



*Testing Tomorrow's Technology*

**Application**

**For**

**Part 2, Subpart J, Paragraph 2.907 Equipment Authorization of Certification for an Intentional Radiator per Part 15, Subpart C, paragraphs 15.207, 15.209 and 15.247**

**And**

**RSS-247 Issue 1 for Industry Canada**

**For the  
Acuity Brands Lighting, Inc. and  
Acuity Brands Technology Services, Inc.**

**Model: ACWIFI001**

**FCC ID: 2ADCB-ACWIFI001  
IC: 6715A-ACWIFI001**

**UST Project: 16-0139  
Issue Date: August 26, 2016**

Total Pages in This Report: 148

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Testing Tomorrow's Technology

I certify that I am authorized to sign for the Test Agency and that all of the statements in this report and in the Exhibits attached hereto are true and correct to the best of my knowledge and belief:

US TECH (Agent Responsible For Test):

By: Alan Ghasiani

Name: 

Title: Compliance Engineer – President

Date August 26, 2016



NVLAP LAB CODE 200162-0

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US Tech Test Report:  
FCC ID:  
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Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

## MEASUREMENT TECHNICAL REPORT

**COMPANY NAME:** Acuity Brands  
**MODEL:** ACWIFI001  
**FCC ID:** 2ADCB-ACWIFI001  
**IC:** 6715A-ACWIFI001  
**DATE:** August 26, 2016

This report concerns (check one): Original grant   
Class II change

Equipment type: 2412 - 2462 MHz Transmitter Module

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes\_\_\_\_\_ No X

If yes, defer until: N/A  
date

agrees to notify the Commission by N/A  
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

US Tech  
3505 Francis Circle  
Alpharetta, GA 30004

Phone Number: (770) 740-0717  
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US Tech Test Report:  
FCC ID:  
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## Table of Contents

<u>Paragraph</u>	<u>Title</u>	<u>Page</u>
<b>1</b>	<b>General Information</b>	<b>11</b>
1.1	Purpose of this Report	11
1.2	Characterization of Test Sample	11
1.3	Product Description	11
1.4	Configuration of Tested System	12
1.5	Test Facility	12
1.6	Related Submittals	12
1.6.1	The EUT is subject to the following FCC authorizations:	12
1.6.2	Verification of the Digital Apparatus	13
<b>2</b>	<b>Tests and Measurements</b>	<b>14</b>
2.1	Test Equipment	14
2.2	Modifications to EUT Hardware	15
2.3	Number of Measurements for Intentional Radiators (15.31(m))	15
2.4	Frequency Range of Radiated Measurements (Part 15.33)	15
2.4.1	Intentional Radiator	15
2.4.2	Unintentional Radiator	16
2.5	Measurement Detector Function and Bandwidth (PART 15.35)	16
2.5.1	Detector Function and Associated Bandwidth	16
2.5.2	Corresponding Peak and Average Requirements	16
2.5.3	Pulsed Transmitter Averaging	16
2.6	Duty Cycle Verification	17
2.7	EUT Antenna Requirements (PART 15.203)	23
2.8	Intentional Radiator, Power Line Conducted Emissions (PART 15.207)	52
2.9	Restricted Bands of Operation (Part 15.205)	54
2.10	Intentional Radiator, Spurious Emissions (PART 15.209, 15.247(d)) (IC RSS 247, 5.4)	54
2.10.1	Conducted Spurious Emissions	54
2.10.2	Radiated Spurious Emissions (PART 15.209, 15.247)	79
2.11	Band Edge and Restricted Band Measurements (PART 15.247 (d))	98
2.11.1	Band Edge Measurements	99
2.11.2	Restricted Band measurements (Radiated)	115
2.12	99% Occupied Bandwidth (IC RSS Gen, 6.6)	146
2.13	Measurement Uncertainty	148
2.13.1	Conducted Emissions Measurement Uncertainty	148
2.13.2	Radiated Emissions Measurement Uncertainty	148
2.14	FCC 15.407(c) Compliance	148

**List of Figures**

<b><u>Figures</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
Figure 1.	Block Diagram of Test Configuration .....	13
Figure 2.	802.11 b, 1 Mbps Duty Cycle .....	17
Figure 3.	802.11b, 22 Mbps Duty Cycle .....	18
Figure 4.	802.11g, 6 Mbps Duty Cycle .....	19
Figure 5.	802.11g, 72 Mbps Duty Cycle .....	20
Figure 6.	802.11n, MCS0 Duty Cycle.....	21
Figure 7.	802.11n, MCS7 Duty Cycle.....	22
Figure 8.	Peak Antenna Conducted Output Power 802.11b Low Channel .....	26
Figure 9.	Peak Antenna Conducted Output Power 802.11b Mid Channel .....	27
Figure 10.	Peak Antenna Conducted Output Power 802.11b High Channel.....	28
Figure 11.	Peak Antenna Conducted Output Power 802.11g Low Channel .....	29
Figure 12.	Peak Antenna Conducted Output Power 802.11g Mid Channel .....	30
Figure 13.	Peak Antenna Conducted Output Power 802.11g High Channel.....	31
Figure 14.	Peak Antenna Conducted Output Power 802.11n Low Channel .....	32
Figure 15.	Peak Antenna Conducted Output Power 802.11n Mid Channel .....	33
Figure 16.	Peak Antenna Conducted Output Power 802.11n High Channel.....	34
Figure 17.	Peak Antenna Conducted Output Power 802.11n (40MHz) Low Channel .....	35
Figure 18.	Peak Antenna Conducted Output Power 802.11n (40MHz) Mid Channel .....	36
Figure 19.	Peak Antenna Conducted Output Power 802.11n (40MHz) High Channel .....	37
Figure 20.	Peak Power Spectral Density 802.11b Low Channel.....	40
Figure 21.	Peak Power Spectral Density 802.11b Mid Channel .....	41
Figure 22.	Peak Power Spectral Density 802.11b High Channel.....	42
Figure 23.	Peak Power Spectral Density 802.11g Low Channel.....	43
Figure 24.	Peak Power Spectral Density 802.11g Mid Channel .....	44
Figure 25.	Peak Power Spectral Density 802.11g High Channel.....	45
Figure 26.	Peak Power Spectral Density 802.11n Low Channel.....	46
Figure 27.	Peak Power Spectral Density 802.11n Mid Channel .....	47
Figure 28.	Peak Power Spectral Density 802.11n High Channel.....	48
Figure 29.	Peak Power Spectral Density 802.11n (40MHz) Low Channel .....	49
Figure 30.	Peak Power Spectral Density 802.11n (40MHz) Mid Channel.....	50
Figure 31.	Peak Power Spectral Density 802.11n (40MHz) High Channel .....	51
Figure 32.	Antenna Conducted Emissions 802.11b Low, Part 1 .....	55
Figure 33.	Antenna Conducted Emissions 802.11b Low, Part 2 .....	56
Figure 34.	Antenna Conducted Emissions 802.11b Mid, Part 1 .....	57

Figure 35. Antenna Conducted Emissions 802.11b Mid, Part 2..... 58  
Figure 36. Antenna Conducted Emissions 802.11b High, Part 1 ..... 59  
Figure 37. Antenna Conducted Emissions 802.11b High, Part 2 ..... 60  
Figure 38. Antenna Conducted Emissions 802.11g Low, Part 1 ..... 61  
Figure 39. Antenna Conducted Emissions 802.11g Low, Part 2..... 62  
Figure 40. Antenna Conducted Emissions 802.11g Mid, Part 1..... 63  
Figure 41. Antenna Conducted Emissions 802.11g Mid, Part 2..... 64  
Figure 42. Antenna Conducted Emissions 802.11g High, Part 1 ..... 65  
Figure 43. Antenna Conducted Emissions 802.11g High, Part 2 ..... 66  
Figure 44. Antenna Conducted Emissions 802.11n Low, Part 1 ..... 67  
Figure 45. Antenna Conducted Emissions 802.11n Low, Part 2..... 68  
Figure 46. Antenna Conducted Emissions 802.11n Mid, Part 1..... 69  
Figure 47. Antenna Conducted Emissions 802.11n Mid, Part 2..... 70  
Figure 48. Antenna Conducted Emissions 802.11n High, Part 1 ..... 71  
Figure 49. Antenna Conducted Emissions 802.11n High, Part 2 ..... 72  
Figure 50. Antenna Conducted Emissions 802.11n, 40MHz Low, Part 1..... 73  
Figure 51. Antenna Conducted Emissions 802.11n, 40 MHz Low, Part 2..... 74  
Figure 52. Antenna Conducted Emissions 802.11n, 40 MHz Mid, Part 1 ..... 75  
Figure 53. Antenna Conducted Emissions 802.11n, 40 MHz Mid, Part 2 ..... 76  
Figure 54. Antenna Conducted Emissions 802.11n, 40 MHz High, Part 1 ..... 77  
Figure 55. Antenna Conducted Emissions 802.11n, 40 MHz High, Part 2..... 78  
Figure 56. Band Edge Compliance, 802.11b Low Channel Delta - Peak..... 99  
Figure 57. Band Edge Compliance, 802.11b Low Channel Delta - Average..... 100  
Figure 58. Band Edge Compliance,802.11b High Channel Delta – Peak ..... 101  
Figure 59. Band Edge Compliance, 802.11b High Channel Delta – Average ..... 102  
Figure 60. Band Edge Compliance, 802.11g Low Channel Delta - Peak..... 103  
Figure 61. Band Edge Compliance, 802.11g Low Channel Delta - Average..... 104  
Figure 62. Band Edge Compliance, 802.11g High Channel Delta – Peak ..... 105  
Figure 63. Band Edge Compliance, 802.11g High Channel Delta – Average ..... 106  
Figure 64. Band Edge Compliance, 802.11n Low Channel Delta – Peak ..... 107  
Figure 65. Band Edge Compliance, 802.11n Low Channel Delta - Average..... 108  
Figure 66. Band Edge Compliance, 802.11n High Channel Delta – Peak ..... 109  
Figure 67. Band Edge Compliance, 802.11n High Channel Delta – Average ..... 110  
Figure 68. Band Edge Compliance, 802.11 40 MHz BW Low Channel Delta – Peak  
..... 111  
Figure 69. Band Edge Compliance, 802.11 40 MHz BW Low Channel Delta –  
Average ..... 112  
Figure 70. Band Edge Compliance, 802.11 40 MHz BW High Channel Delta – Peak  
..... 113  
Figure 71. Band Edge Compliance, 802.11 40 MHz BW High Channel Delta –  
Average ..... 114  
Figure 72. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11b - Peak..... 116

Figure 73. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11b - Average 117  
Figure 74. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11b - Peak.. 118  
Figure 75. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11b - Average  
..... 119  
Figure 76. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11g - Peak..... 120  
Figure 77. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11g - Average 121  
Figure 78. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11g - Peak.. 122  
Figure 79. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11g - Average  
..... 123  
Figure 80. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n - Peak..... 124  
Figure 81. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n - Average 125  
Figure 82. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11n- Peak... 126  
Figure 83. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11n - Average  
..... 127  
Figure 84. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n (40MHz) -  
Peak..... 128  
Figure 85. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n (40MHz) -  
Average ..... 129  
Figure 86. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) -  
Peak..... 130  
Figure 87. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) -  
Average ..... 131  
Figure 88. Six dB Bandwidth 802.11b Low Channel ..... 134  
Figure 89. Six dB Bandwidth 802.11b Mid Channel ..... 135  
Figure 90. Six dB Bandwidth 802.11b High Channel ..... 136  
Figure 91. Six dB Bandwidth 802.11g Low Channel ..... 137  
Figure 92. Six dB Bandwidth 802.11g Mid Channel ..... 138  
Figure 93. Six dB Bandwidth 802.11g High Channel ..... 139  
Figure 94. Six dB Bandwidth 802.11n Low Channel ..... 140  
Figure 95. Six dB Bandwidth 802.1n Mid Channel ..... 141  
Figure 96. Six dB Bandwidth 802.11n High Channel ..... 142  
Figure 97. Six dB Bandwidth 802.11 40 MHz BW Low Channel ..... 143  
Figure 98. Six dB Bandwidth - 15.247 – 802.11 40 MHz BW Mid Channel ..... 144  
Figure 99. Six dB Bandwidth - 15.247 – 802.11 40 MHz BW High Channel ..... 145

**List of Tables**

<b><u>Table</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
Table 1.	EUT and Peripherals.....	13
Table 2.	Test Instruments .....	14
Table 3.	Number of Test Frequencies for Intentional Radiators.....	15
Table 4.	Allowed Antenna(s).....	23
Table 5.	802.11b Peak Antenna Conducted Output Power per Part 15.247 (b) (3) .	24
Table 6.	802.11g Peak Antenna Conducted Output Power per Part 15.247 (b) (3) .	24
Table 7.	802.11n Peak Antenna Conducted Output Power per Part 15.247 (b) (3) .	25
Table 8.	802.11n 40 MHz BW Peak Antenna Conducted Output Power per Part 15.247 (b) (3) .....	25
Table 9.	802.11b Power Spectral Density for Low, Mid and High Bands .....	38
Table 10.	802.11g Power Spectral Density for Low, Mid and High Bands.....	38
Table 11.	802.11n Power Spectral Density for Low, Mid and High Bands.....	39
Table 12.	802.11 40 MHz BW Power Spectral Density for Low, Mid and High Bands .....	39
Table 13.	Power Line Conducted Emissions Test Data, Part 15.207.....	53
Table 14.	Intentional Radiator, Spurious Radiated Emissions (PART 15.209), .....	79
Table 15.	Intentional Radiator, Spurious Radiated Emissions (PART 15.209), .....	80
Table 16.	Intentional Radiator, Spurious Radiated Emissions (PART 15.209), above 1 GHz.....	81
Table 17.	802.11b Peak Radiated Fundamental & Harmonic Emissions.....	82
Table 18.	802.11b Average Radiated Fundamental & Harmonic Emissions.....	83
Table 19.	802.11g Peak Radiated Fundamental & Harmonic Emissions.....	84
Table 20.	802.11g Average Radiated Fundamental & Harmonic Emissions.....	85
Table 21.	802.11n Peak Radiated Fundamental & Harmonic Emissions.....	86
Table 22.	802.11n Average Radiated Fundamental & Harmonic Emissions.....	87
Table 23.	802.11n 40 MHz BW Peak Radiated Fundamental & Harmonic Emissions .....	88
Table 24.	802.11n 40 MHz BW Average Radiated Fundamental & Harmonic Emissions .....	89
Table 25.	802.11b Peak Radiated Fundamental & Harmonic Emissions.....	90
Table 26.	802.11b Average Radiated Fundamental & Harmonic Emissions.....	91
Table 27.	802.11g Peak Radiated Fundamental & Harmonic Emissions.....	92
Table 28.	802.11g Average Radiated Fundamental & Harmonic Emissions.....	93
Table 29.	802.11n Peak Radiated Fundamental & Harmonic Emissions.....	94
Table 30.	802.11n Average Radiated Fundamental & Harmonic Emissions.....	95
Table 31.	802.11n 40 MHz BW Peak Radiated Fundamental & Harmonic Emissions .....	96



Table 32. 802.11n 40 MHz BW Average Radiated Fundamental & Harmonic Emissions ..... 97

Table 33. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11b – Peak..... 116

Table 34. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11b – Average 117

Table 35. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11b – Peak.. 118

Table 36. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11b – Average ..... 119

Table 37. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11g – Peak..... 120

Table 38. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11g – Average 121

Table 39. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11g – Peak.. 122

Table 40. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11g – Average ..... 123

Table 41. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n – Peak..... 124

Table 42. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n – Average 125

Table 43. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11n – Peak.. 126

Table 44. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11n – Average ..... 127

Table 45. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n (40MHz) – Peak..... 128

Table 46. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n (40MHz) – Average ..... 129

Table 47. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) – Peak..... 130

Table 48. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) – Average ..... 131

Table 49. 802.11b Six (6) dB Bandwidth..... 132

Table 50. 802.11g Six (6) dB Bandwidth..... 132

Table 51. 802.11n Six (6) dB Bandwidth..... 132

Table 52. 802.11n 40 MHz BW Six (6) dB Bandwidth..... 133

Table 53. 802.11b 20 dB Bandwidth and 99% Occupied Bandwidth ..... 146

Table 54. 802.11g 20 dB Bandwidth and 99% Occupied Bandwidth ..... 146

Table 55. 802.11n 20 dB Bandwidth and 99% Occupied Bandwidth ..... 146

Table 56. 802.11n (40MHz) 20 dB Bandwidth and 99% Occupied Bandwidth ..... 147

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

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### **List of Attachments**

Agency Agreements  
Application Forms  
Letter of Confidentiality  
Equipment Label(s)  
Block Diagram(s)  
Schematic(s)  
Test Configuration Photographs  
Internal Photographs  
External Photographs  
Antenna Photographs  
Theory of Operation  
RF Exposure  
User's Manual

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

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## **1 General Information**

### **1.1 Purpose of this Report**

This report is prepared as a means of conveying test results and information concerning the suitability of this exact product for public distribution according to the FCC Rules and Regulations Part 15, Section 247 and IC RSS 247 Issue 1.

### **1.2 Characterization of Test Sample**

The sample used for testing was received by US Tech on June 30, 2016 in good operating condition.

### **1.3 Product Description**

The Equipment Under Test (EUT) is the Acuity Brands Technology Services, Inc. Model ACWIFI001 radio module. The ACWIFI001 radio module is an embedded wireless internet connectivity module that operates in the 2.4 and 5.0 GHz spectrums.

The EUT can be used with one of two types of antennas, however it will only be set up and can only broadcast using one antenna at a time; never both simultaneously. There is only one RF port. The antenna uses an RF switch that will attenuate the signal to the antenna that is not being used for transmission.

The 5.0 GHz Wi-Fi radio features have been tested and the results detailed in a separate report.

Antenna Gain: 2.79 dBi (flex trace), 1.0 dBi (omni)

Modulation: DSSS

Bandwidth: 20 MHz and 40 MHz modulation

Maximum Output Power: b mode: 16 dBm, g mode: 17 dBm, n mode: 16 dBm, n mode (40 MHz): 17.2 dBm.

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

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## **1.4 Configuration of Tested System**

The Test Sample was tested per *ANSI C63.10:2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices* and *ANSI C63.4:2014, Methods of Measurement of Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (2014)*, and per FCC KDB Publication number 558074v03r05 for Digital Transmission Systems Operating Under section 15.247.

A list of EUT and Peripherals is found in Table 1 below. A block diagram of the tested system is shown in Figure 1. Test configuration photographs are provided in separate Appendices.

## **1.5 Test Facility**

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA 30004. This site has been fully described and registered with the FCC. Its designation number is 186022. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number 9900A-1.

## **1.6 Related Submittals**

### **1.6.1 The EUT is subject to the following FCC authorizations:**

- a) Certification under section 15.247 as a transmitter.
- b) Certification under section 15.407 as a transmitter

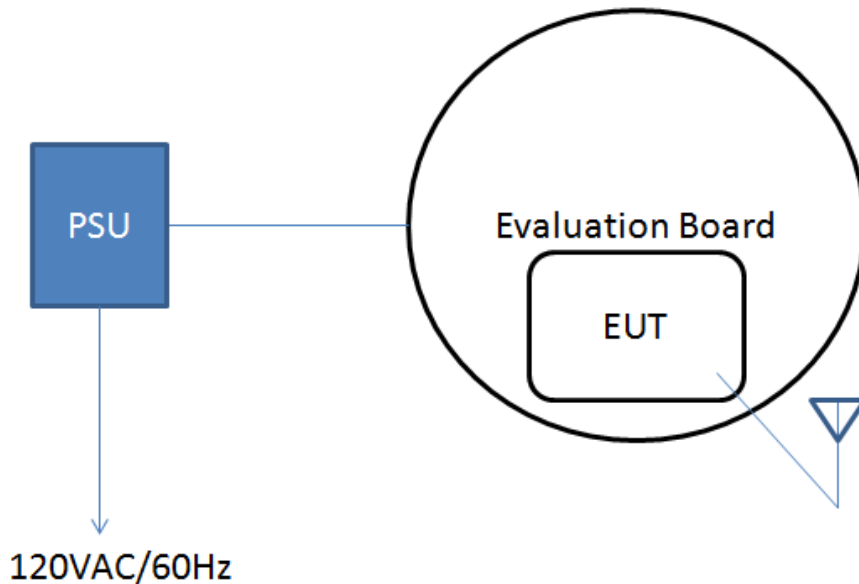
### 1.6.2 Verification of the Digital Apparatus

The EUT is radio module. This report covers the certification requirements for the radio module. When installed within a host device, the host device with radio module will be subject to verification testing to meet the requirements of 15.107 and 15.109.

**Table 1. EUT and Peripherals**

PERIPHERAL MANUFACTURER.	MODEL NUMBER	SERIAL NUMBER	FCC/IC ID:	CABLES P/D
Acuity Brands Technology Services, Inc.	ACWIFI001	Engineering Sample	2ADCB-ACWIFI001 6715A-ACWIFI001	N/A
Antenna See antenna details	--	--	--	--

U= Unshielded S= Shielded  
 P= Power D= Data



**Figure 1. Block Diagram of Test Configuration**

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

## 2 Tests and Measurements

### 2.1 Test Equipment

The table below lists test equipment used to evaluate this product. Model numbers, serial numbers, and calibration status at the time of testing are indicated.

**Table 2. Test Instruments**

TEST INSTRUMENT	MODEL NUMBER	MANUFACTURER	SERIAL NUMBER	CALIBRATION DUE DATE
SPECTRUM ANALYZER	8566B	HEWLETT-PACKARD	2410A00109	08/30/16
SPECTRUM ANALYZER	DSA815	RIGOL	DSA180300138	6/30/2017
SPECTRUM ANALYZER	E4407B	Agilent	US41442935	2/11/2017
LOOP ANTENNA	SAS-200/562	A. H. Systems	142	9/28/2017 2 yr
BICONICAL ANTENNA	3110B	EMCO	9306-1708	11/24/2017 2 yr
LOG PERIODIC ANTENNA	3146	EMCO	9110-3236	11/19/2016 2 yr
LOG PERIODIC ANTENNA	3146	EMCO	9305-3600	10/01/2016 2 yr
HORN ANTENNA	SAS-571	A.H. Systems	605	8/25/2017 2 yr.
HORN ANTENNA	3115	EMCO	9107-3723	10/8/2016 2 yr.
PRE-AMPLIFIER	8449B	HEWLETT-PACKARD	3008A00480	12/01/2016
PRE-AMPLIFIER	8447D	HEWLETT-PACKARD	1937A02980	12/02/2016
LISN x 2	9247-50-TS-50-N	SOLAR ELECTRONICS	955824 and 955825	11/30/2016

Note: The calibration interval of the above test instruments are 12 months unless stated otherwise and all calibrations are traceable to NIST/USA.

**2.2 Modifications to EUT Hardware**

No modifications were made by US Tech in order to bring the EUT into compliance with FCC Part 15, Subpart C Intentional Radiator Limits for the transmitter portion of the EUT or the Subpart B Unintentional Radiator Limits (Receiver and Digital Device) Requirements.

**2.3 Number of Measurements for Intentional Radiators (15.31(m))**

Measurements of intentional radiators or receivers shall be performed and reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in Table 3 below.

**Table 3. Number of Test Frequencies for Intentional Radiators**

Frequency Range over which the device operates	Number of Frequencies	Location in the Range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near the top 1 near the bottom
Greater than 10 MHz	3	1 near top 1 near middle 1 near bottom

Because the EUT operates at 2412 MHz to 2462 MHz, 3 test frequencies were used.

**2.4 Frequency Range of Radiated Measurements (Part 15.33)**

**2.4.1 Intentional Radiator**

The spectrum was investigated for the intentional radiator from the lowest RF signal generated in the EUT, without going below 9 kHz to the 10<sup>th</sup> harmonic of the highest fundamental frequency generated or 40 GHz, whichever is the lowest.

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
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FCC Part 15 Certification/ RSS 247  
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6715A-ACWIFI001  
16-0139  
August 26, 2016  
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## **2.4.2 Unintentional Radiator**

For the digital device, an unintentional radiator, the frequency range tested was 30 MHz to 1000 MHz, or to 5 times the highest internal clock frequency.

## **2.5 Measurement Detector Function and Bandwidth (PART 15.35)**

The radiated and conducted emissions limits shown herein are based on the following:

### **2.5.1 Detector Function and Associated Bandwidth**

On frequencies below 1000 MHz, the limits herein are based upon measurement equipment employing a CISPR Quasi-peak detector function and related measurement bandwidths (i.e. 9 kHz from 150 kHz to 30 MHz and 120 kHz from 30 MHz to 1000 MHz). Alternatively, measurements may be made with equipment employing a peak detector function as long as the same bandwidths specified for the Quasi-peak device are used.

### **2.5.2 Corresponding Peak and Average Requirements**

Above 1000 MHz, radiated limits are based on measuring instrumentation employing an average detector function. When average radiated emissions are specified there is also a corresponding Peak requirement, as measured using a peak detector, of 20 dB greater than the average limit. For all measurements above 1000 MHz the Resolution Bandwidth shall be at least 1 MHz.

### **2.5.3 Pulsed Transmitter Averaging**

When the radiated emissions limit is expressed as an average value, and the transmitter is pulsed, the measured field strength shall be determined by applying a Duty Cycle Correction Factor based upon dividing the total ON time during the first 100 ms period by 100 ms (or by the period if less than 100 ms). The duty cycle may be expressed logarithmically in dB.

In this case the transmitter is assumed to have a duty cycle for near 100% (>98%) on. The different modes were varied below. The EUT was programmed and tested with this duty cycle setting.



## 2.6 Duty Cycle Verification

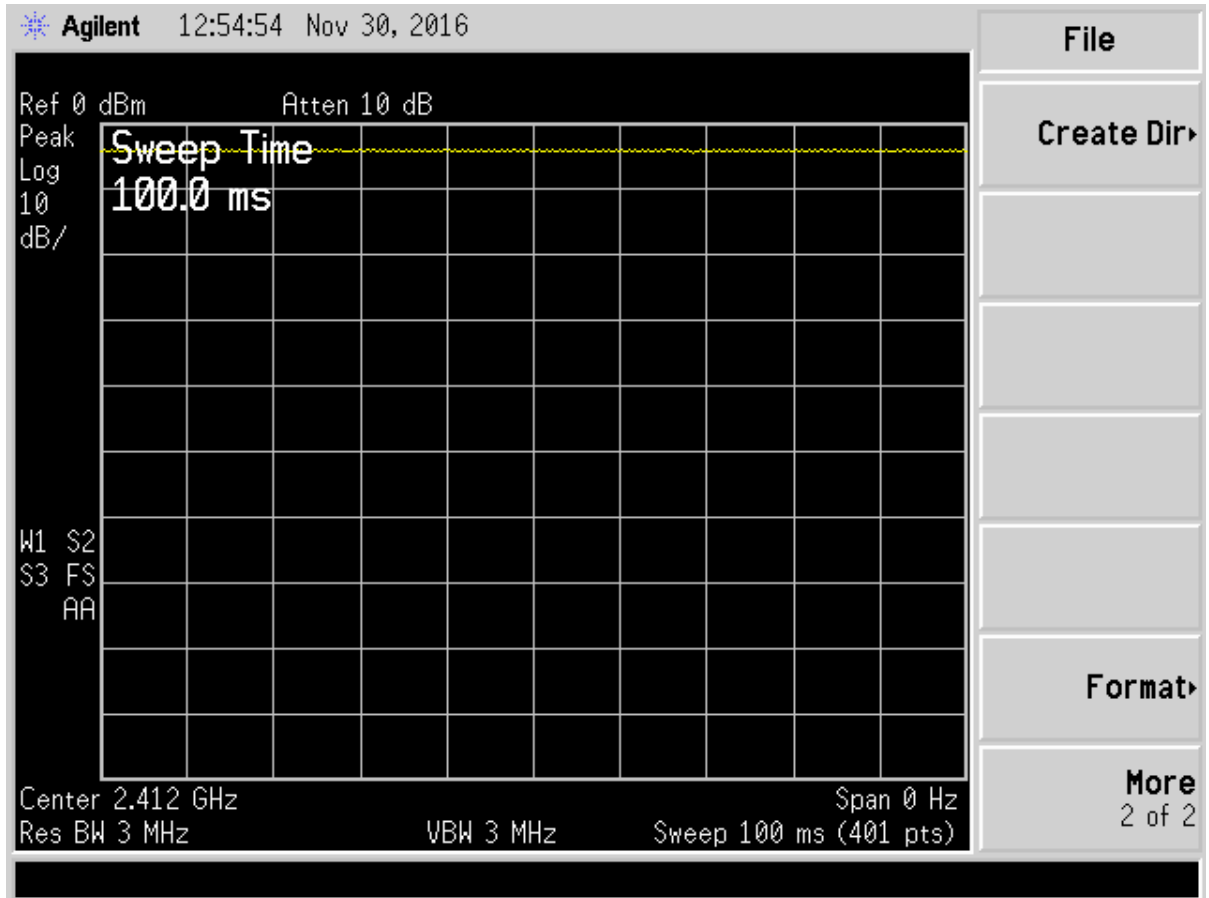


Figure 2. 802.11 b, 1 Mbps Duty Cycle

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

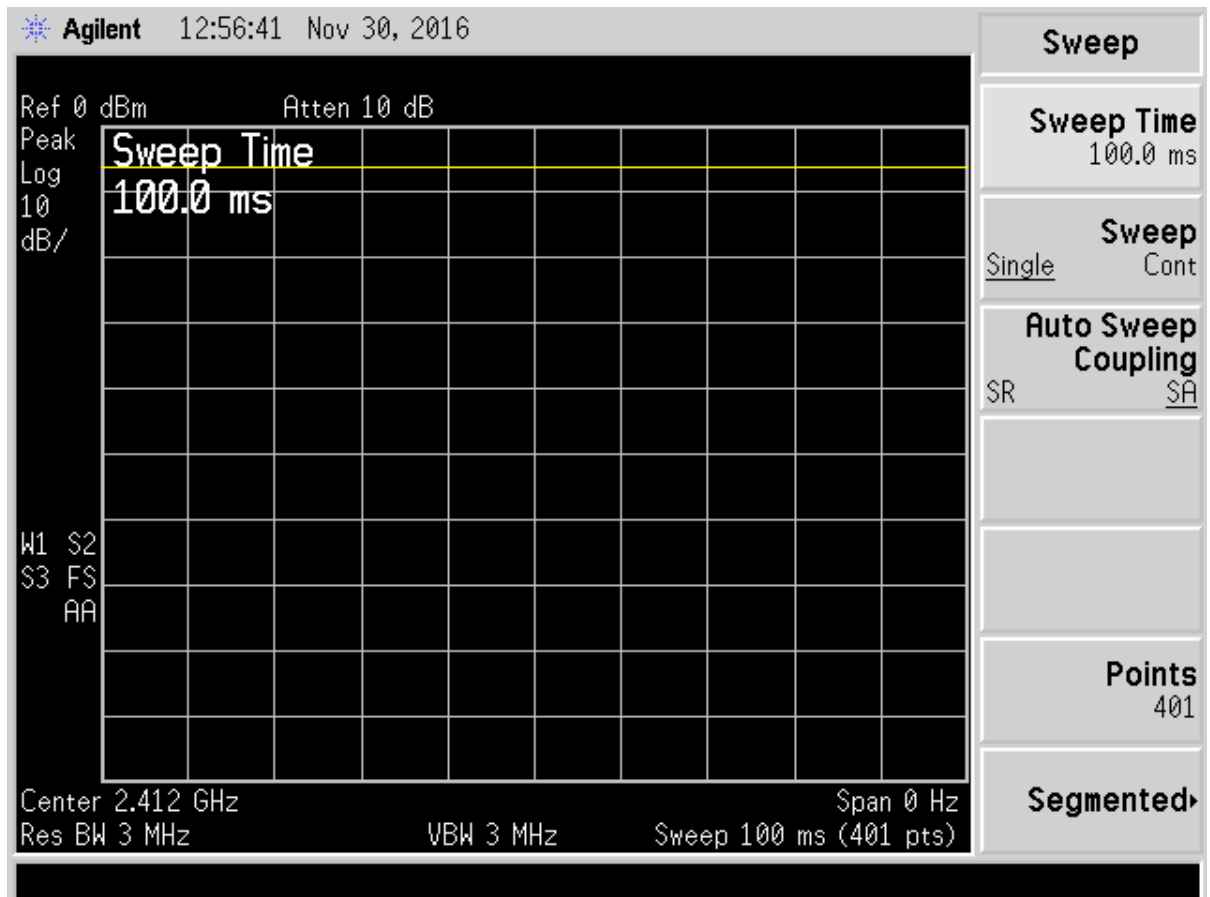


Figure 3. 802.11b, 22 Mbps Duty Cycle

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

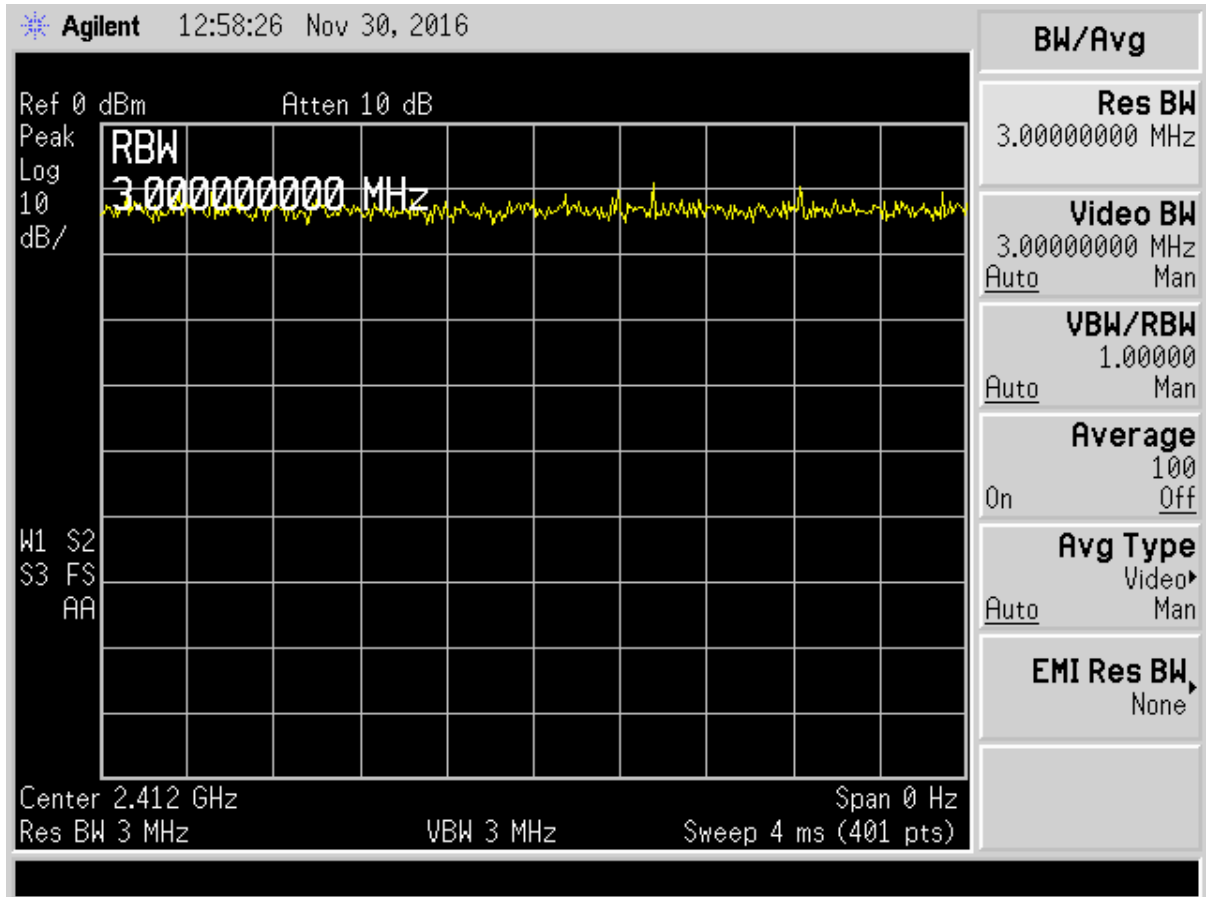


Figure 4. 802.11g, 6 Mbps Duty Cycle

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

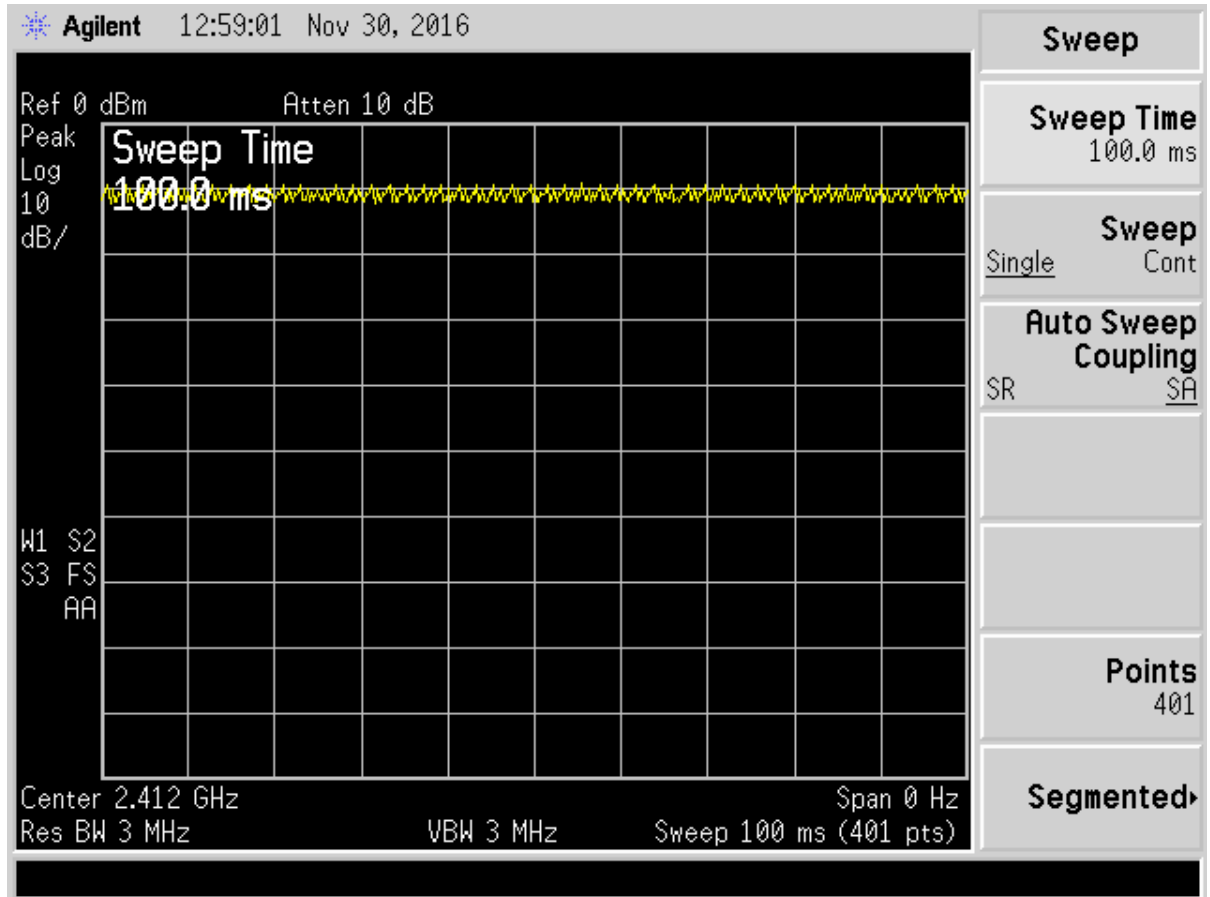


Figure 5. 802.11g, 72 Mbps Duty Cycle

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

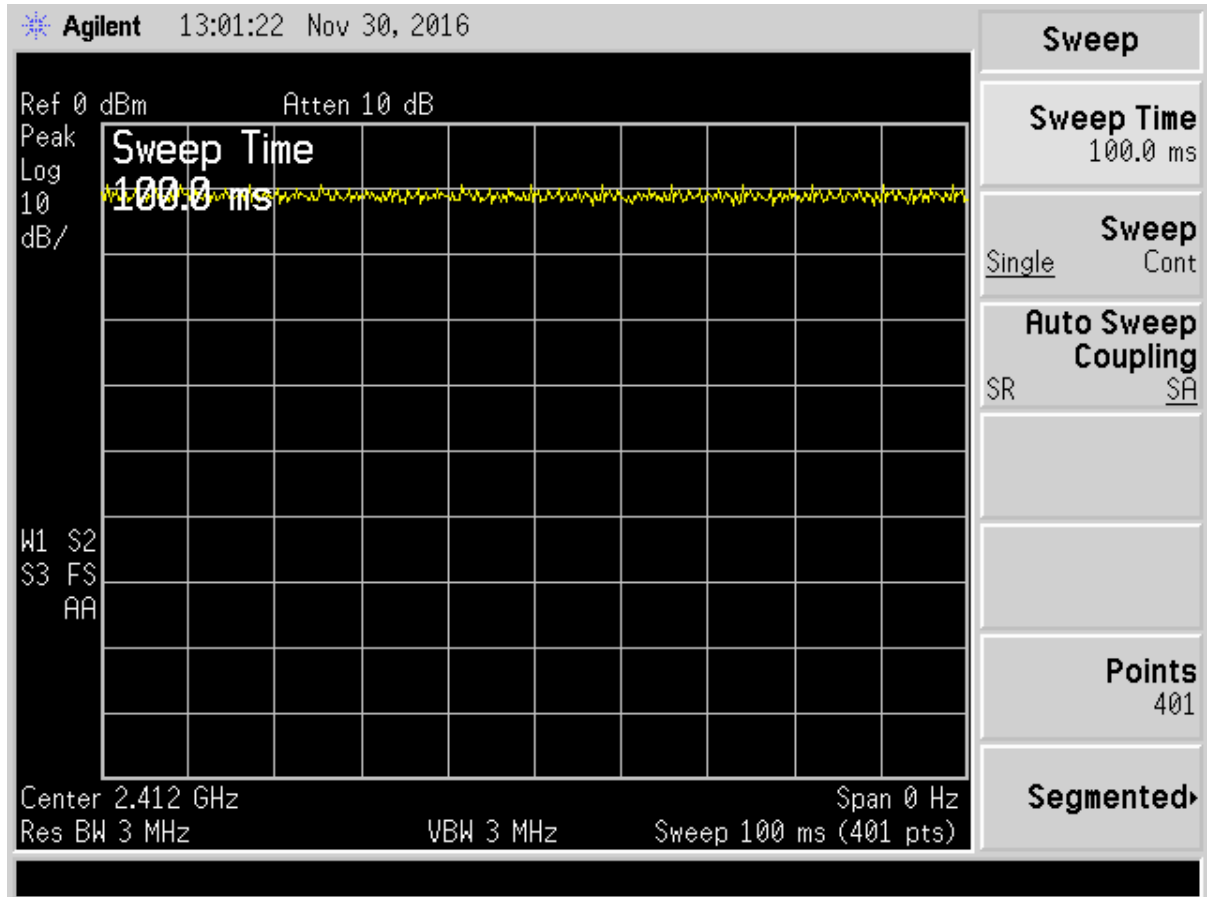


Figure 6. 802.11n, MCS0 Duty Cycle

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

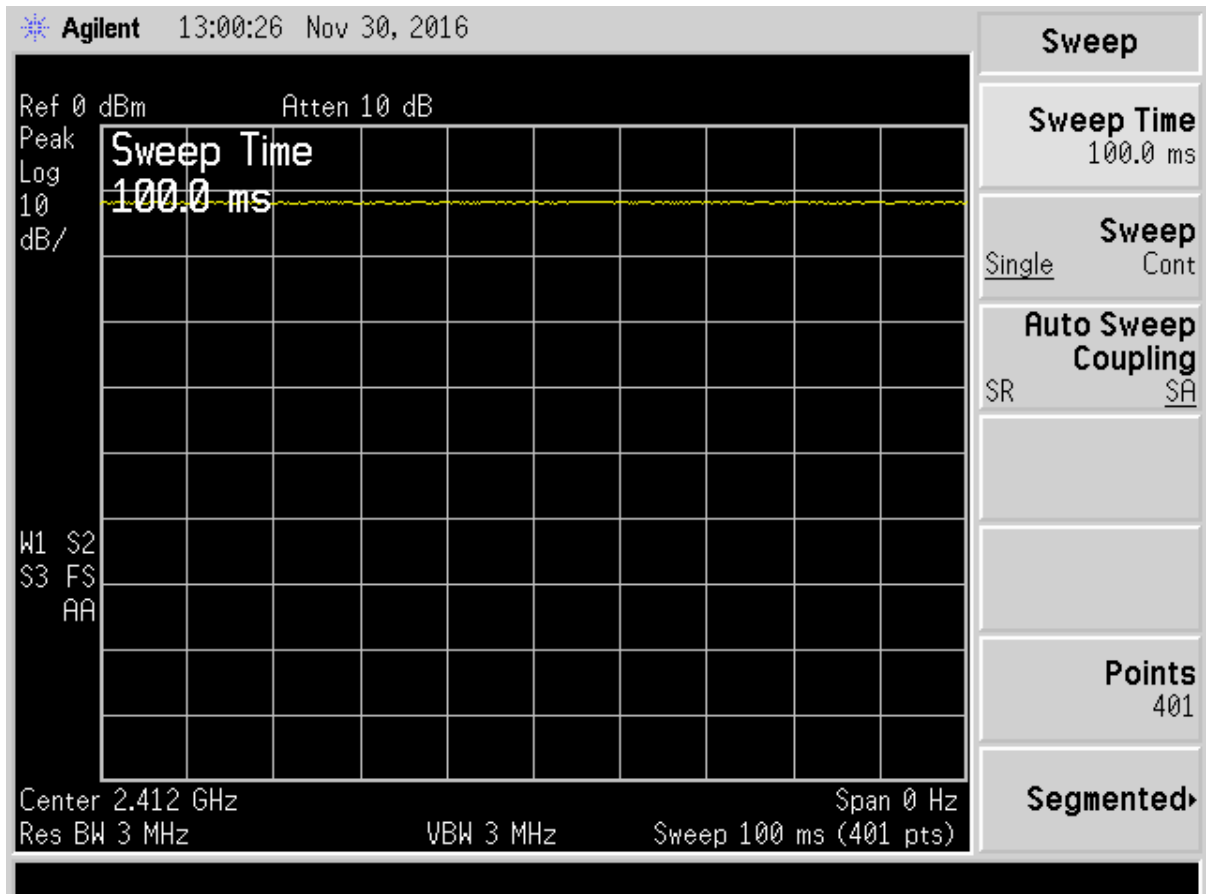


Figure 7. 802.11n, MCS7 Duty Cycle

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

## 2.7 EUT Antenna Requirements (PART 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. Only the antenna(s) listed in Table 4 will be used with this module.

**Table 4. Allowed Antenna(s)**

REPORT REFERENCE	MANUFACTURER	TYPE OF ANTENNA	MODEL	GAIN dBi	TYPE OF CONNECTOR
Antenna 1	Laird	Flex trace	MAF95310 Mini NanoBlade	2.8	u.fl
Antenna 2	Laird	Omni	DCF5151C- FNM	1.0	N-type to u.fl

## 2.8 Maximum Peak Conducted Output Power (PART 15.247 (b) (3))

For this test, the transmitter was programmed to operate at a maximum output power across the bandwidth.

Peak power within the band 2.4 GHz to 2.4835 GHz was measured per FCC KDB Publication 558074 and ANSI C63.10 section 11.9.1.2 as an Antenna Conducted test with a spectrum analyzer by connecting the spectrum analyzer directly, via a short RF cable, and attenuators to the antenna output terminals on the EUT. The spectrum analyzer was set for an impedance of 50  $\Omega$  with the RBW set greater than the 6 dB bandwidth of the EUT, and the VBW  $\geq$  RBW. Peak antenna conducted output power is tabulated in the tables below.

**Table 5. 802.11b Peak Antenna Conducted Output Power per Part 15.247 (b) (3)**

Frequency of Fundamental (MHz)	Raw Test Data (dBm)	Converted Data (mW)	FCC Limit (mW)
2412	14.63	29.0	1000
2442	15.54	35.8	1000
2462	15.42	34.8	1000

**Table 6. 802.11g Peak Antenna Conducted Output Power per Part 15.247 (b) (3)**

Frequency of Fundamental (MHz)	Raw Test Data (dBm)	Converted Data (mW)	FCC Limit (mW)
2412	14.80	30.2	1000
2442	17.01	50.2	1000
2462	15.13	32.5	1000



US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

**Table 7. 802.11n Peak Antenna Conducted Output Power per Part 15.247 (b) (3)**

Frequency of Fundamental (MHz)	Raw Test Data (dBm)	Converted Data (mW)	FCC Limit (mW)
2412	12.54	17.9	1000
2442	15.47	35.2	1000
2462	12.34	17.1	1000

**Table 8. 802.11n 40 MHz BW Peak Antenna Conducted Output Power per Part 15.247 (b) (3)**

Frequency of Fundamental (MHz)	Raw Test Data (dBm)	Converted Data (mW)	FCC Limit (mW)
2422	13.33	21.5	1000
2437	17.21	52.5	1000
2452	10.51	11.2	1000

Test Date: December 1, 2016

Tested By  
Signature: 

Name: George Yang

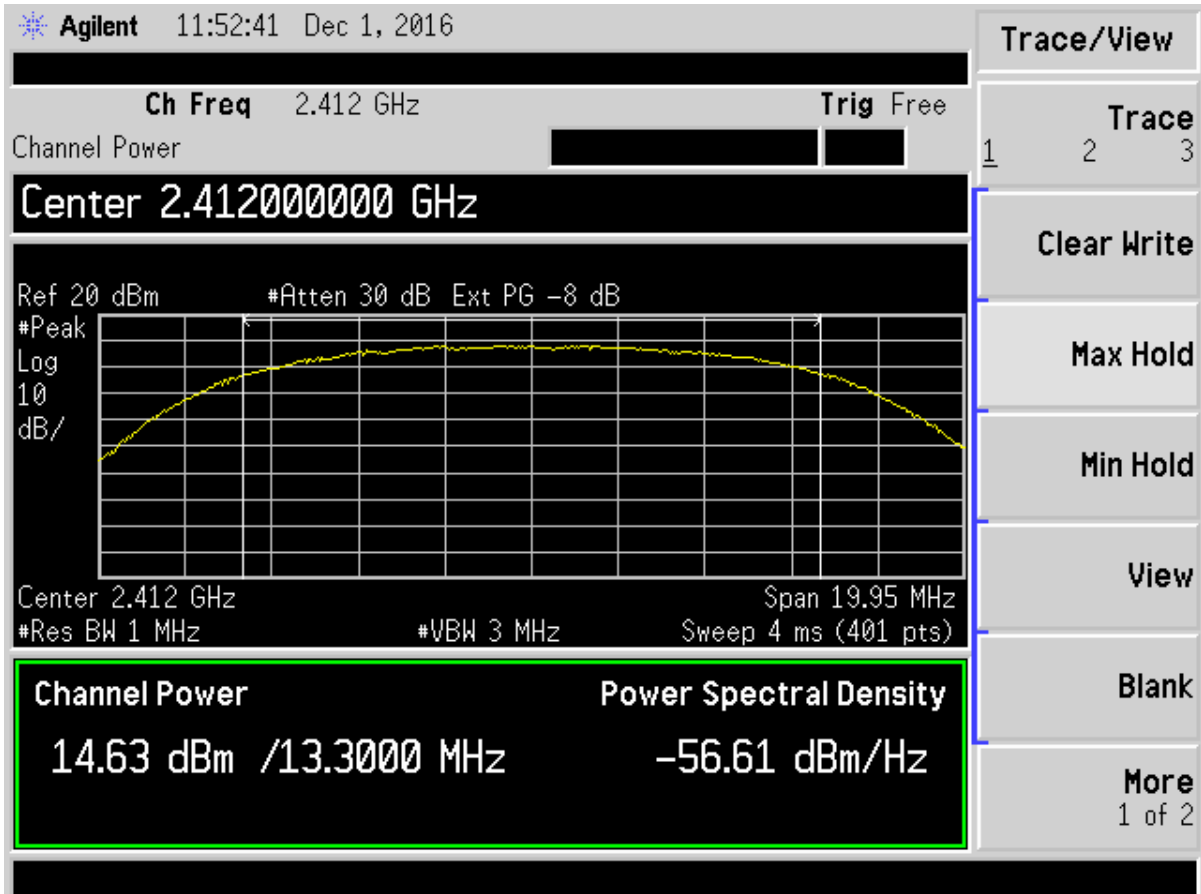


Figure 8. Peak Antenna Conducted Output Power 802.11b Low Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

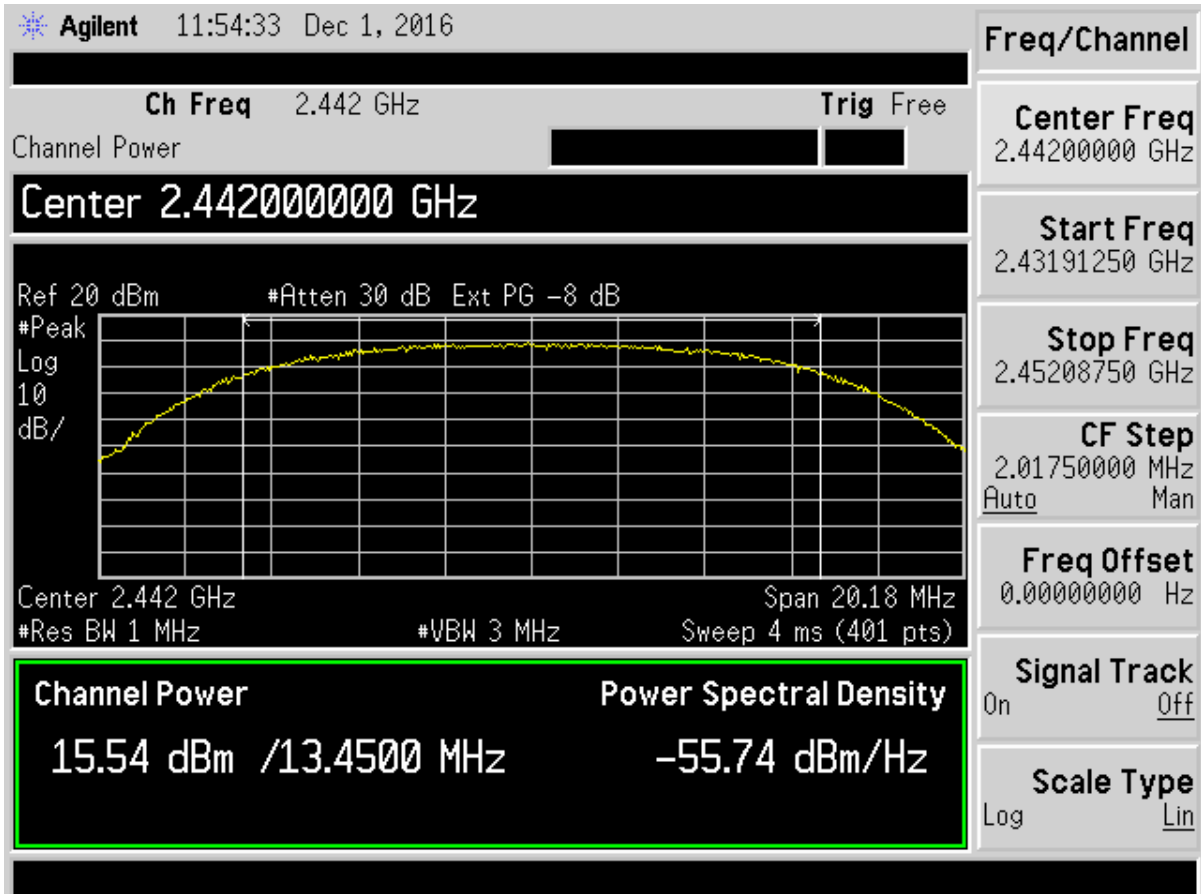


Figure 9. Peak Antenna Conducted Output Power 802.11b Mid Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

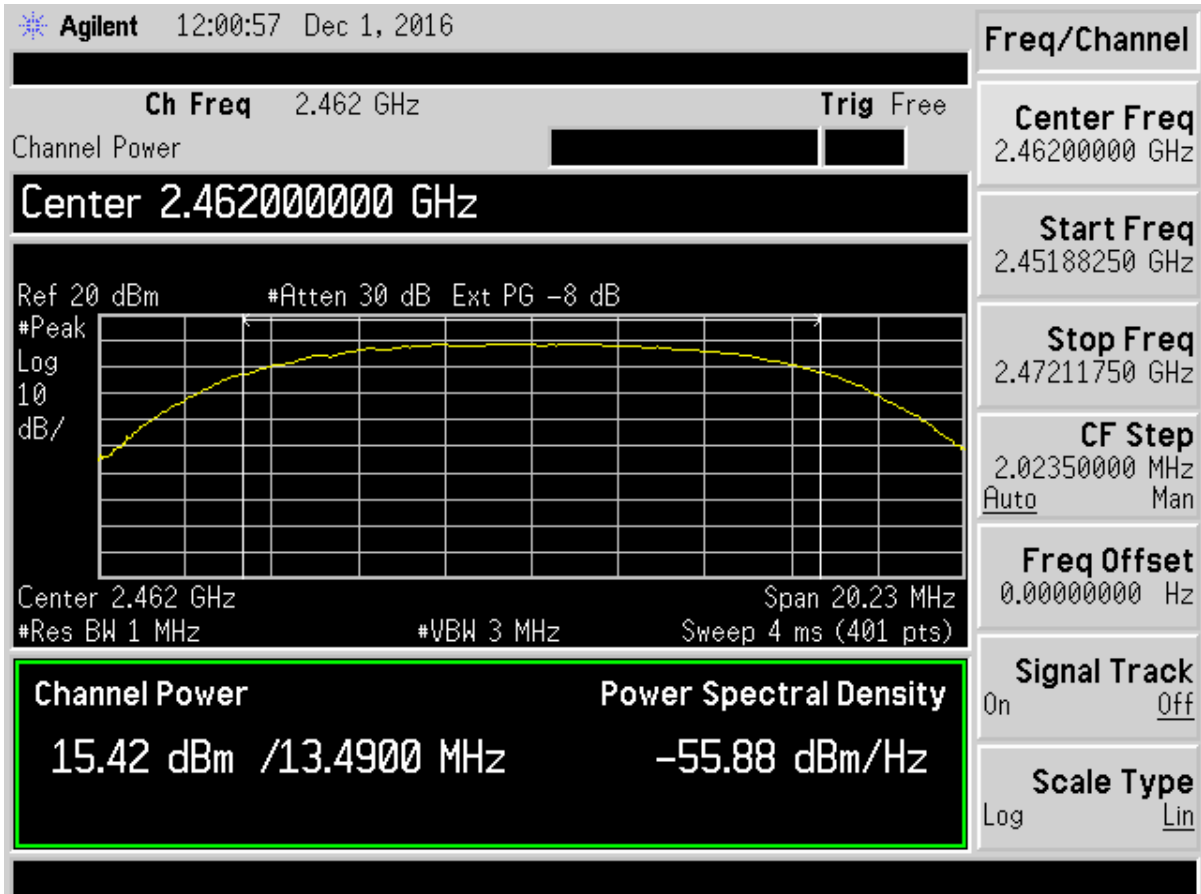


Figure 10. Peak Antenna Conducted Output Power 802.11b High Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

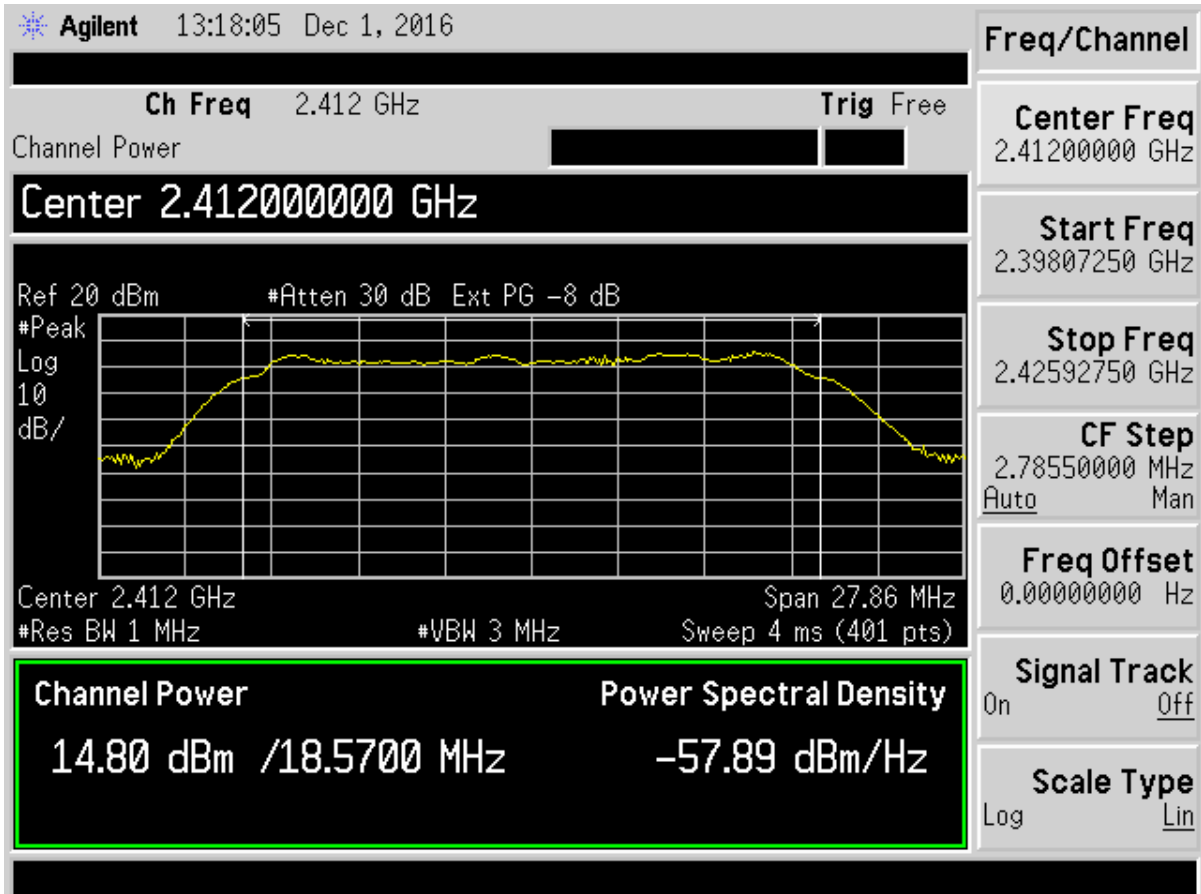


Figure 11. Peak Antenna Conducted Output Power 802.11g Low Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

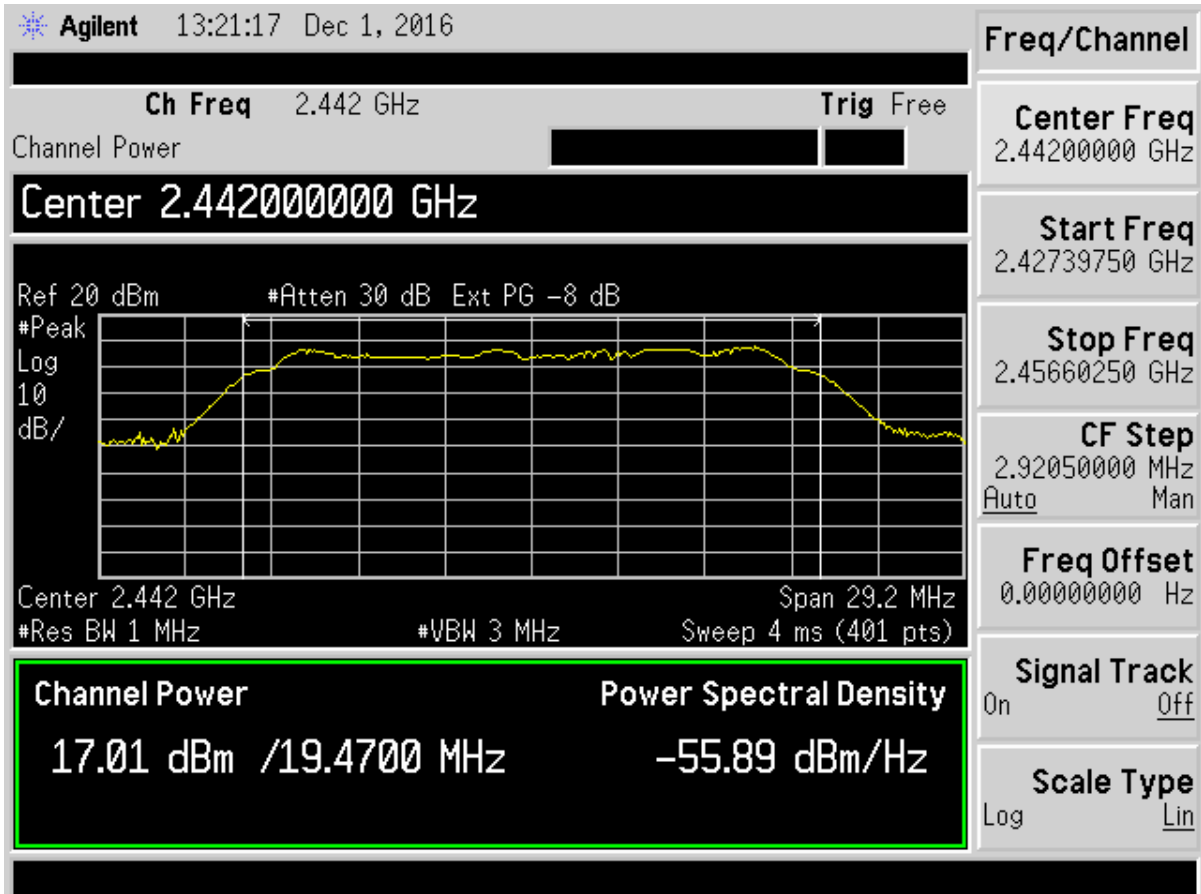


Figure 12. Peak Antenna Conducted Output Power 802.11g Mid Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

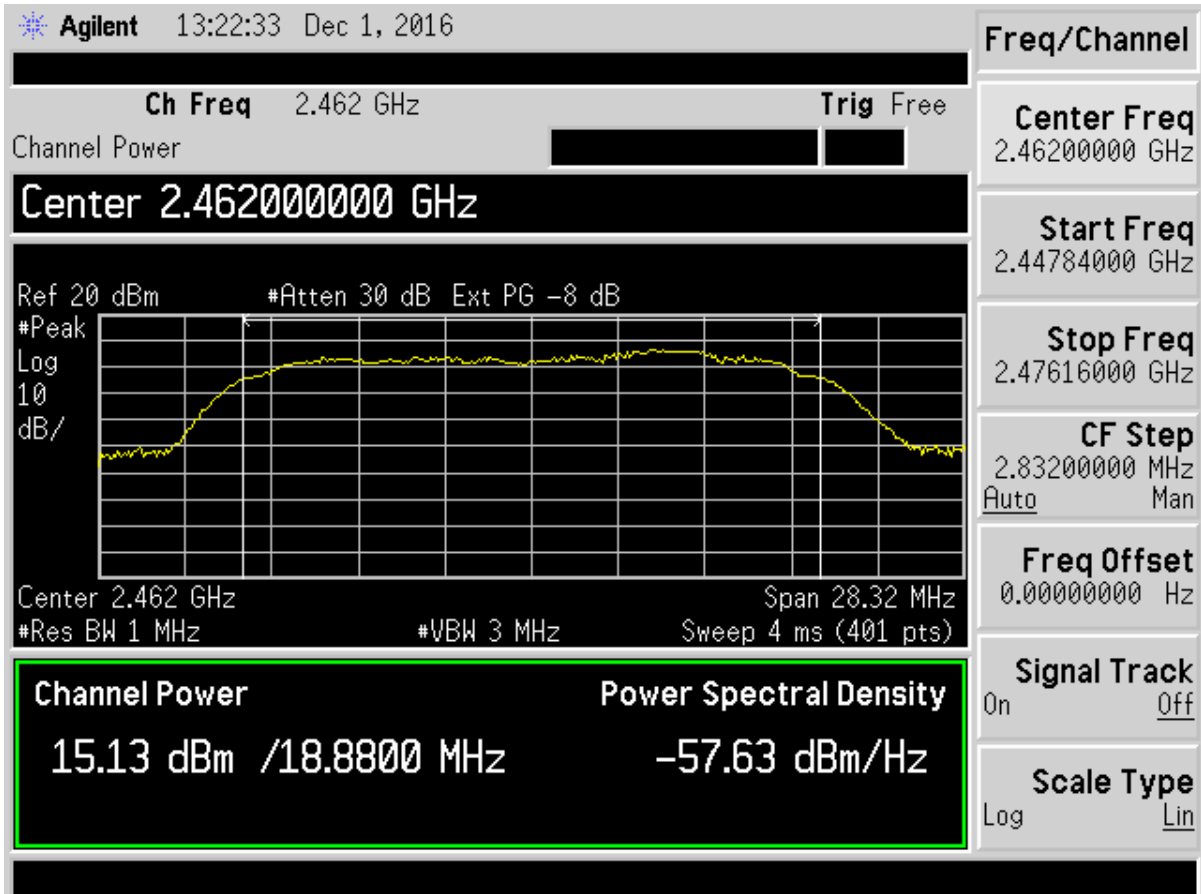


Figure 13. Peak Antenna Conducted Output Power 802.11g High Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

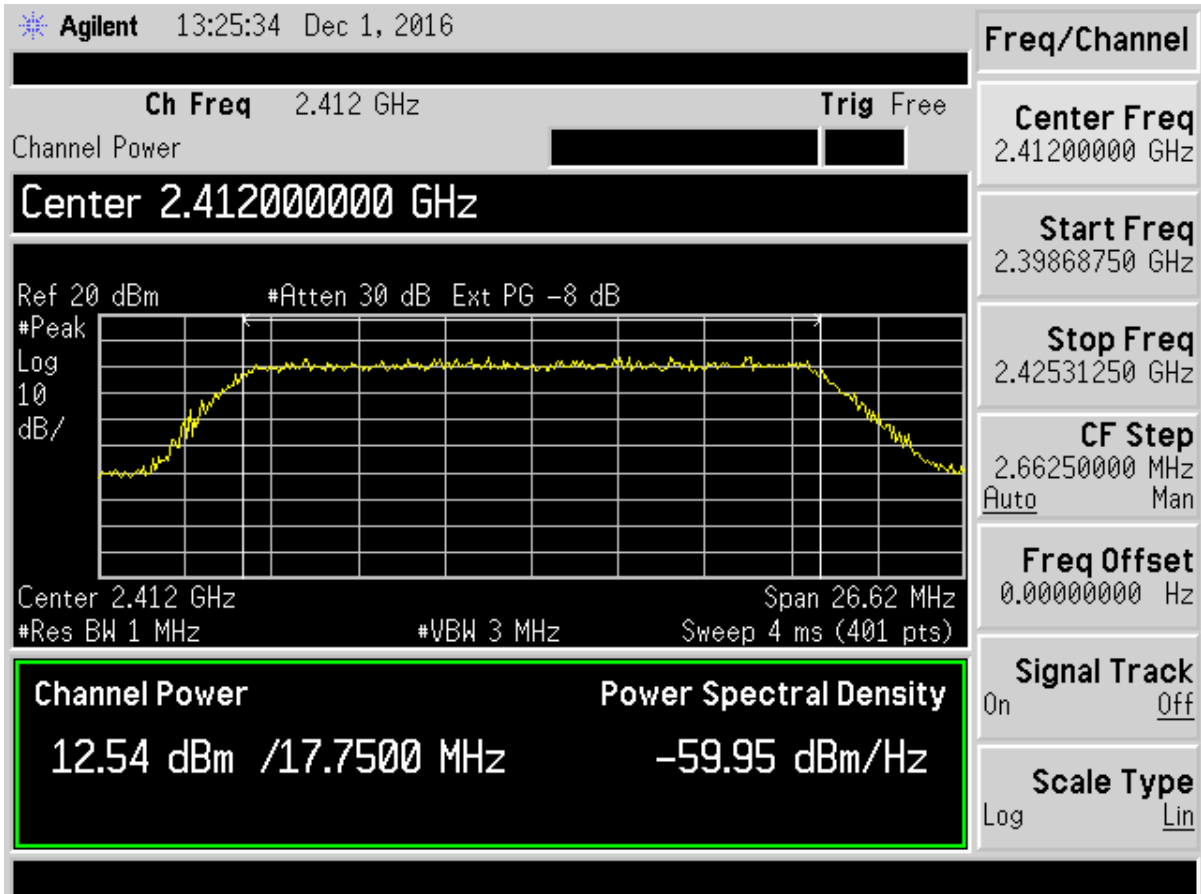


Figure 14. Peak Antenna Conducted Output Power 802.11n Low Channel



US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

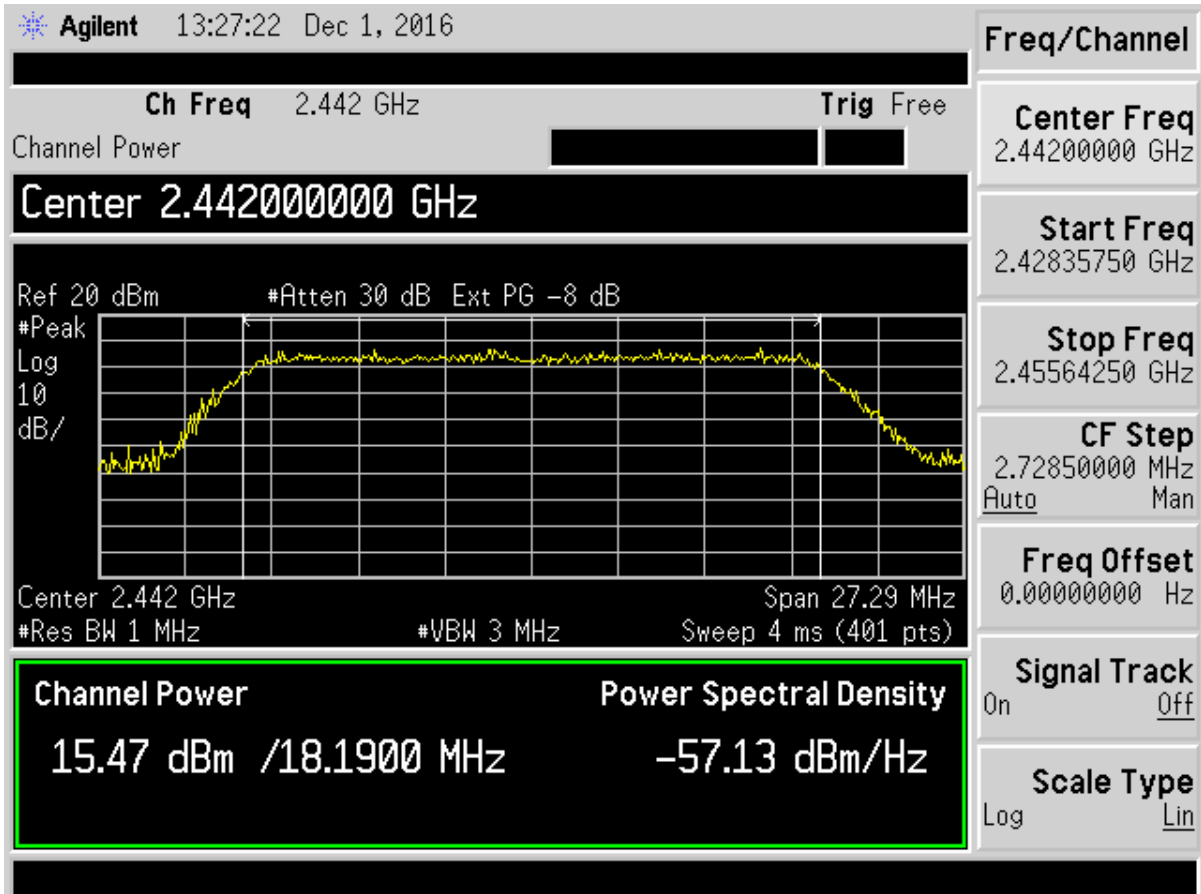


Figure 15. Peak Antenna Conducted Output Power 802.11n Mid Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

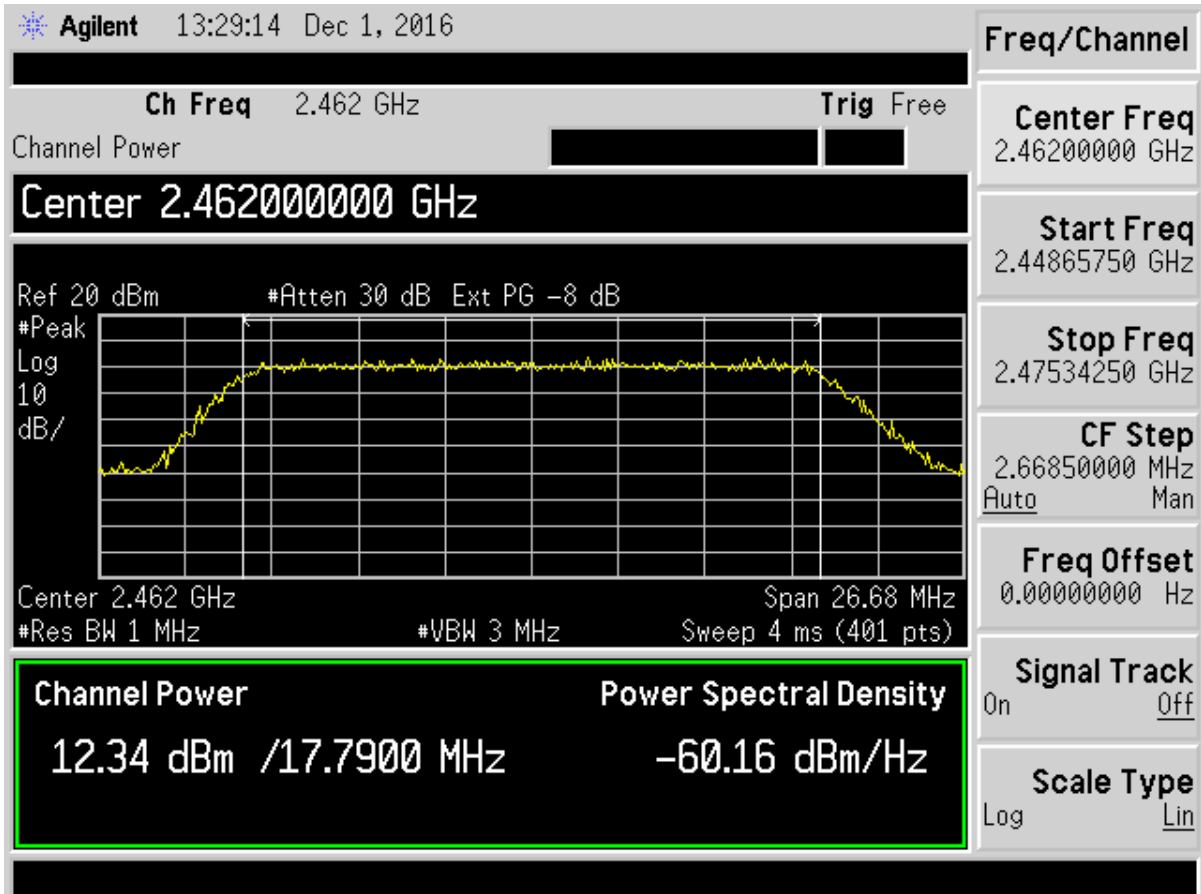


Figure 16. Peak Antenna Conducted Output Power 802.11n High Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

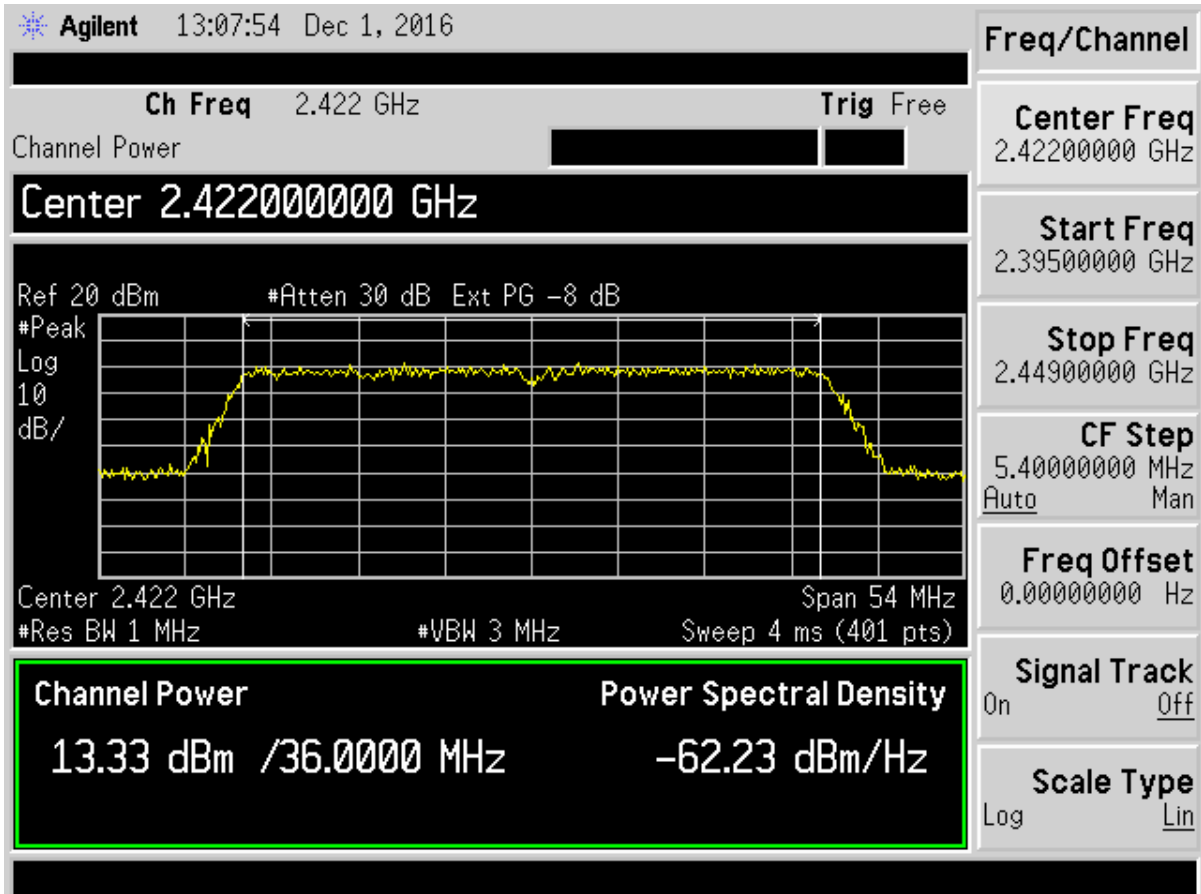


Figure 17. Peak Antenna Conducted Output Power 802.11n (40MHz) Low Channel

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

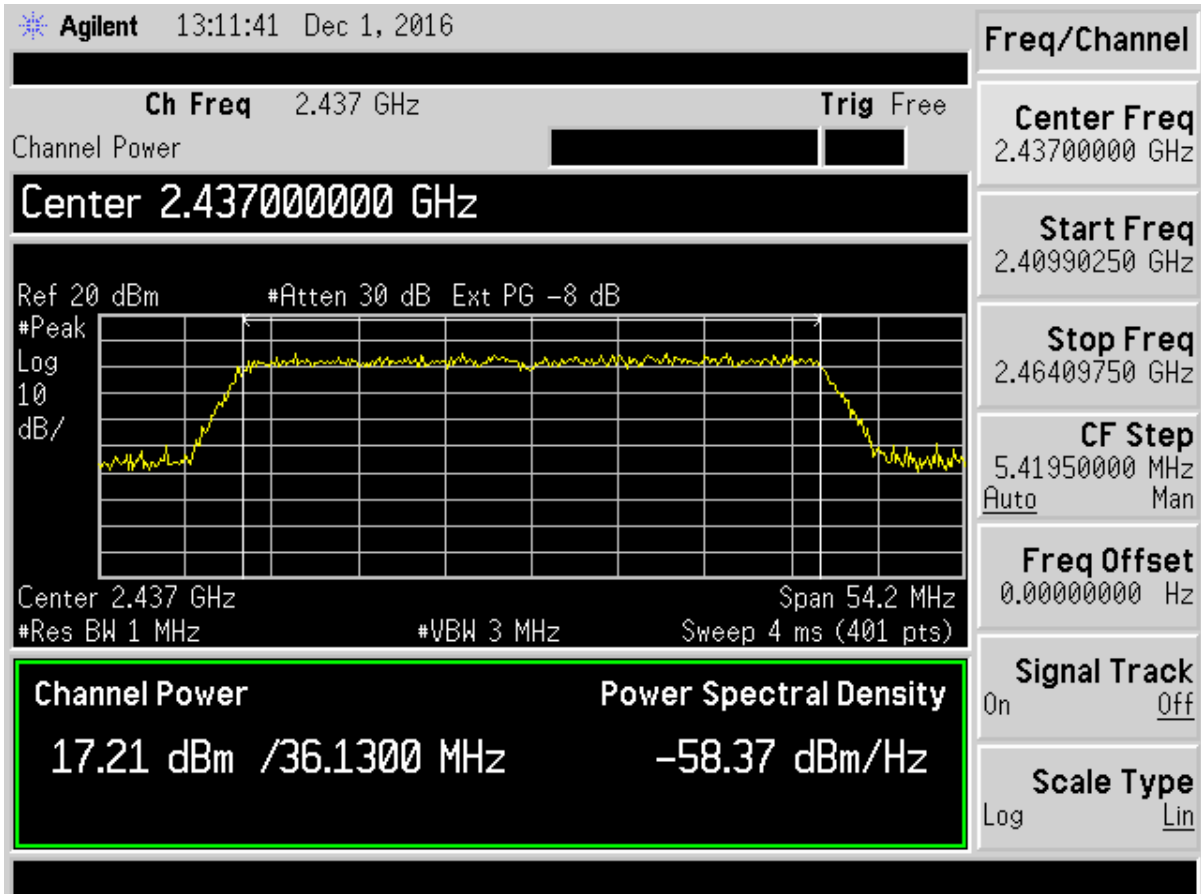


Figure 18. Peak Antenna Conducted Output Power 802.11n (40MHz) Mid Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

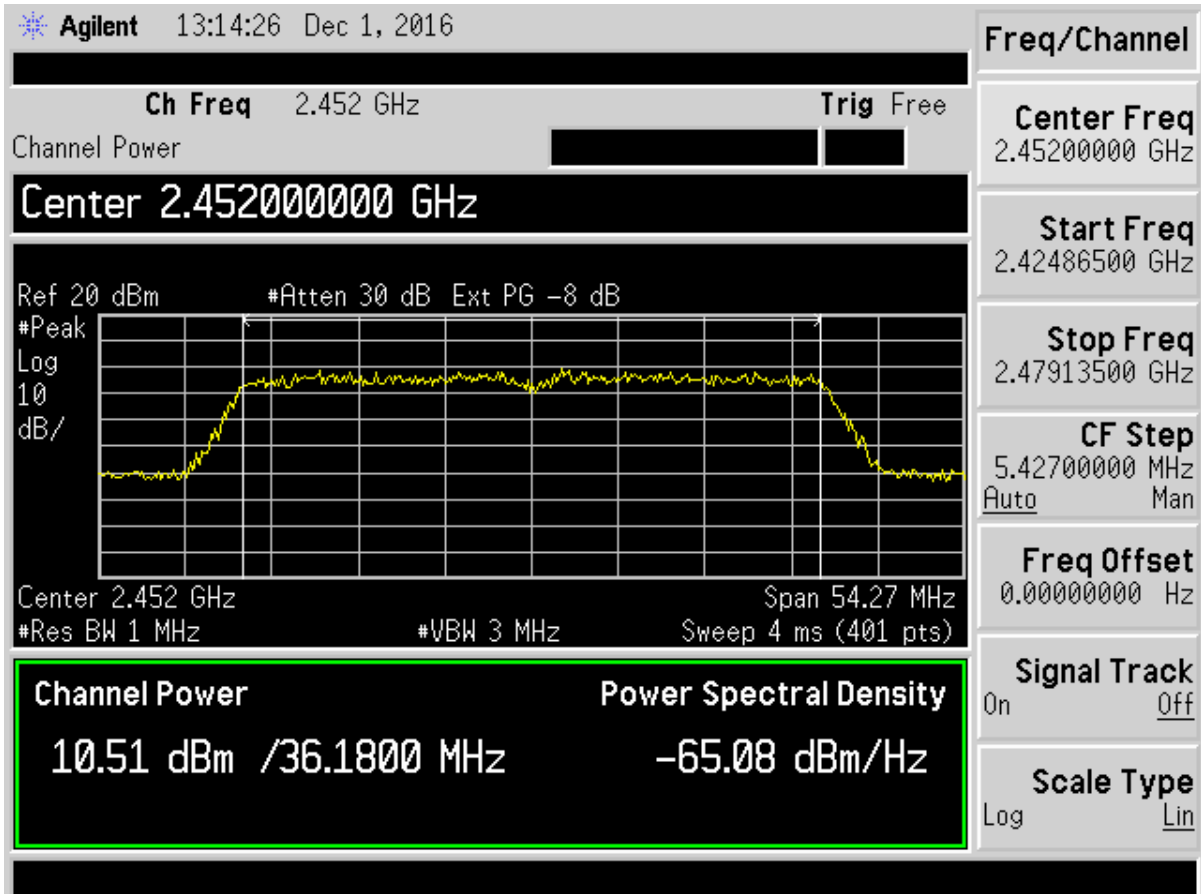


Figure 19. Peak Antenna Conducted Output Power 802.11n (40MHz) High Channel

**2.8 Power Spectral Density (PART 15.247(e)) (IC RSS 247 5.2(2))**

The transmitter was placed into a continuous mode of operation at all applicable frequencies. The measurements were performed per the procedures of FCC KDB Procedure 558074 and ANSI C63.10 section 11.10.2. No duty cycle factor was added since the EUT was operating at >98% duty cycle during this test. The RBW was set to 10 kHz and the Video Bandwidth was set to  $\geq$  RBW. The span was set to 1.5 times the OBW.

In accordance with 15.247 (e), the power spectral density shall be no greater than +8 dBm per any 3 kHz band. Since the EUT meets the requirements with a 10 kHz RBW setting the RBW was not reduce beyond 10 kHz.

The following results show that all are less than +8 dBm per 3 kHz band.

**Table 9. 802.11b Power Spectral Density for Low, Mid and High Bands**

Frequency (MHz)	Raw Test Data (dBm/10 kHz)	FCC Limit (dBm/3 kHz)	Margin (dB)
2412	-8.99	8.0	16.99
2442	-8.27	8.0	16.27
2462	-8.73	8.0	16.73

**Table 10. 802.11g Power Spectral Density for Low, Mid and High Bands**

Frequency (MHz)	Raw Test Data (dBm/10 kHz)	FCC Limit (dBm/3 kHz)	Margin (dB)
2412	-5.62	8.0	13.62
2442	-3.66	8.0	11.66
2462	-5.45	8.0	13.45

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

**Table 11. 802.11n Power Spectral Density for Low, Mid and High Bands**

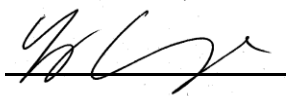
Frequency (MHz)	Raw Test Data (dBm/10 kHz)	FCC Limit (dBm/3 kHz)	Margin (dB)
2412	-12.50	8.0	20.50
2442	-9.19	8.0	17.19
2462	-13.24	8.0	21.24

**Table 12. 802.11 40 MHz BW Power Spectral Density for Low, Mid and High Bands**

Frequency (MHz)	Test Data (dBm/10 kHz)	Limit (dBm/kHz)	Margin (dB)
2422	-15.18	8.0	23.18
2437	-12.38	8.0	20.38
2452	-18.33	8.0	26.33

Test Date: December 1, 2016

Tested By

Signature: 

Name: George Yang

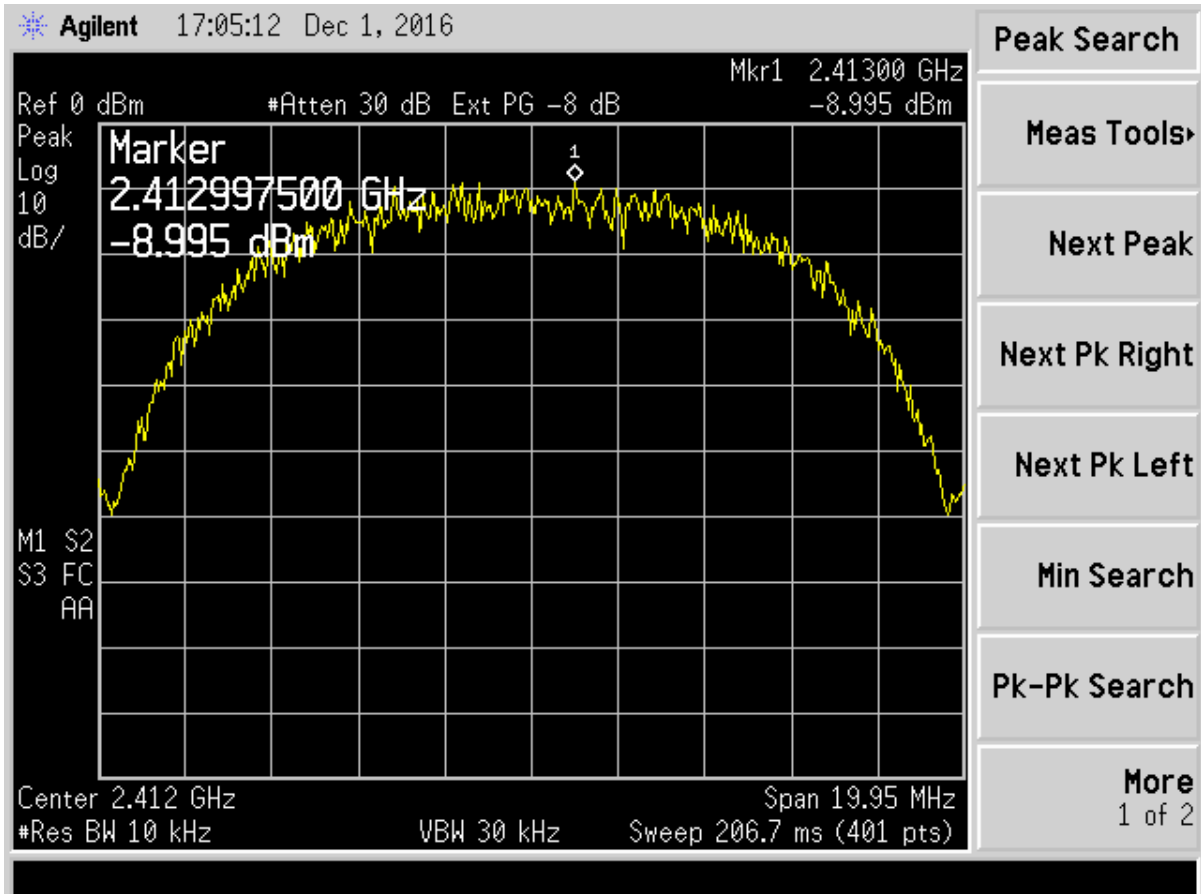


Figure 20. Peak Power Spectral Density 802.11b Low Channel



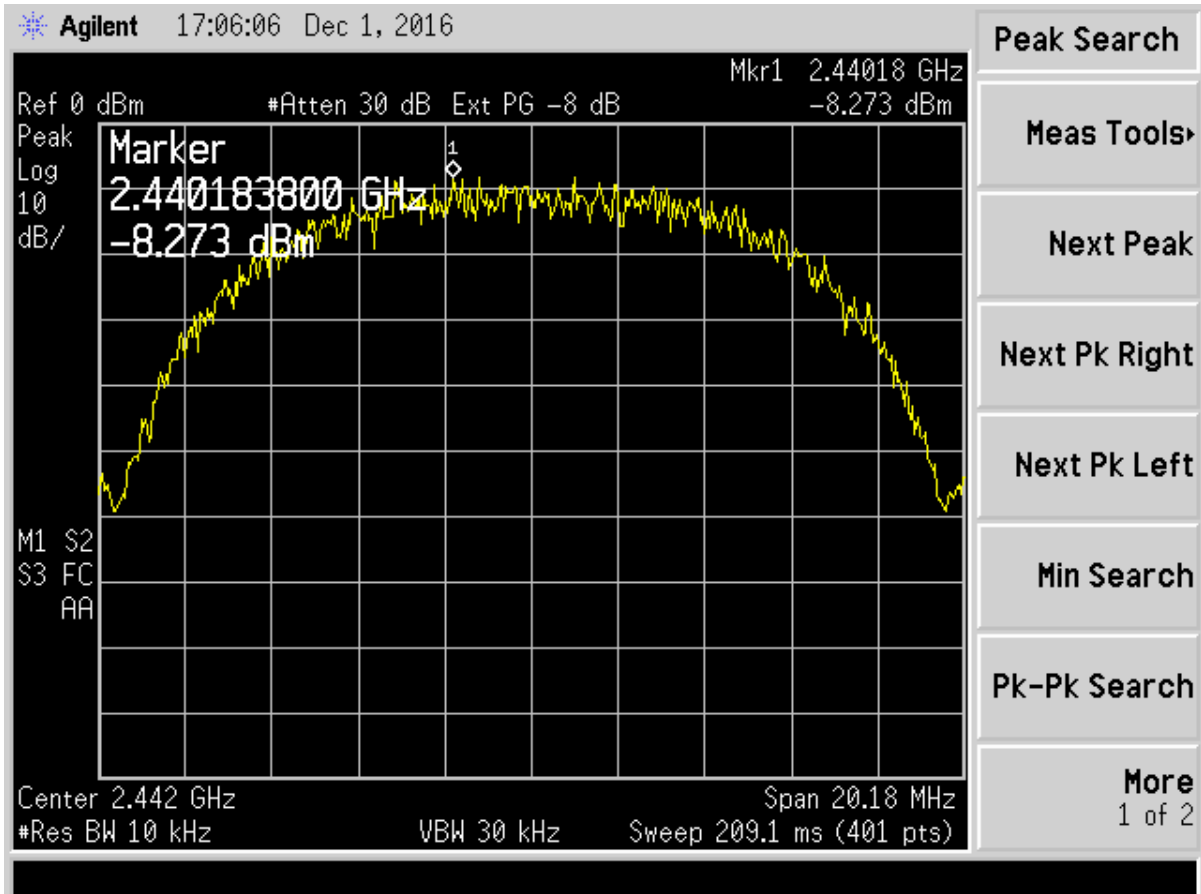


Figure 21. Peak Power Spectral Density 802.11b Mid Channel

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

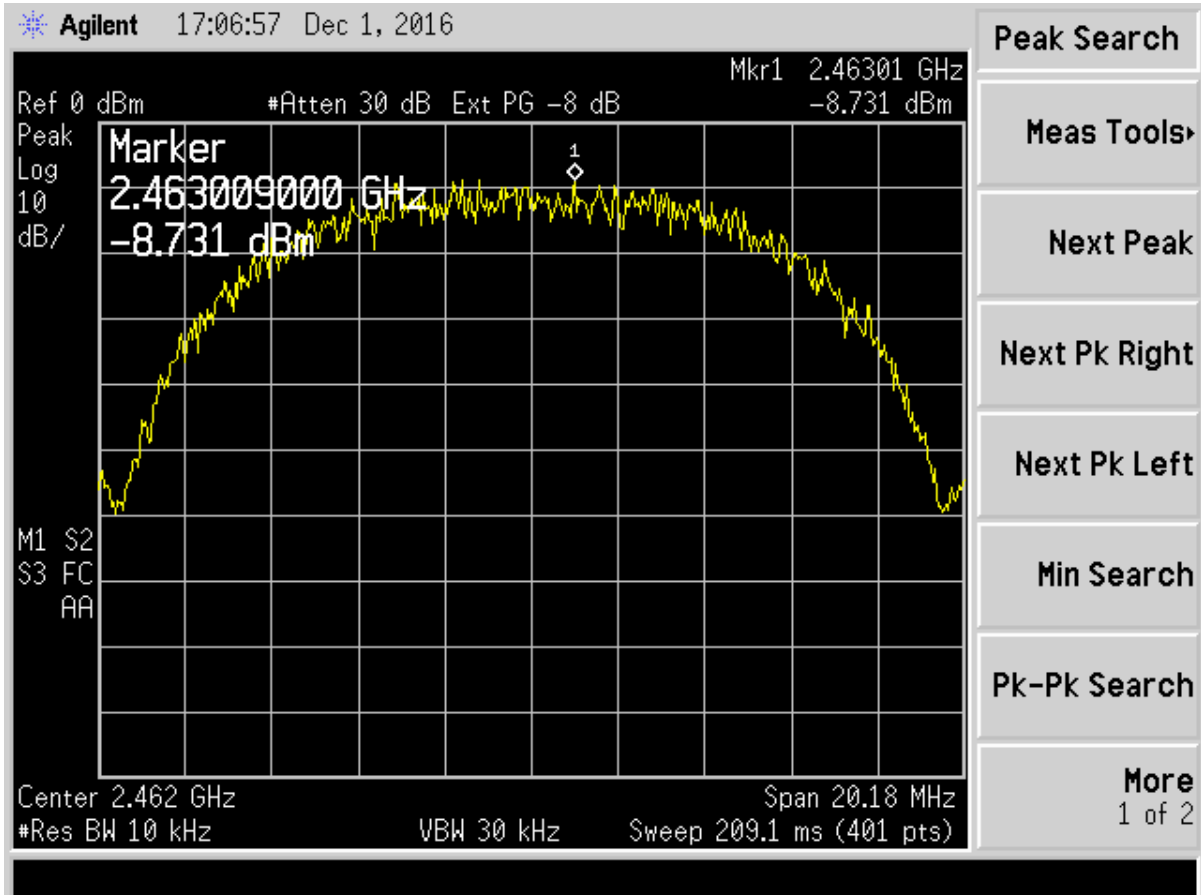


Figure 22. Peak Power Spectral Density 802.11b High Channel

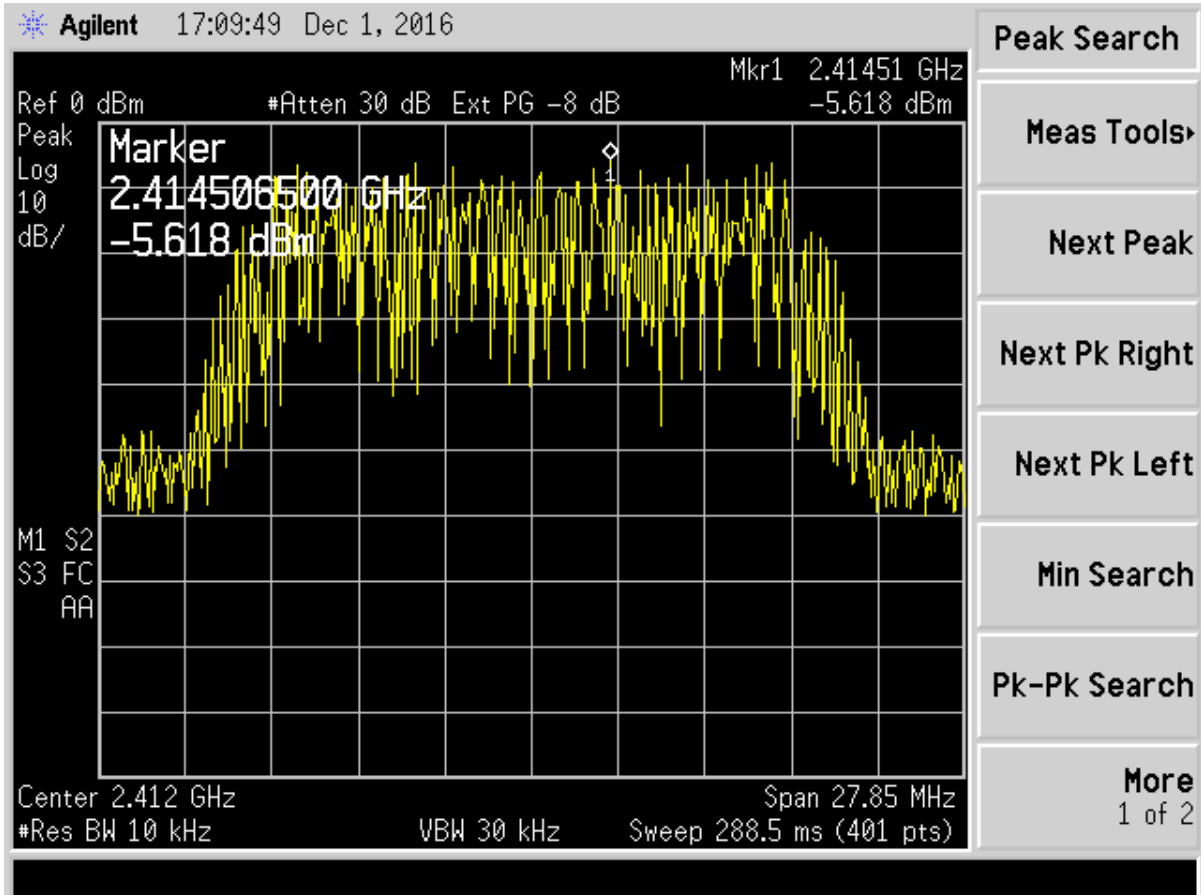


Figure 23. Peak Power Spectral Density 802.11g Low Channel

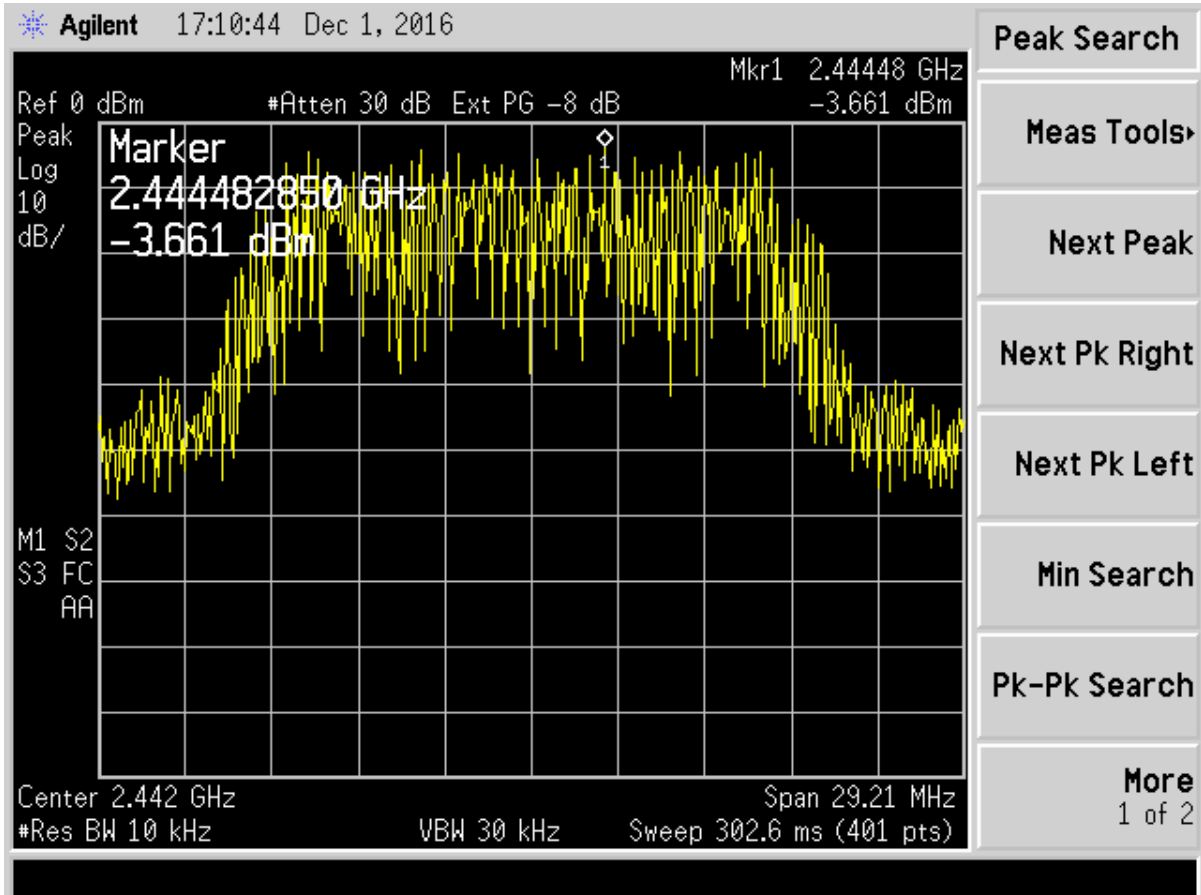


Figure 24. Peak Power Spectral Density 802.11g Mid Channel

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

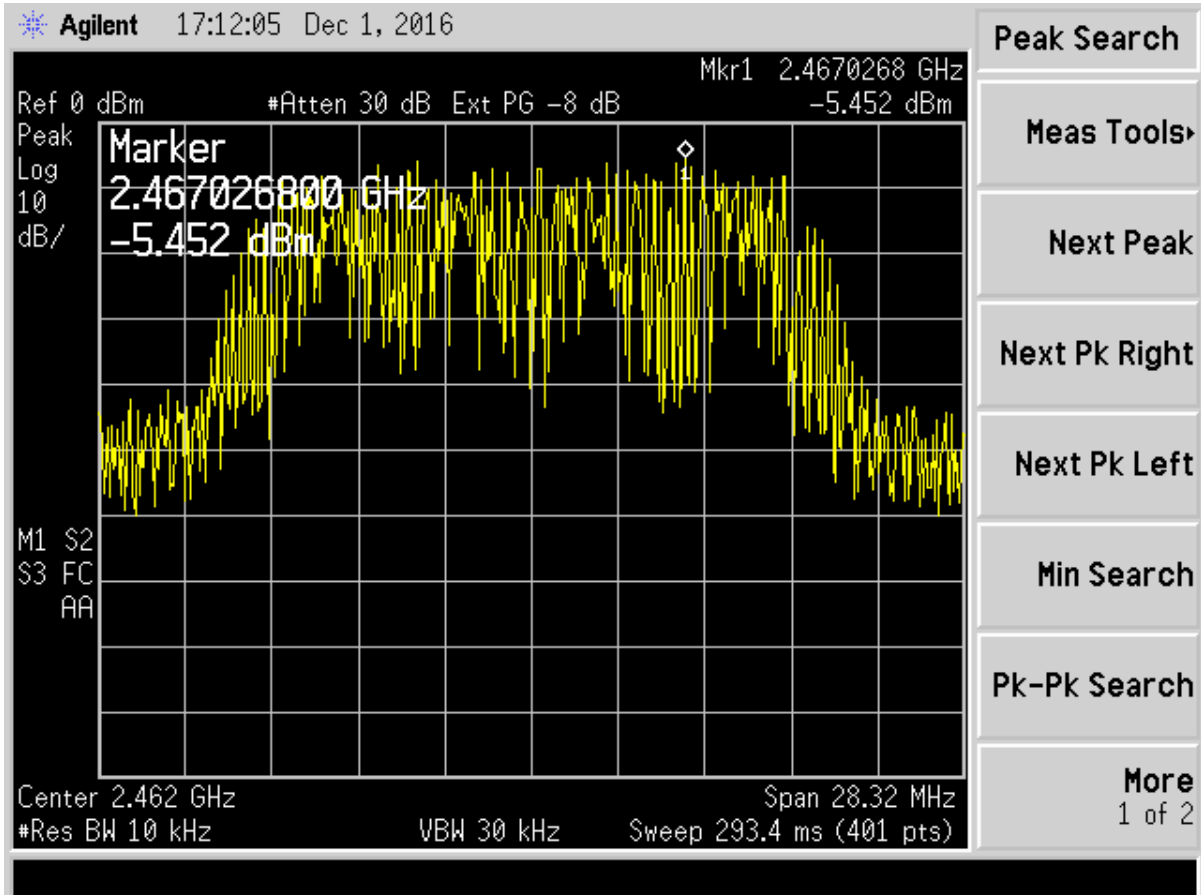


Figure 25. Peak Power Spectral Density 802.11g High Channel

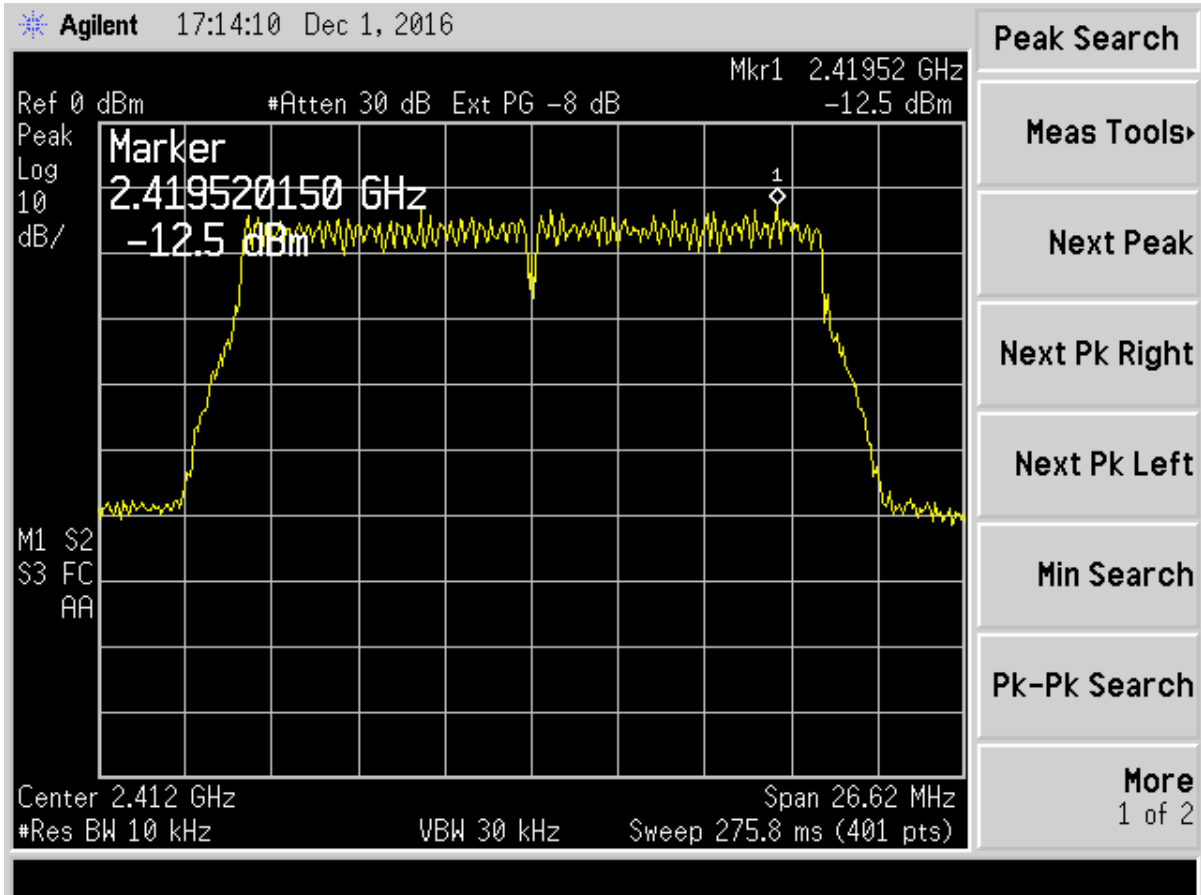


Figure 26. Peak Power Spectral Density 802.11n Low Channel

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

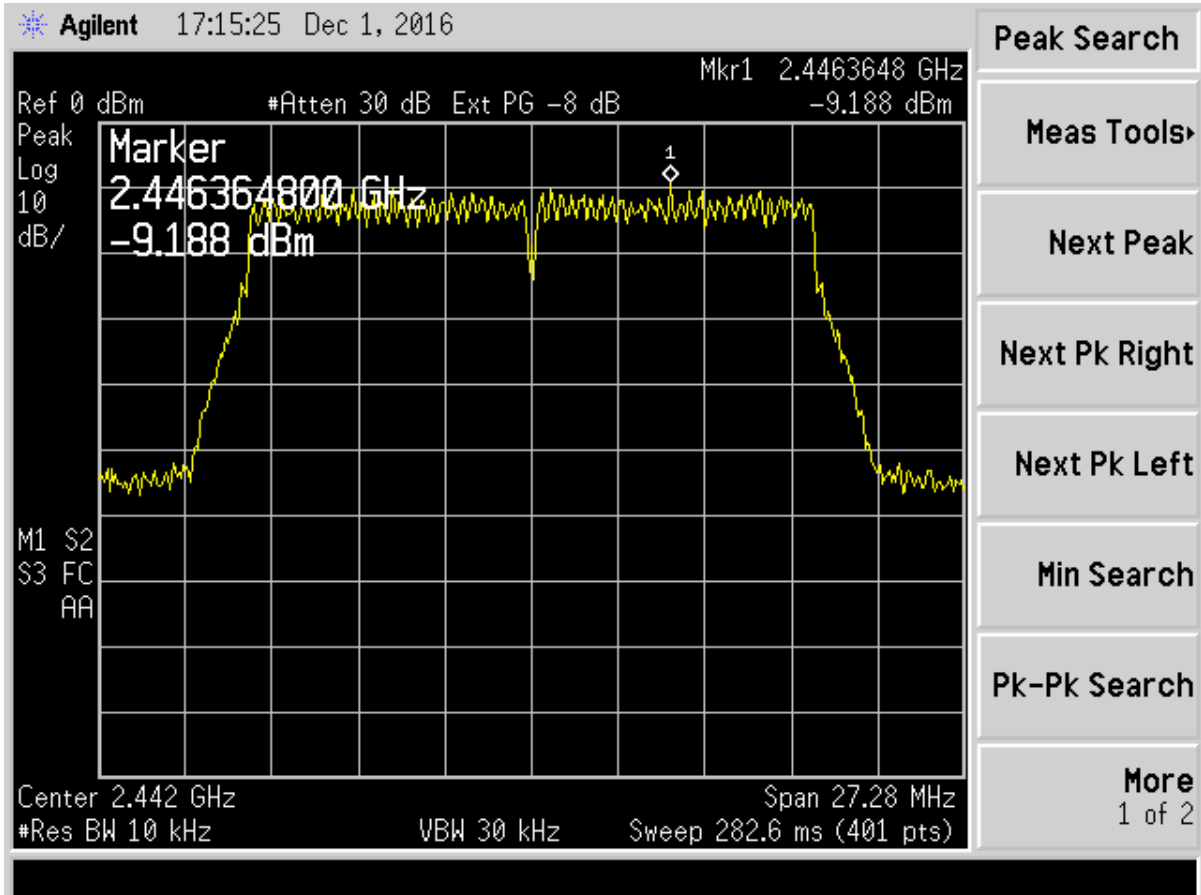


Figure 27. Peak Power Spectral Density 802.11n Mid Channel

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

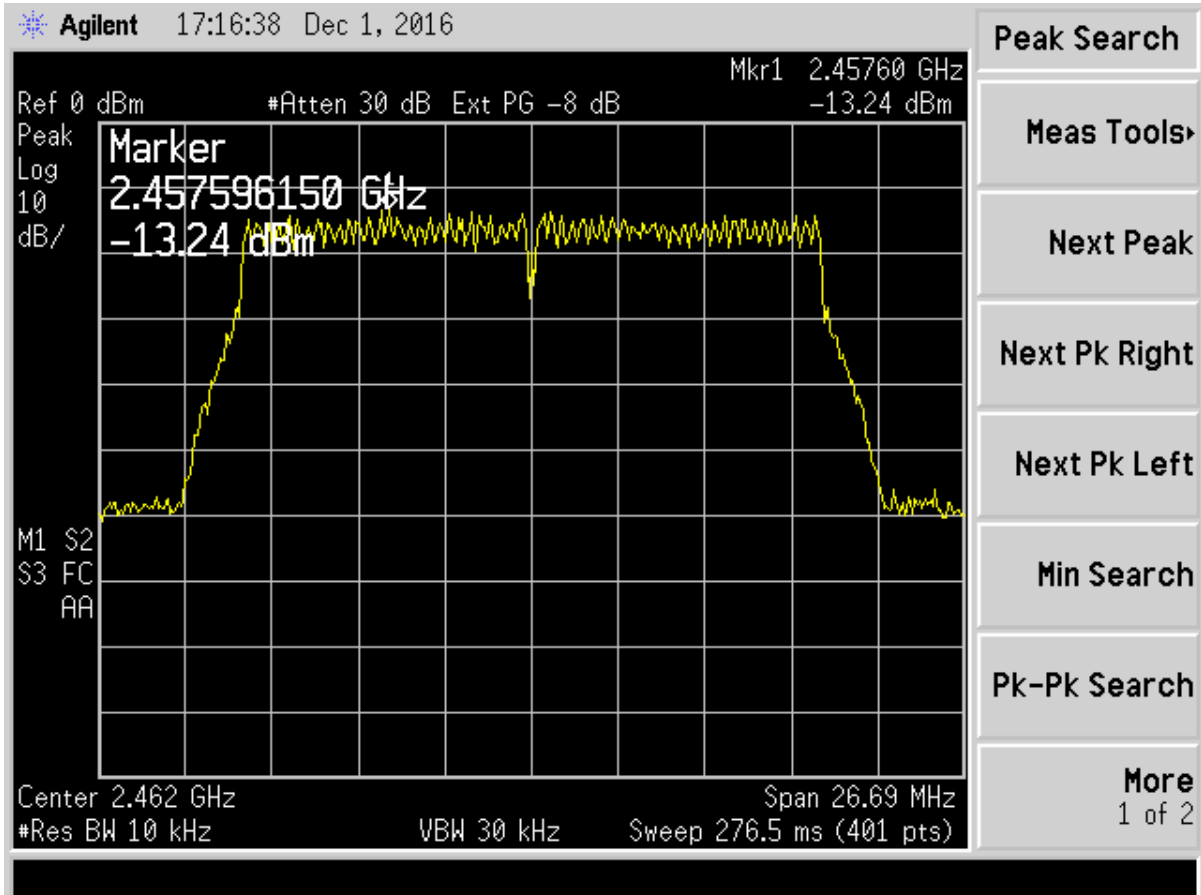


Figure 28. Peak Power Spectral Density 802.11n High Channel



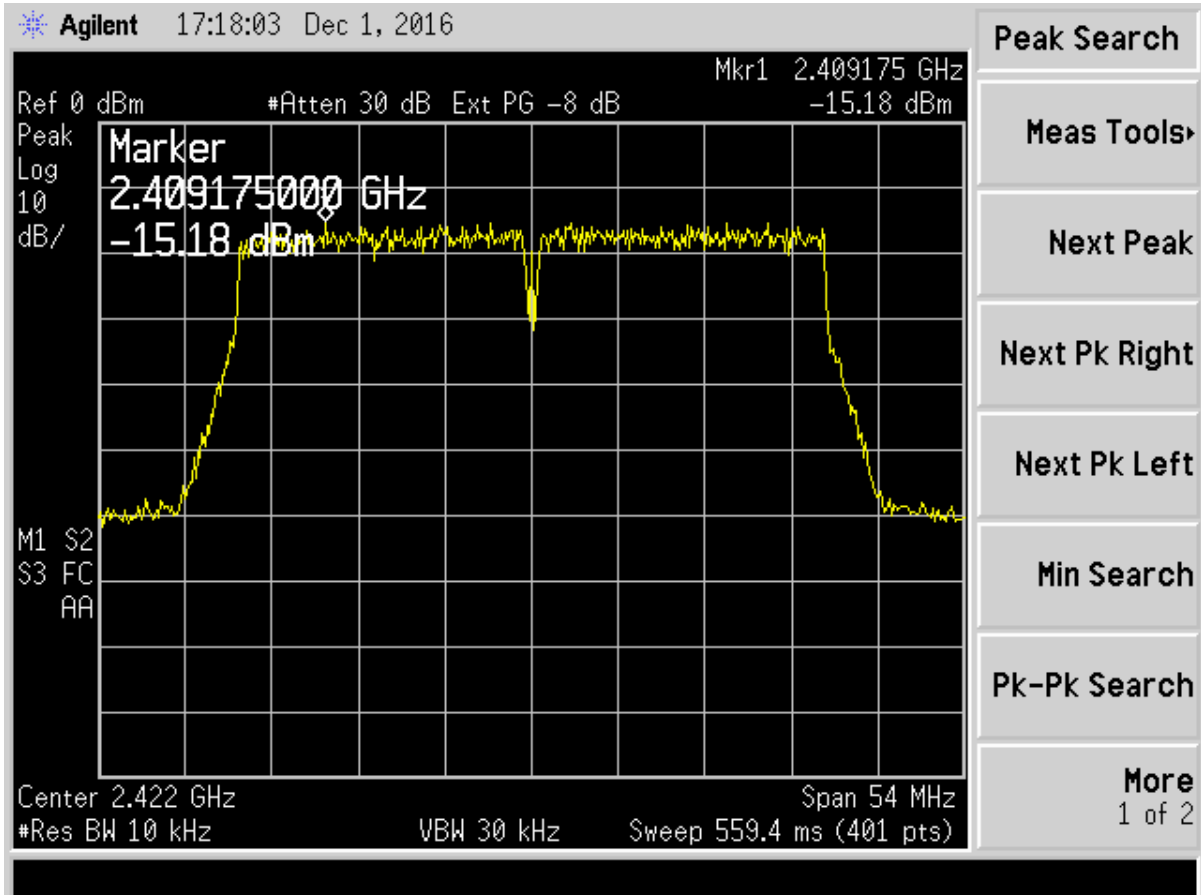


Figure 29. Peak Power Spectral Density 802.11n (40MHz) Low Channel

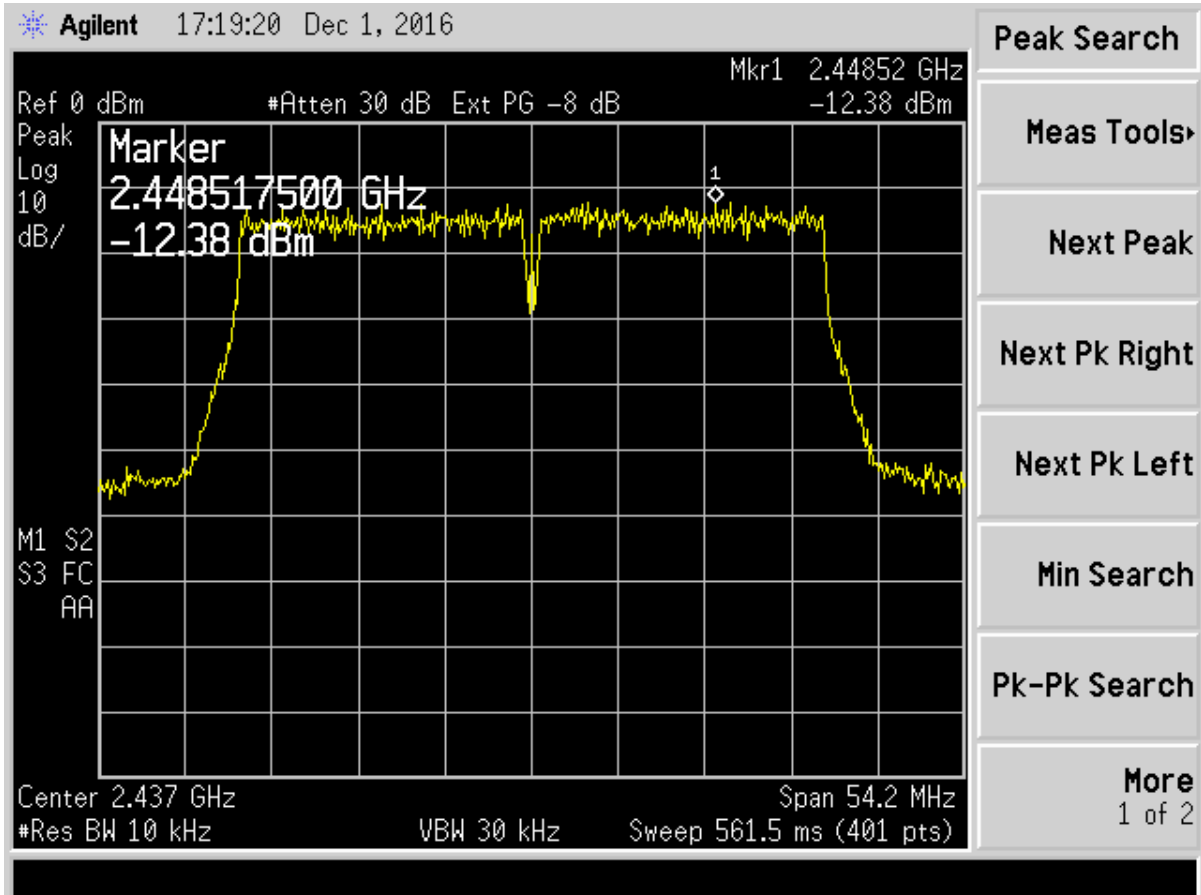


Figure 30. Peak Power Spectral Density 802.11n (40MHz) Mid Channel

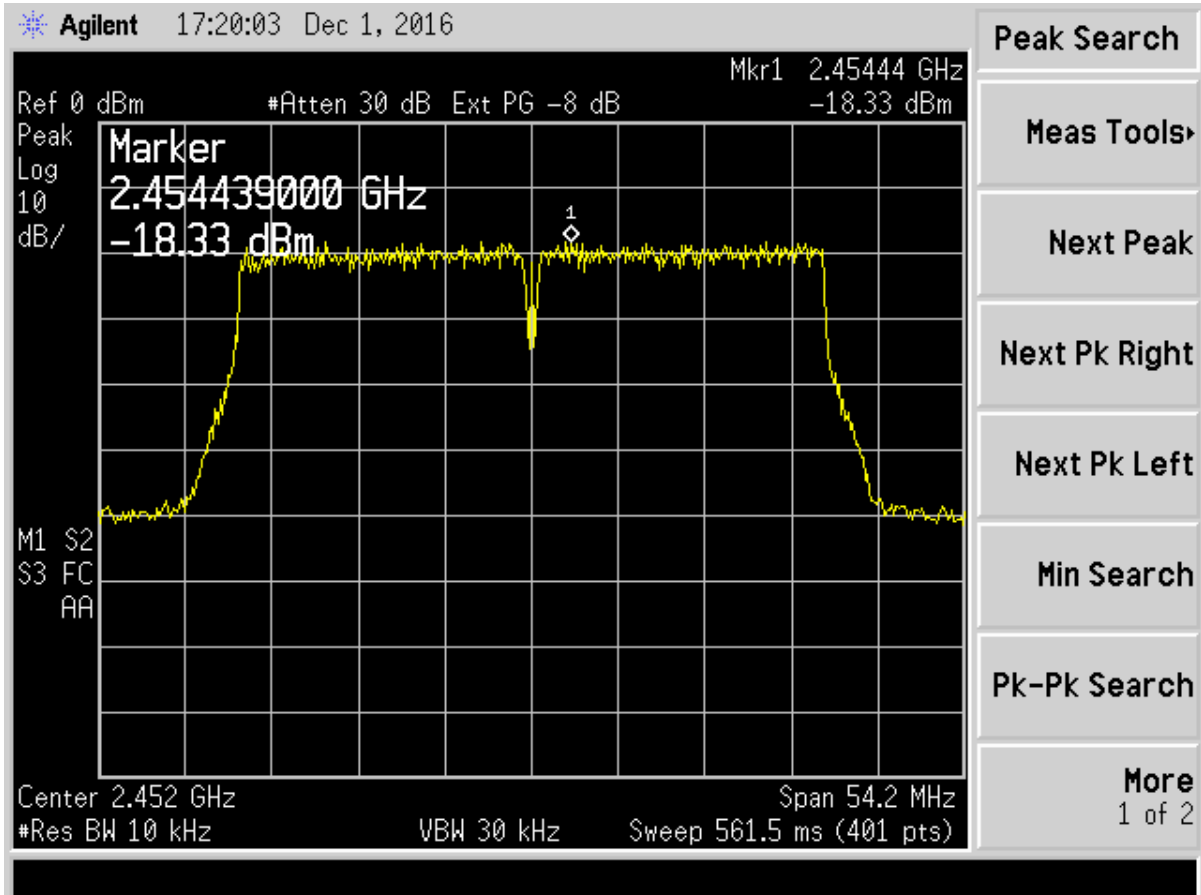


Figure 31. Peak Power Spectral Density 802.11n (40MHz) High Channel

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

---

## **2.8 Intentional Radiator, Power Line Conducted Emissions (PART 15.207)**

The EUT is designed to operate with an input voltage of 3.3 VDC. An evaluation board was used during testing and it supplied the necessary 3.3 VDC voltage to the EUT. The EUT is considered to be indirectly connected to the AC mains during normal operation. Power line conducted emissions testing was performed to ensure that with the EUT in operation (exercising all transmitter functions), the complete system continues to meet the applicable requirements for PART 15.207. These measurements were completed and are displayed below.

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 13. Power Line Conducted Emissions Test Data, Part 15.207**

150 KHz to 30 MHz						
Test: Power Line Conducted Emissions				Client: Acuity Brands Technology Services, Inc.		
Project: 16-0139				Model: ACWIFI001		
Frequency (MHz)	Test Data (dBuV)	LISN+CL-PA (dB)	Results (dBuV)	AVG Limits (dBuV)	Margin (dB)	Detector PK, QP, or AVG
Positive lead						
0.1675	60.70	0.50	61.20	65.1*	3.9	QP
0.1675	32.87	0.50	33.37	55.1	21.7	AVG
0.6075	32.60	0.32	32.92	46.0	13.1	PK
4.9466	39.62	0.40	40.02	46.0	6.0	PK
6.6660	47.67	0.43	48.10	50.0	1.9	QP
10.3833	40.12	0.54	40.66	50.0	9.3	QP
24.9160	29.87	0.90	30.77	50.0	19.2	PK
Negative lead						
0.1517	59.66	0.42	60.08	65.9*	5.8	QP
0.1517	31.00	0.42	31.42	55.9	24.5	AVG
0.6666	35.86	0.15	36.01	46.0	10.0	PK
4.9533	36.03	0.28	36.31	46.0	9.7	QP
6.6250	47.71	0.31	48.02	50.0	2.0	QP
10.0000	43.51	0.40	43.91	50.0	6.1	PK
26.0833	32.69	0.73	33.42	50.0	16.6	PK

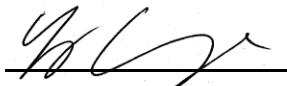
(\*)= Quasi Peak limit applied.

**SAMPLE CALCULATION at 0.1628 MHz:**

Magnitude of Measured Frequency	39.40	dBuV
+ Cable Loss+ LISN Loss	0.49	dB
=Corrected Result	39.89	dBuV
Limit	55.30	dBuV
-Corrected Result	39.89	dBuV
Margin	15.40	dB

Test Date: November 30, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

---

## **2.9 Restricted Bands of Operation (Part 15.205)**

Only spurious emissions can fall in the frequency bands of PART 15.205. The field strength of these spurious cannot exceed the limits of 15.209. Radiated harmonics and other Spurious are examined for this requirement. See test data herein.

## **2.10 Intentional Radiator, Spurious Emissions (PART 15.209, 15.247(d)) (IC RSS 247, 5.4)**

### **2.10.1 Conducted Spurious Emissions**

The EUT was put into a continuous-transmit mode of operation (>98% duty cycle) and tested per FCC KDB Publication 558074 D01 v03r05 for conducted out of band emissions emanating from the antenna port over the frequency range of 30 MHz to 25 GHz. A conducted scan was performed on the EUT to identify and record spurious signals that were related to the transmitter. The conducted spurious emissions were measured at the antenna port of the EUT.

Note 1: The results below are compared to Peak limits.

Note 2: For emissions levels below 1000 MHz, the restricted band limits were applied to show worst case

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

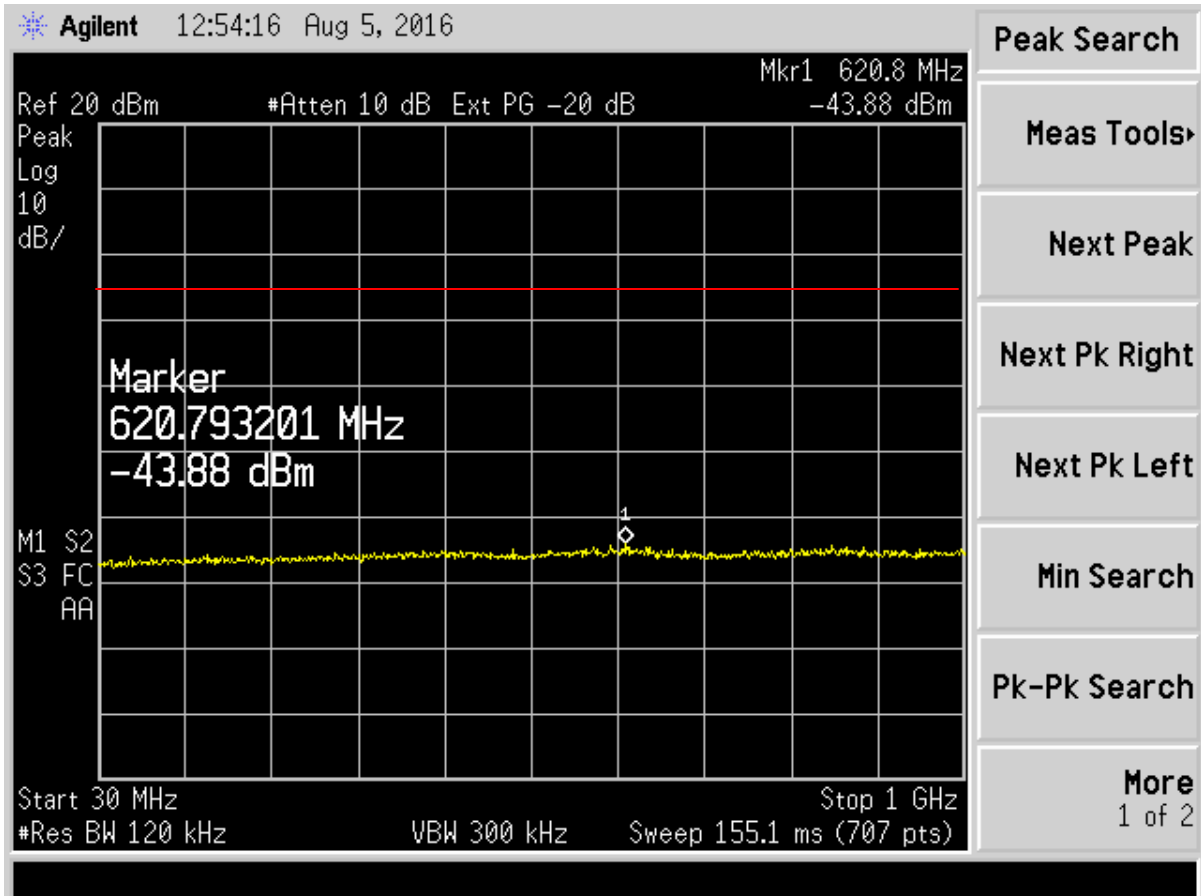


Figure 32. Antenna Conducted Emissions 802.11b Low, Part 1

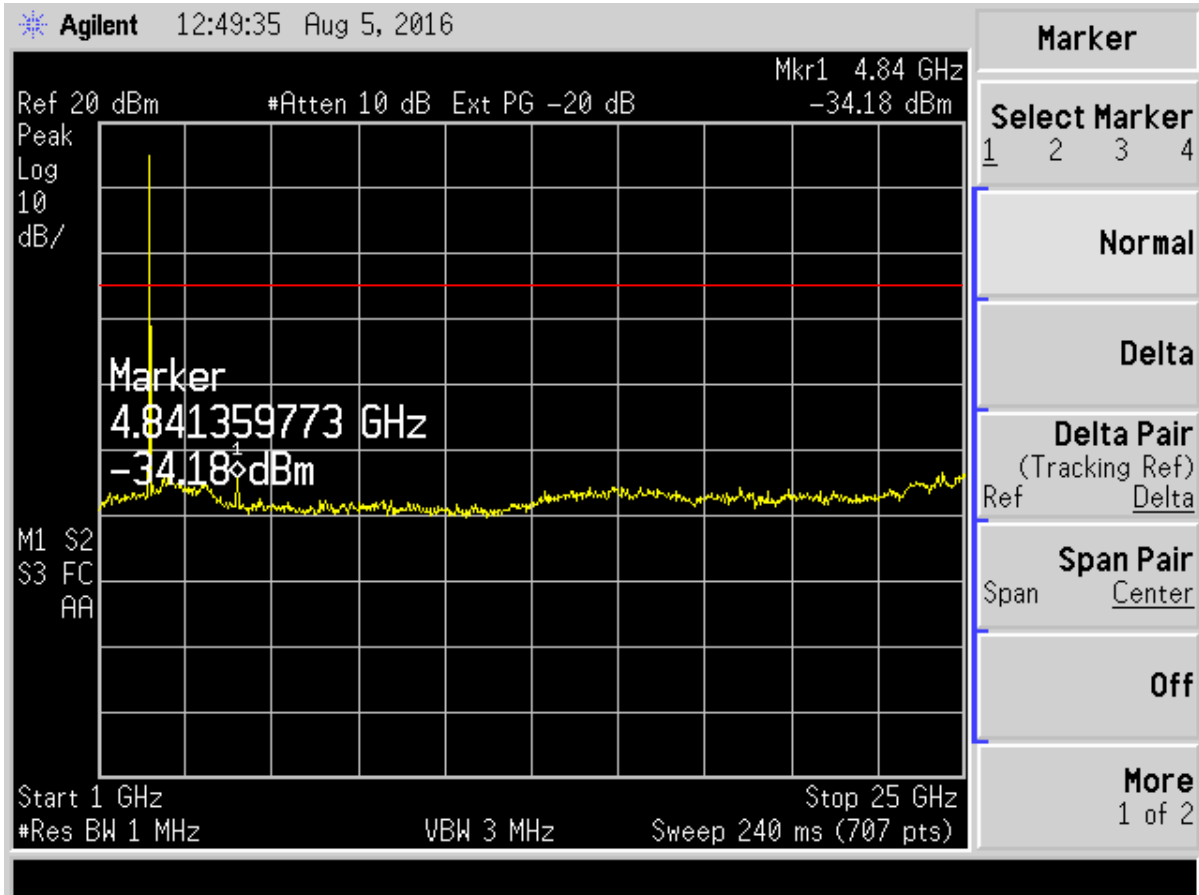


Figure 33. Antenna Conducted Emissions 802.11b Low, Part 2



US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

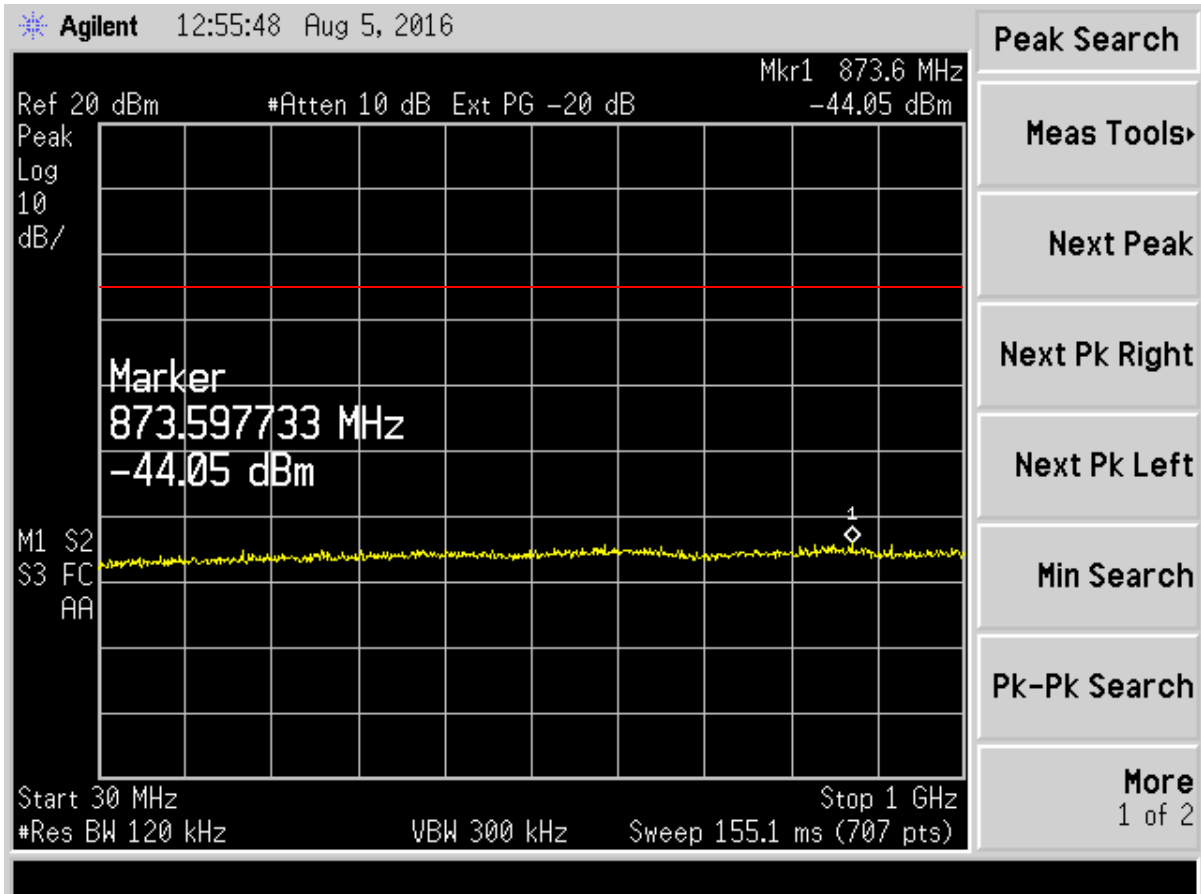


Figure 34. Antenna Conducted Emissions 802.11b Mid, Part 1

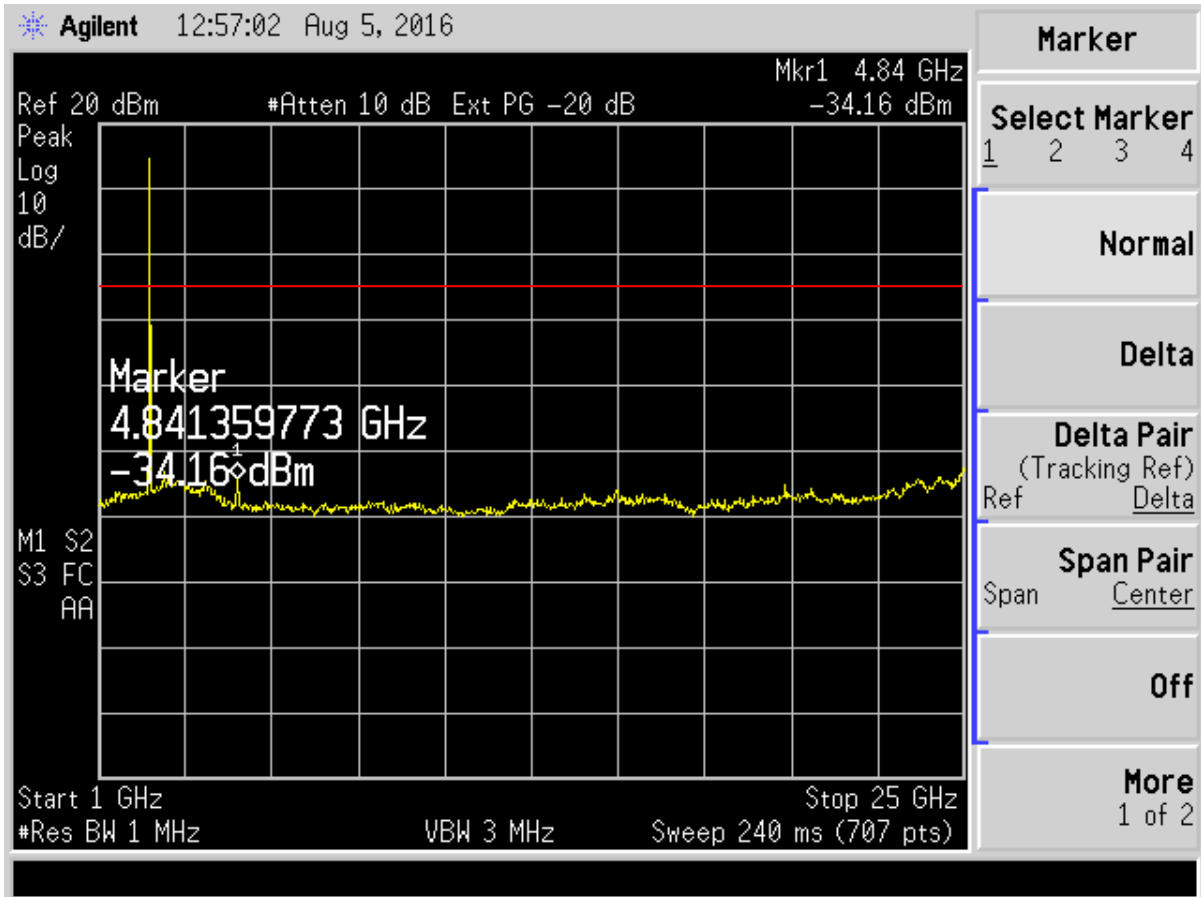


Figure 35. Antenna Conducted Emissions 802.11b Mid, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

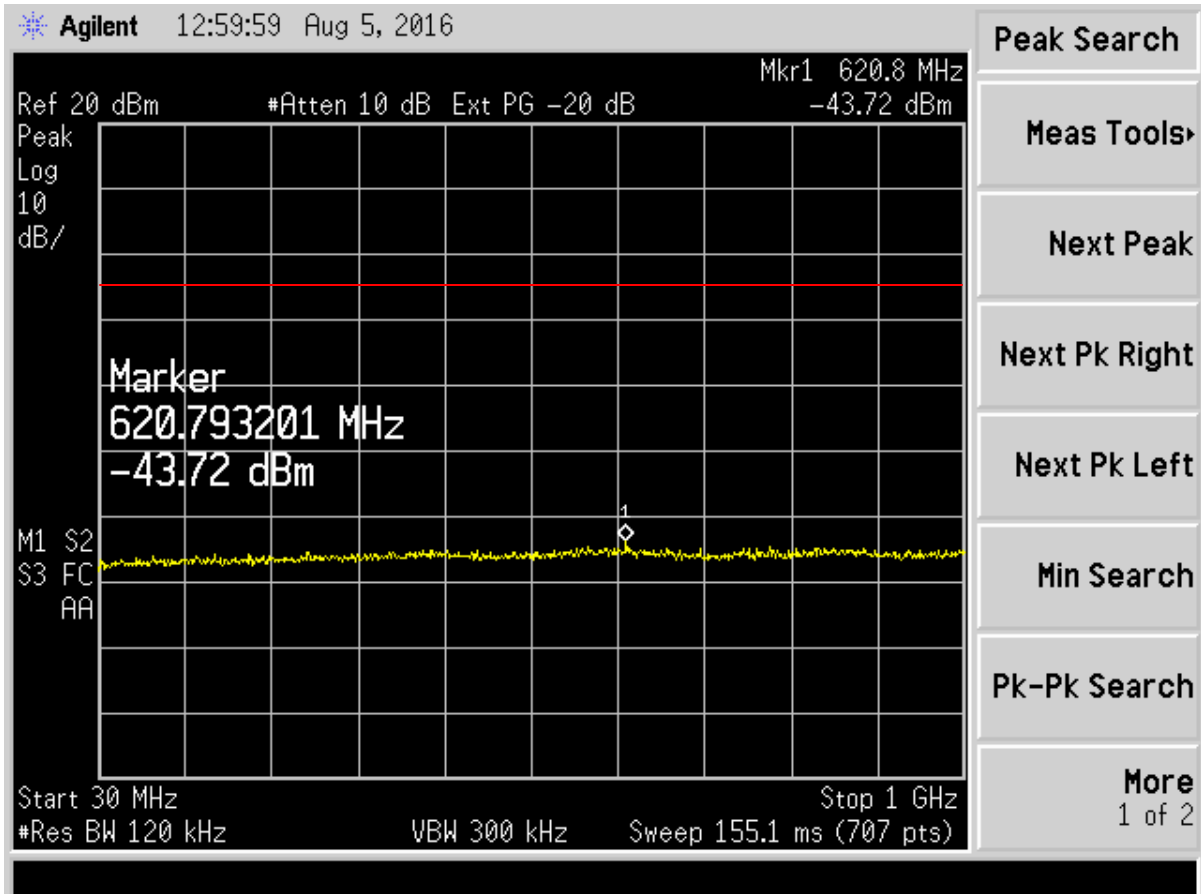


Figure 36. Antenna Conducted Emissions 802.11b High, Part 1

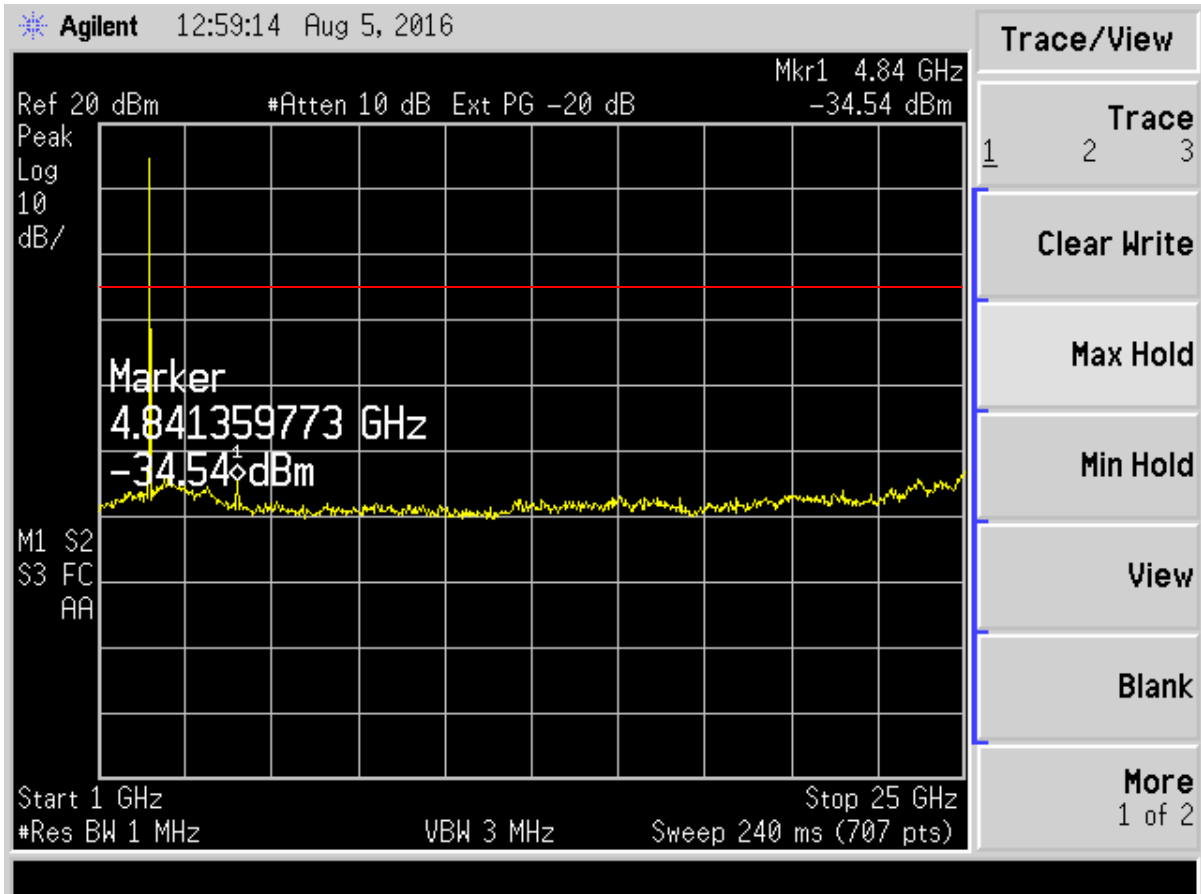


Figure 37. Antenna Conducted Emissions 802.11b High, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

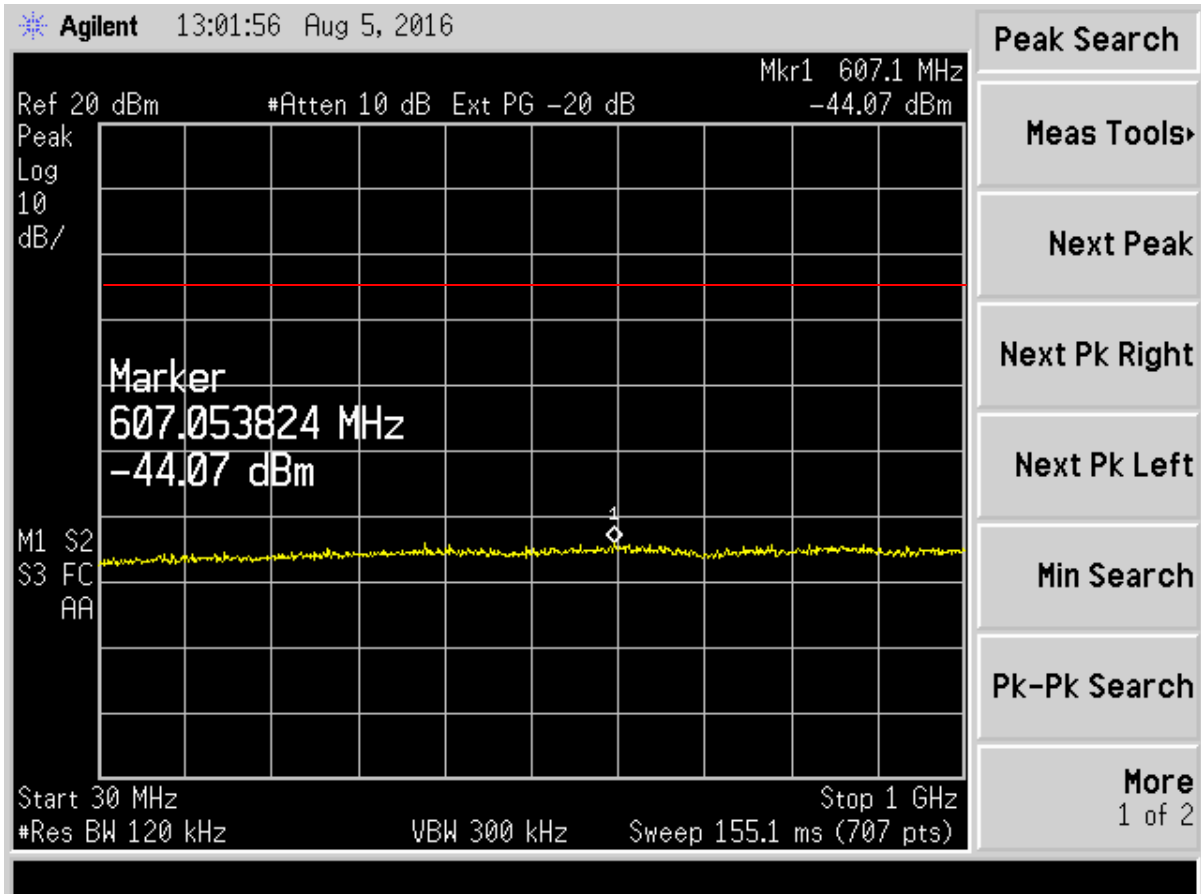


Figure 38. Antenna Conducted Emissions 802.11g Low, Part 1

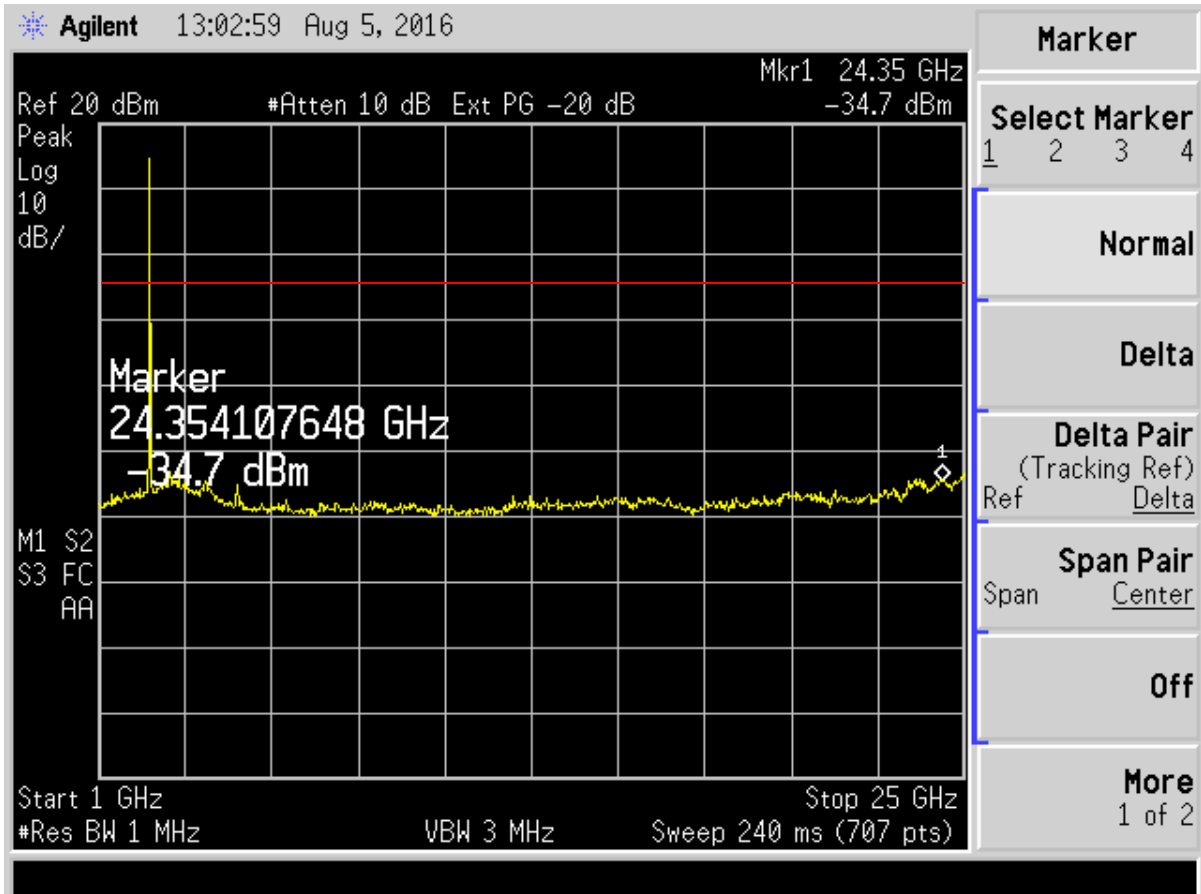


Figure 39. Antenna Conducted Emissions 802.11g Low, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

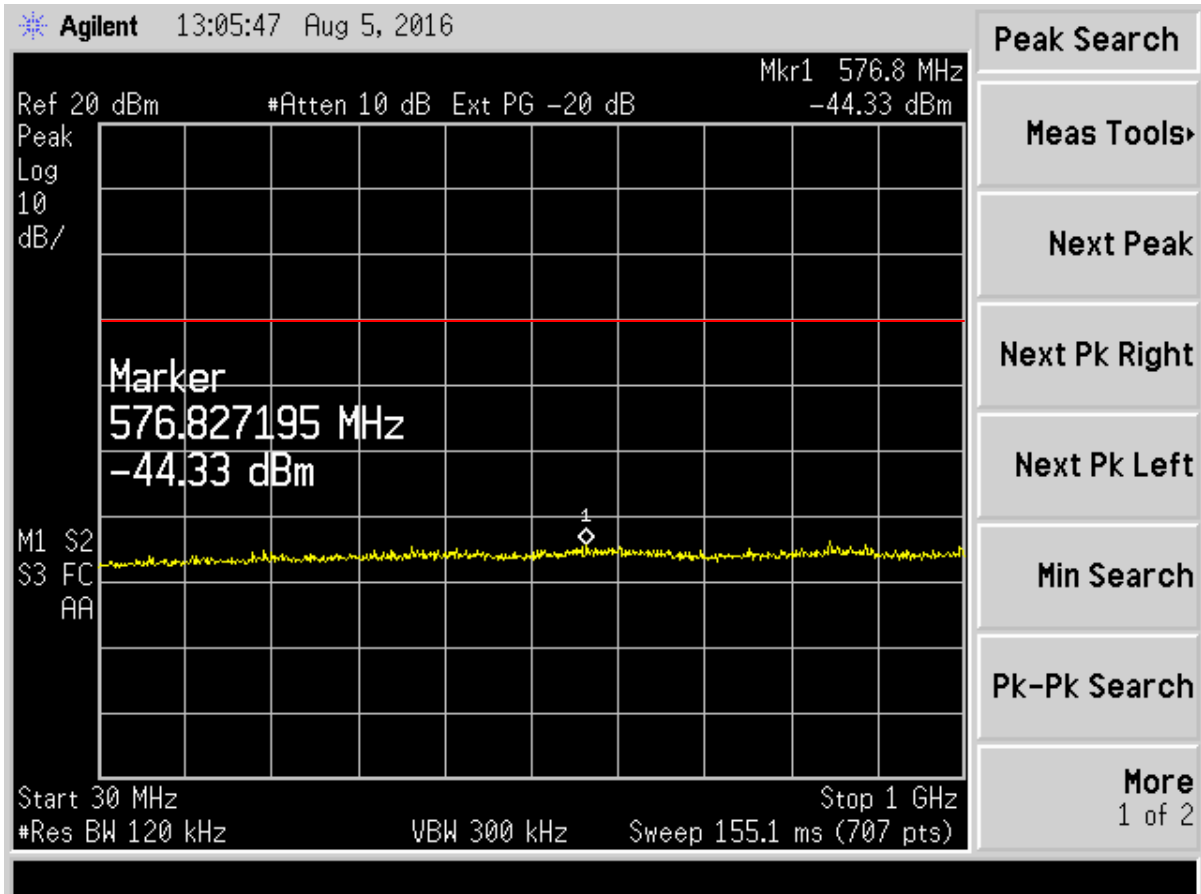


Figure 40. Antenna Conducted Emissions 802.11g Mid, Part 1

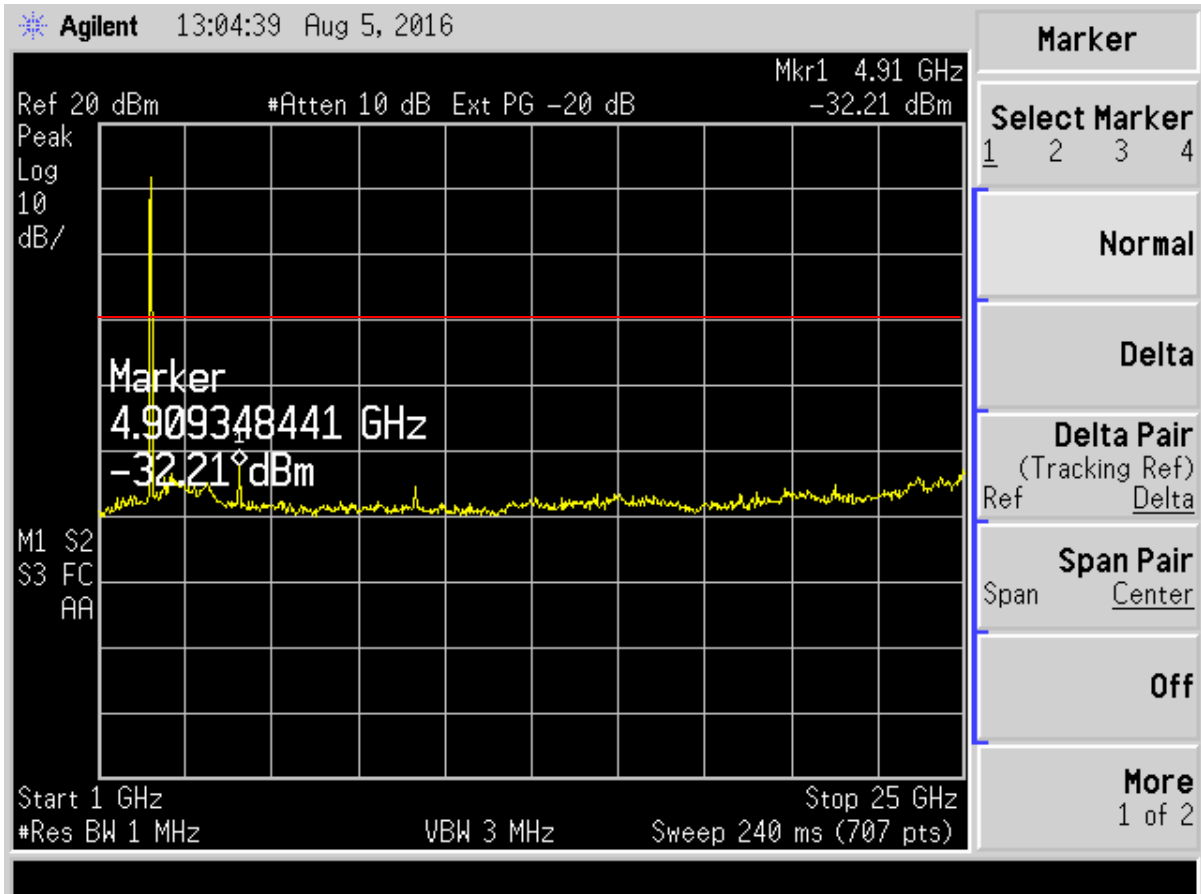


Figure 41. Antenna Conducted Emissions 802.11g Mid, Part 2



US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

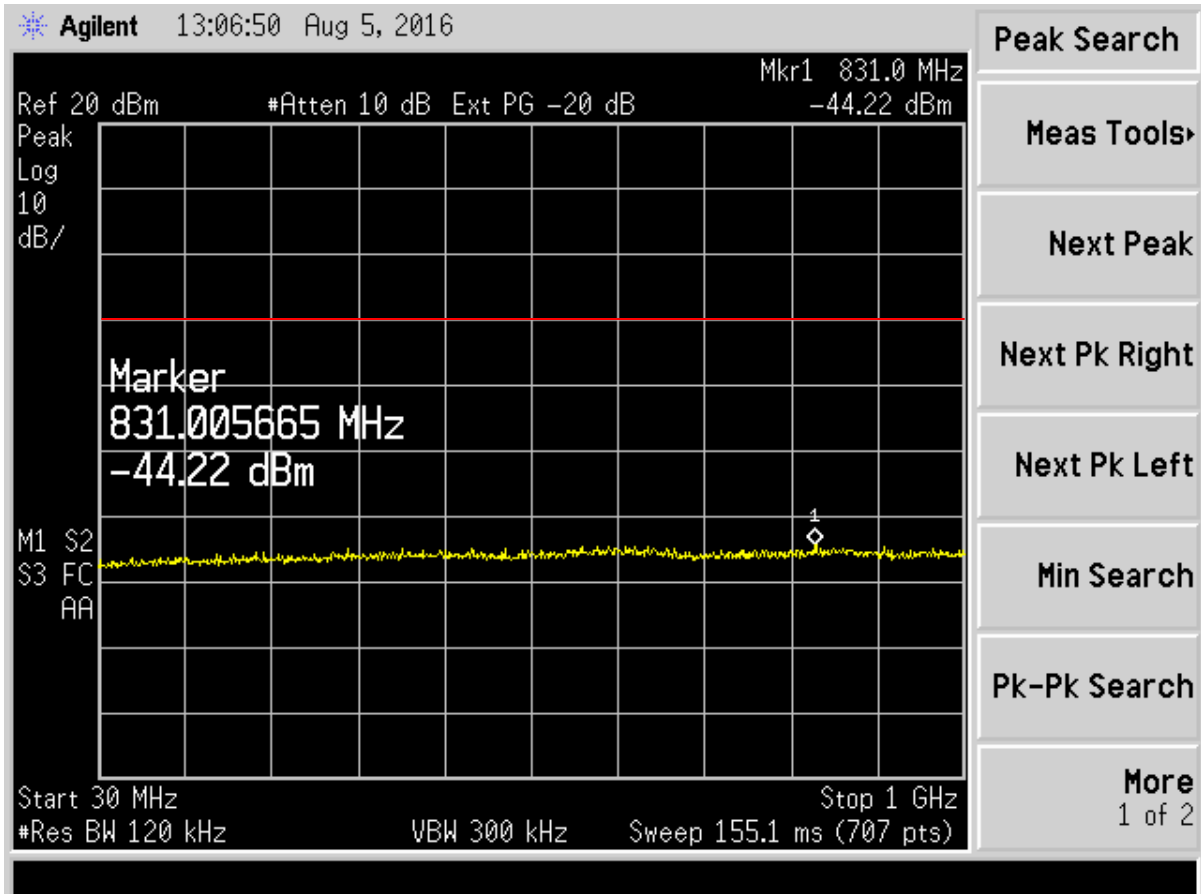


Figure 42. Antenna Conducted Emissions 802.11g High, Part 1

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

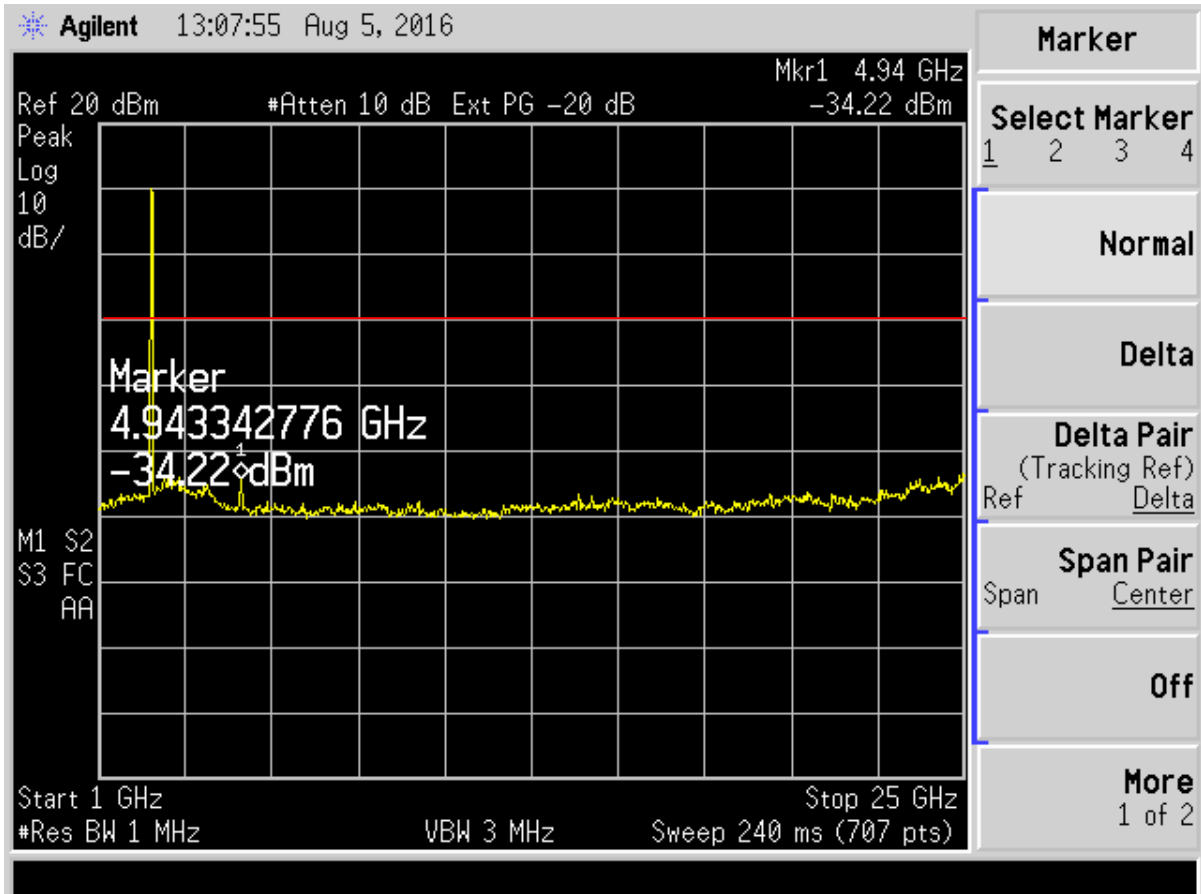


Figure 43. Antenna Conducted Emissions 802.11g High, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

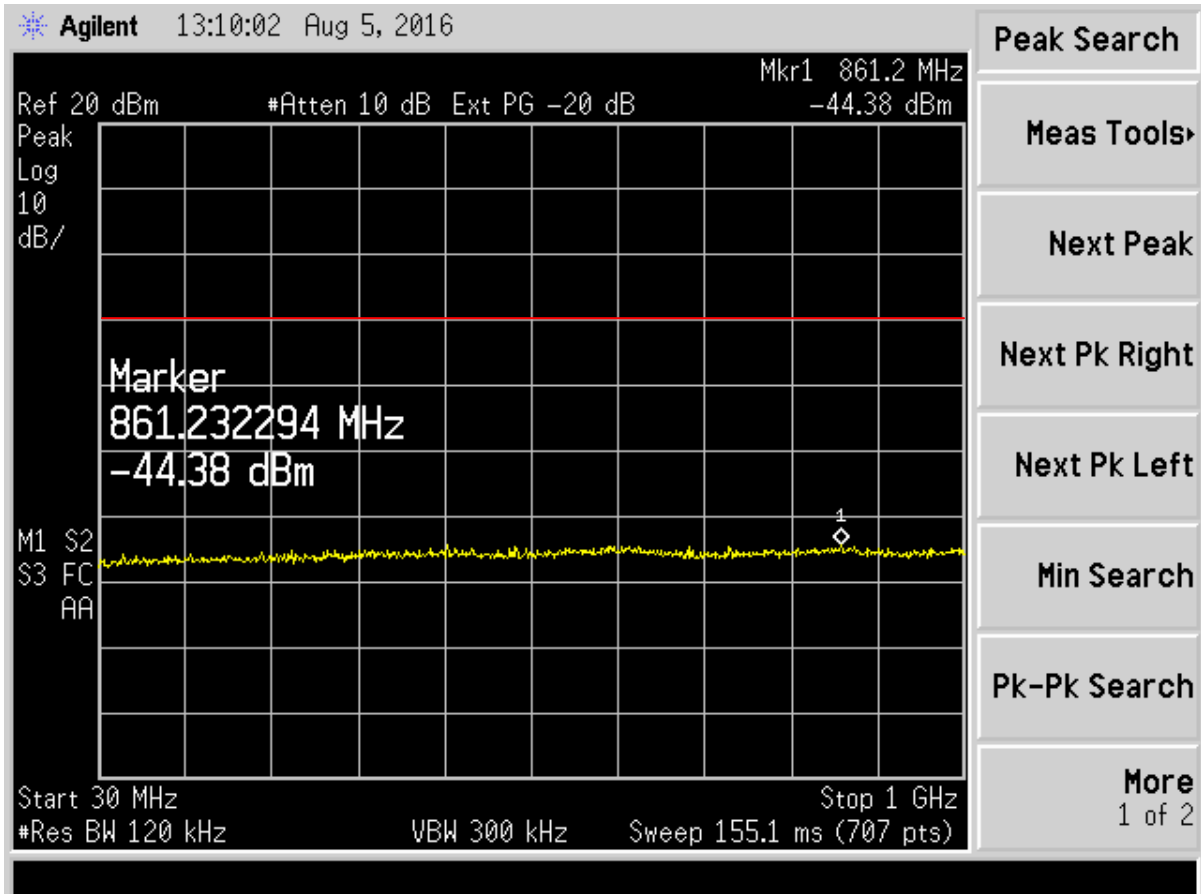


Figure 44. Antenna Conducted Emissions 802.11n Low, Part 1

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

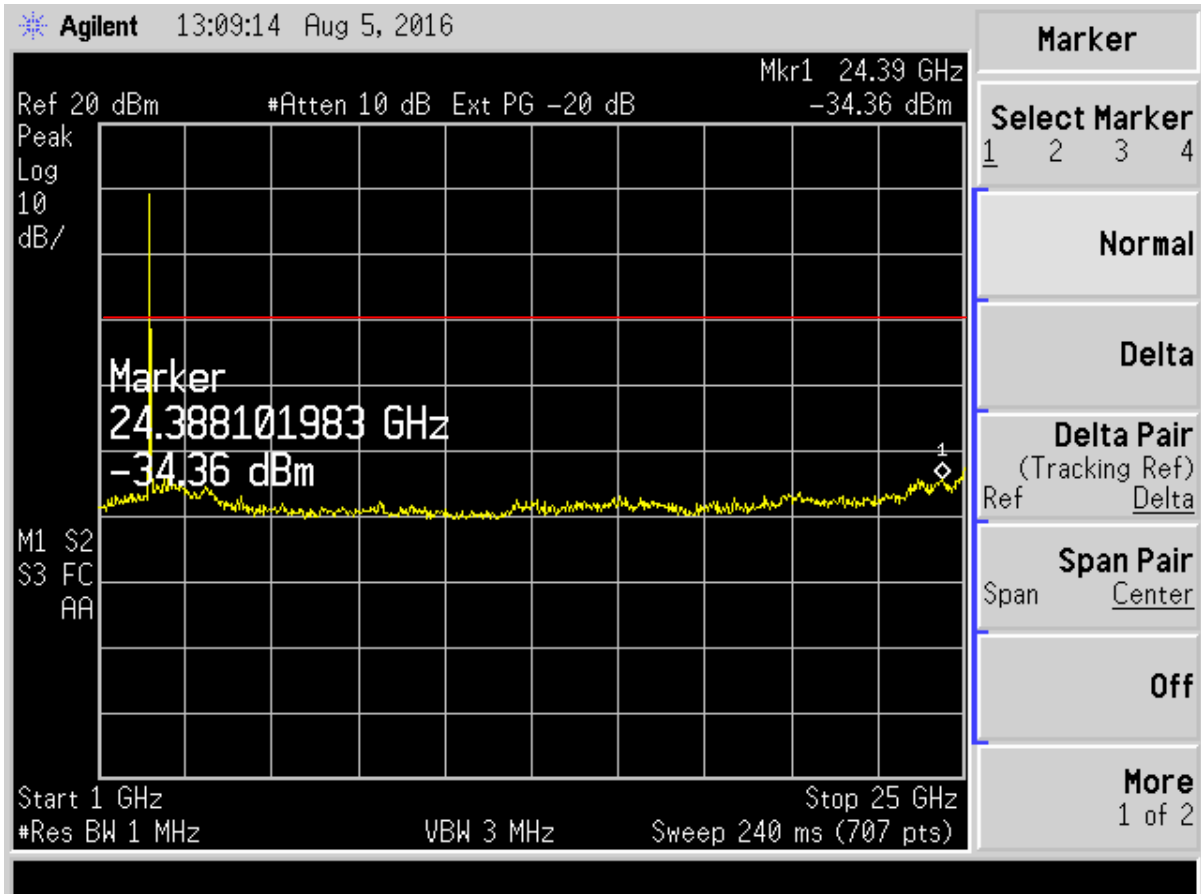


Figure 45. Antenna Conducted Emissions 802.11n Low, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

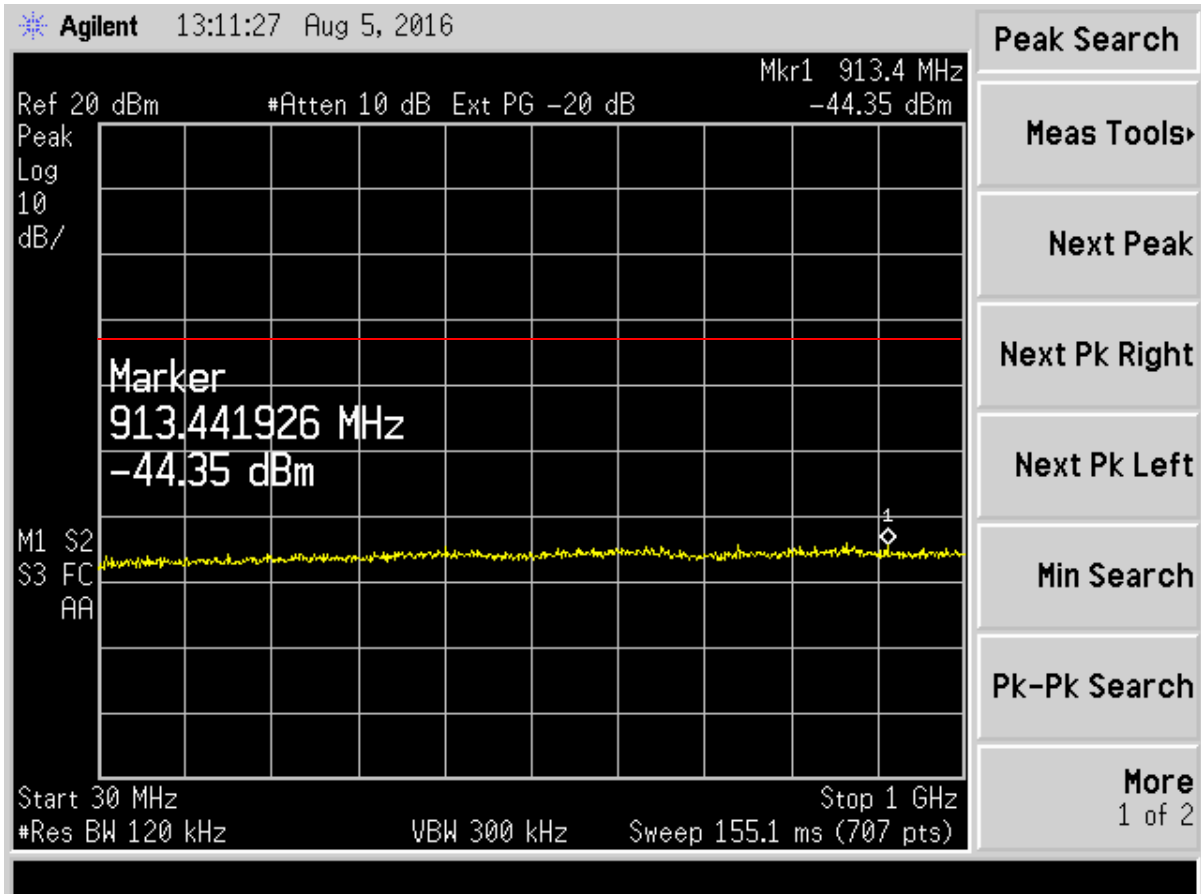


Figure 46. Antenna Conducted Emissions 802.11n Mid, Part 1

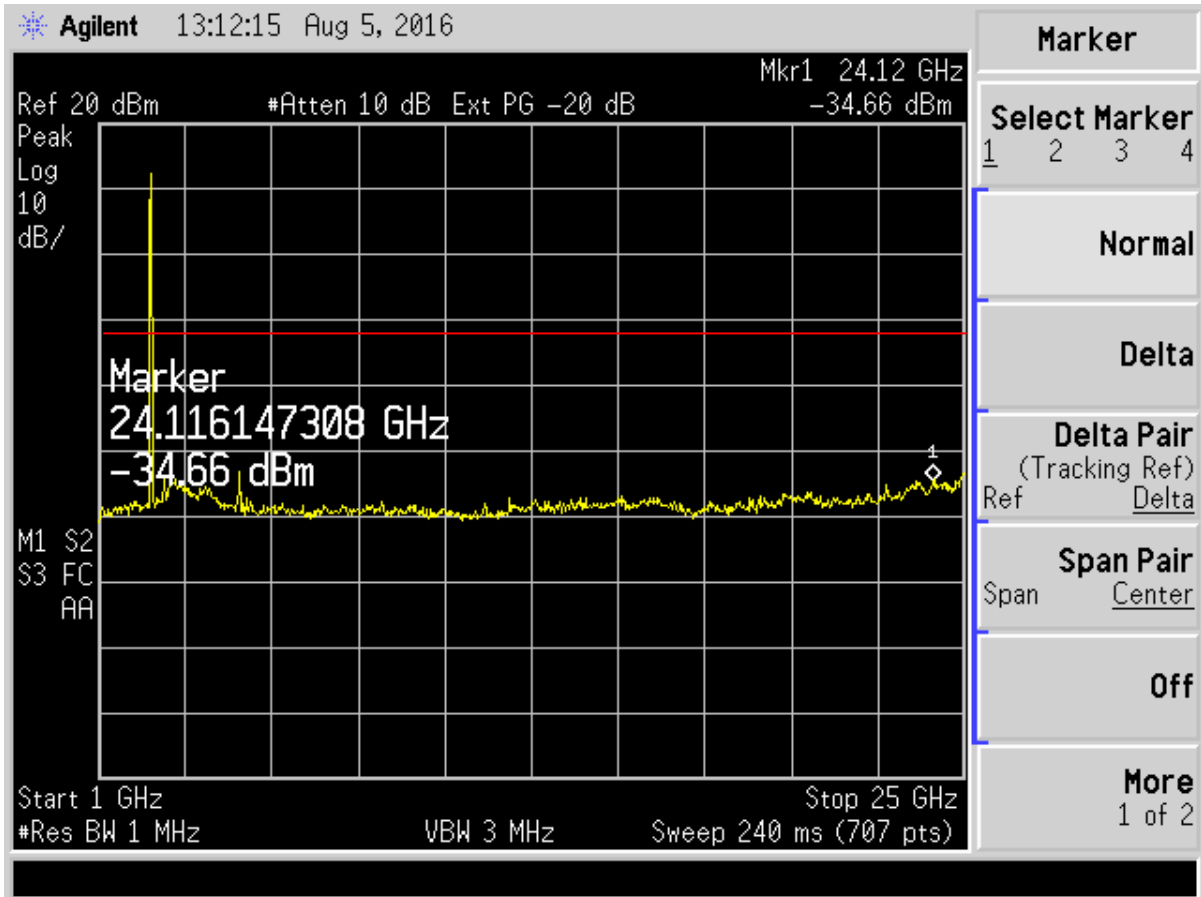


Figure 47. Antenna Conducted Emissions 802.11n Mid, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

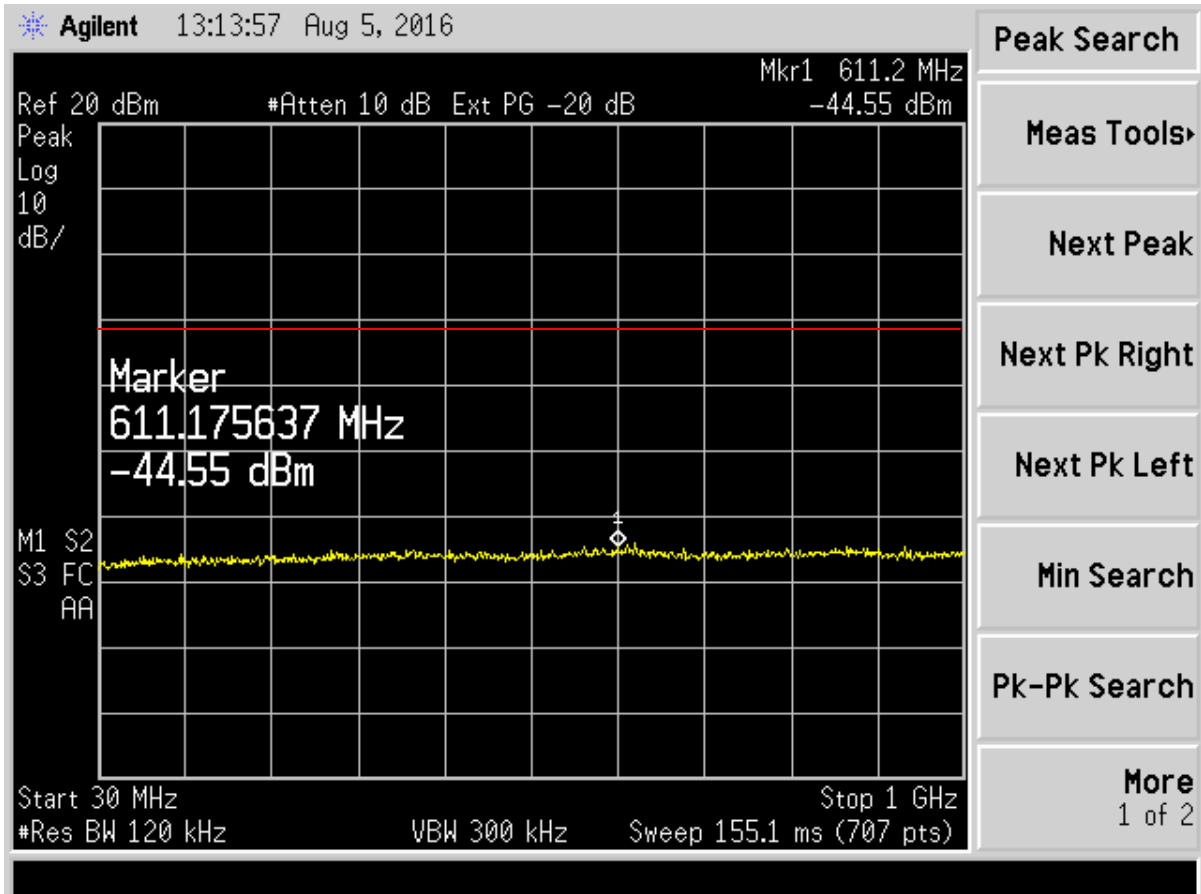


Figure 48. Antenna Conducted Emissions 802.11n High, Part 1

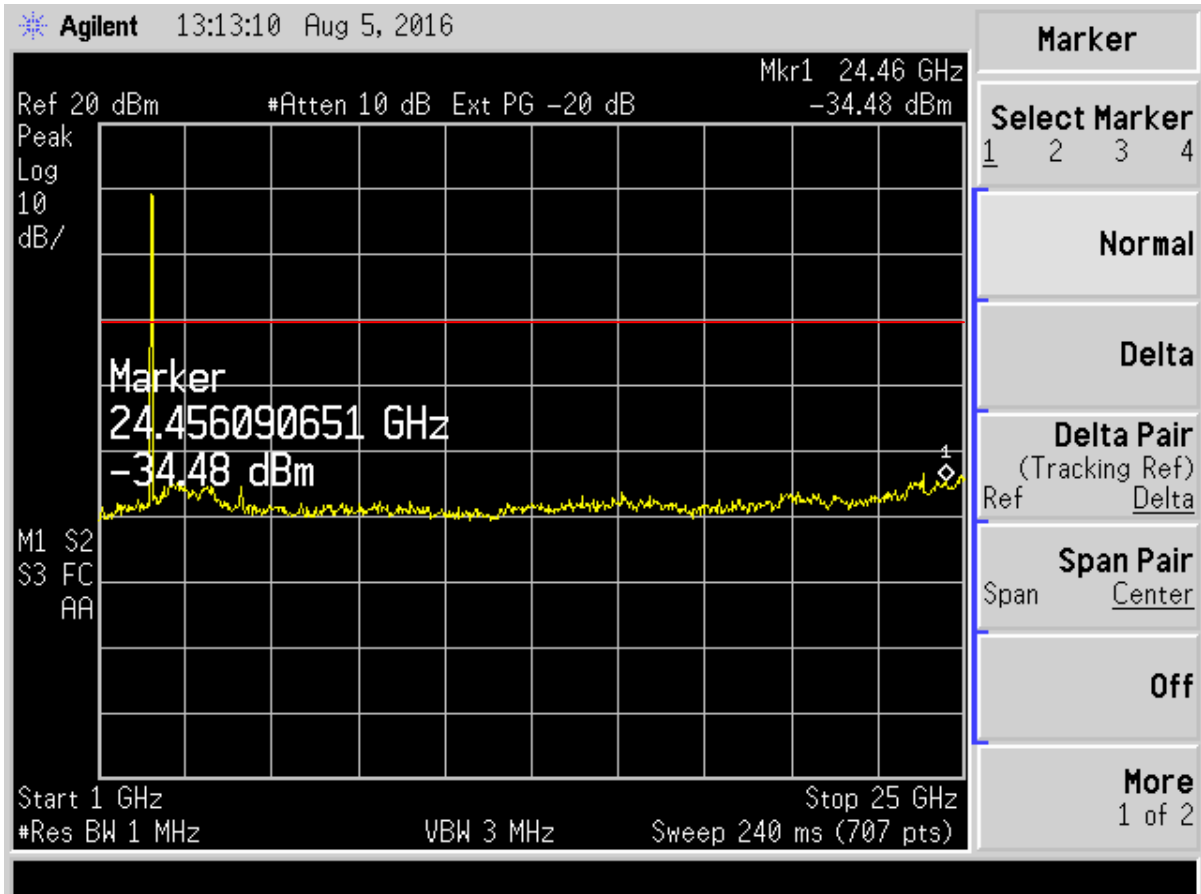


Figure 49. Antenna Conducted Emissions 802.11n High, Part 2



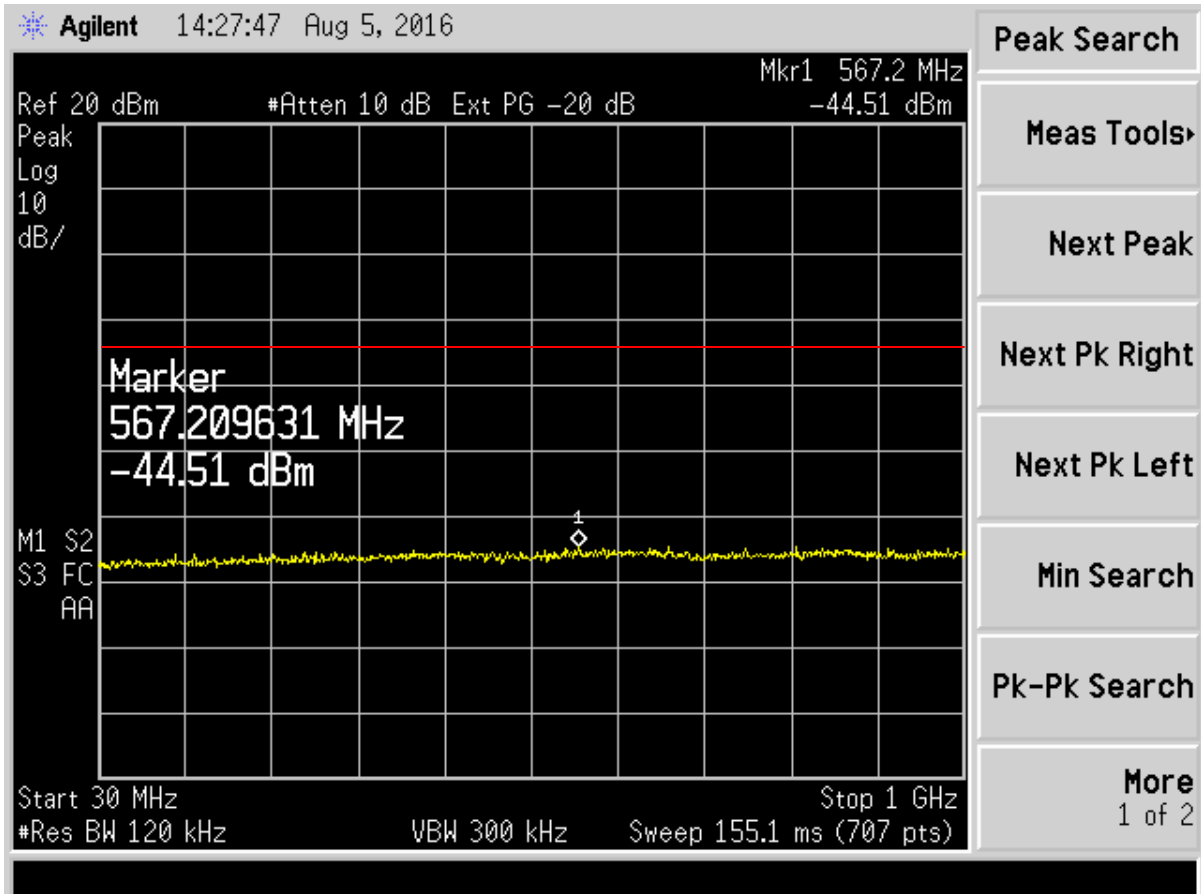


Figure 50. Antenna Conducted Emissions 802.11n, 40MHz Low, Part 1

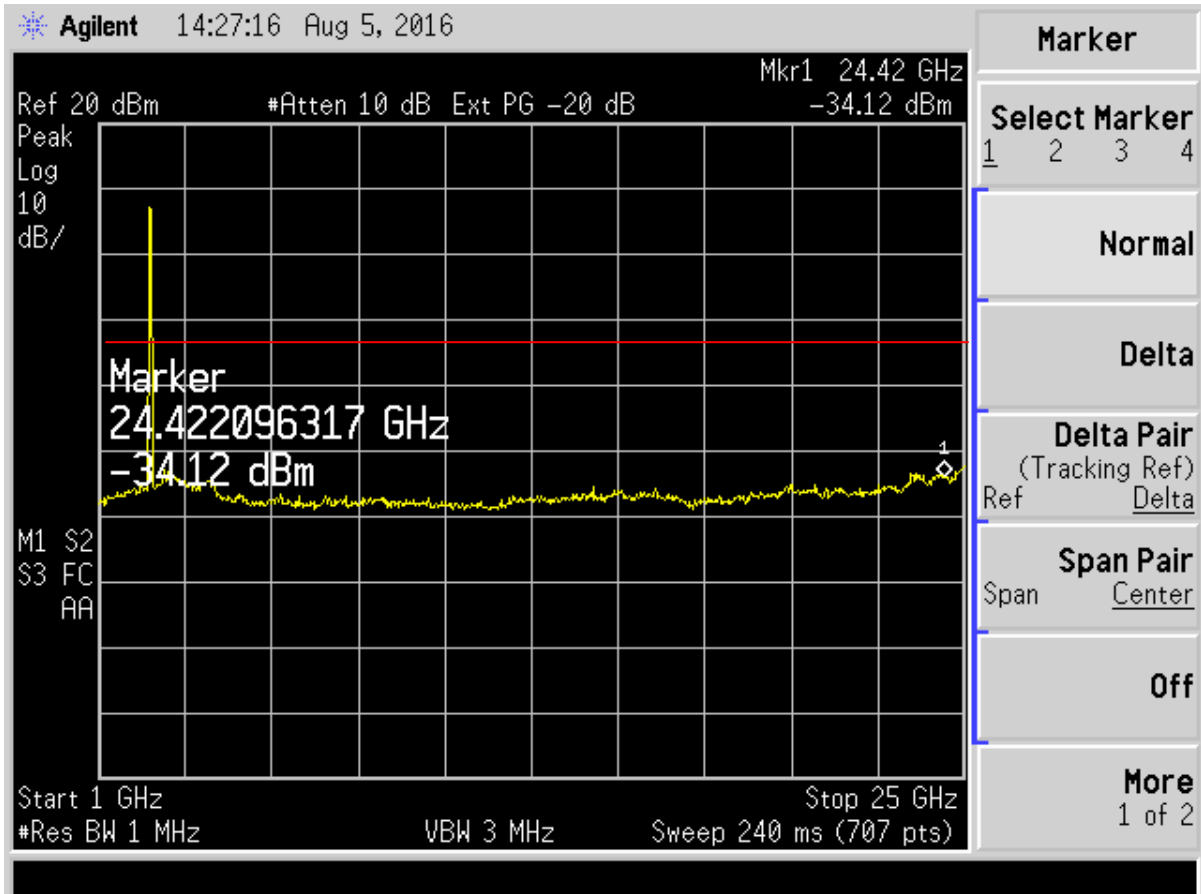


Figure 51. Antenna Conducted Emissions 802.11n, 40 MHz Low, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

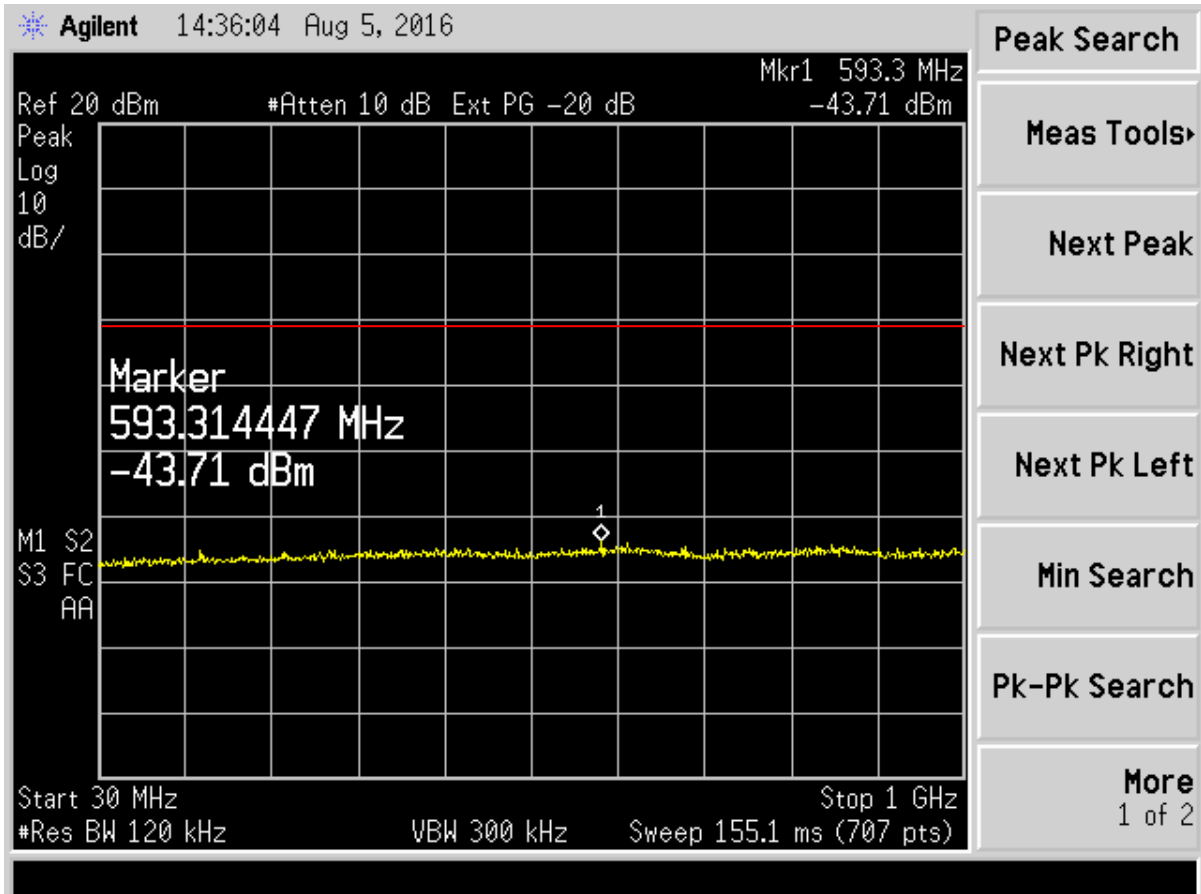


Figure 52. Antenna Conducted Emissions 802.11n, 40 MHz Mid, Part 1

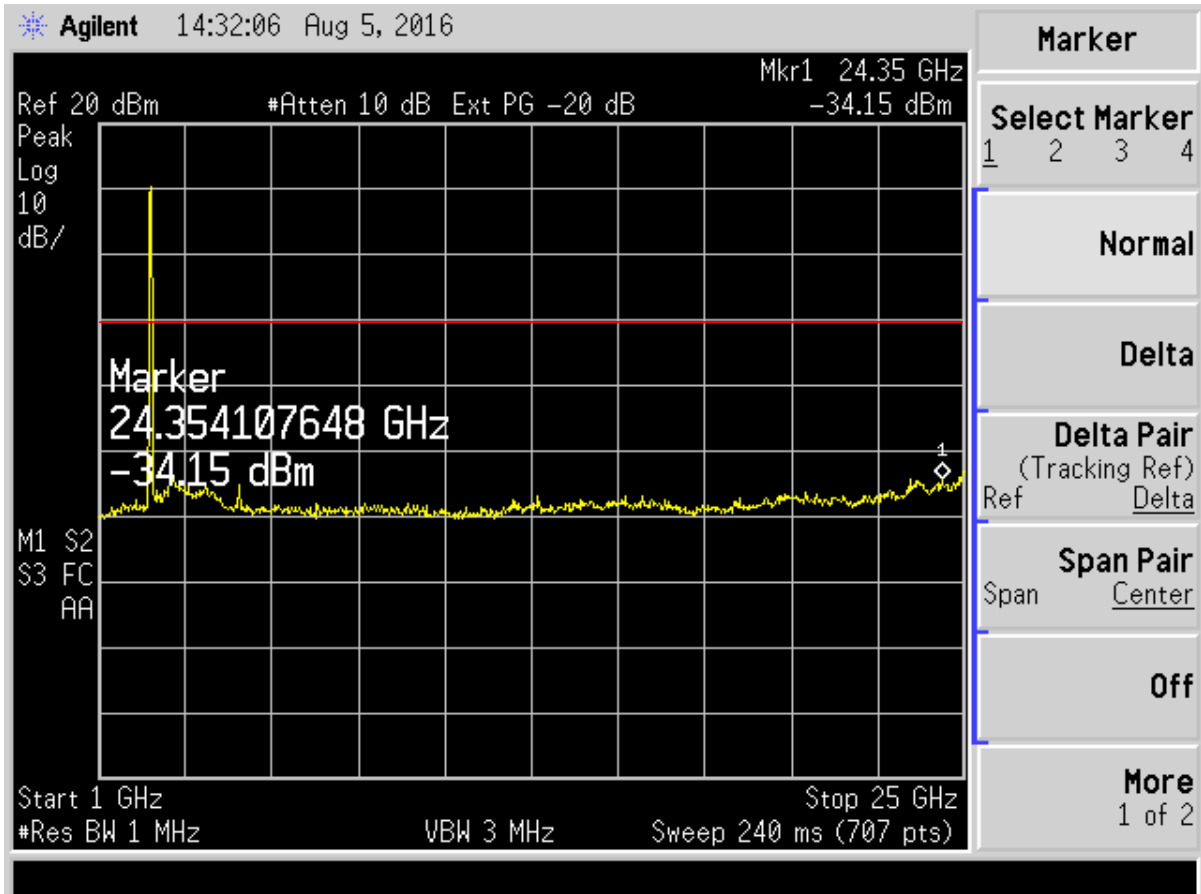


Figure 53. Antenna Conducted Emissions 802.11n, 40 MHz Mid, Part 2

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

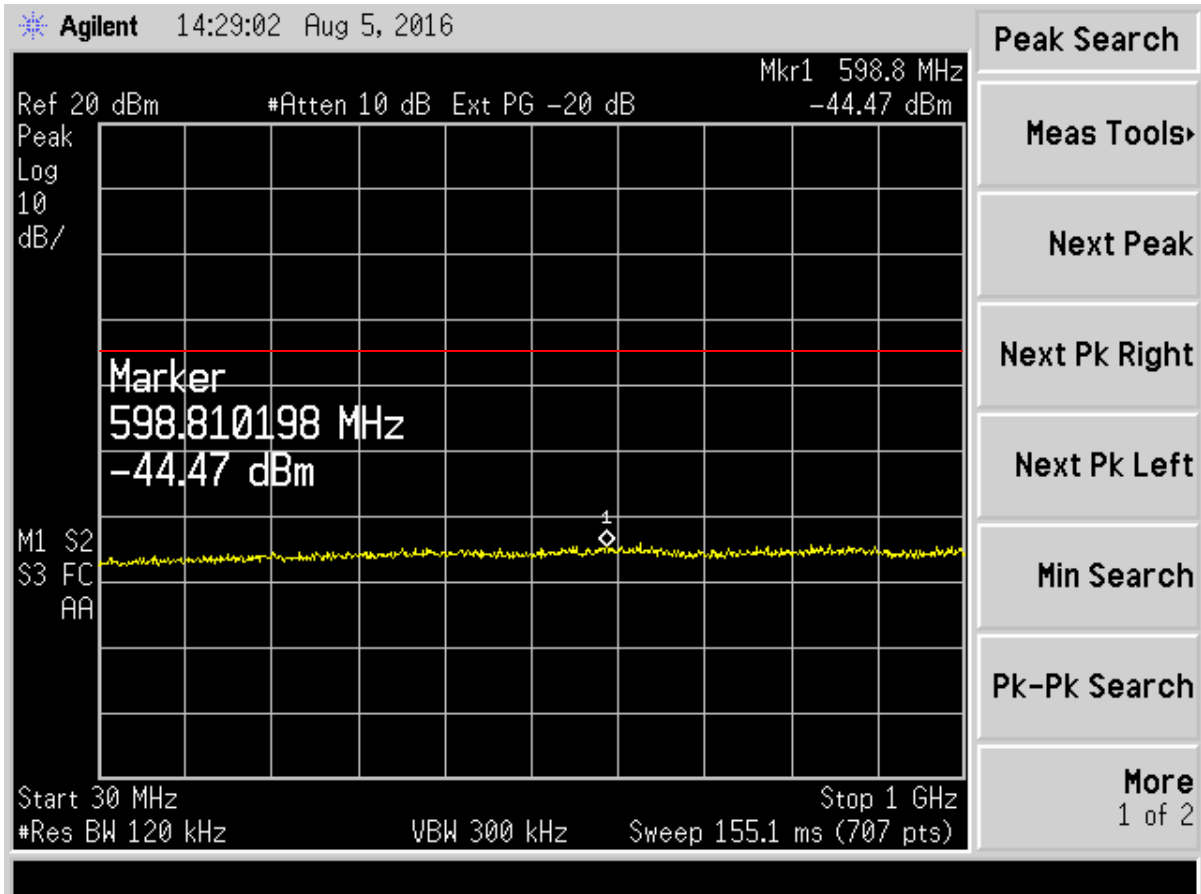


Figure 54. Antenna Conducted Emissions 802.11n, 40 MHz High, Part 1

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

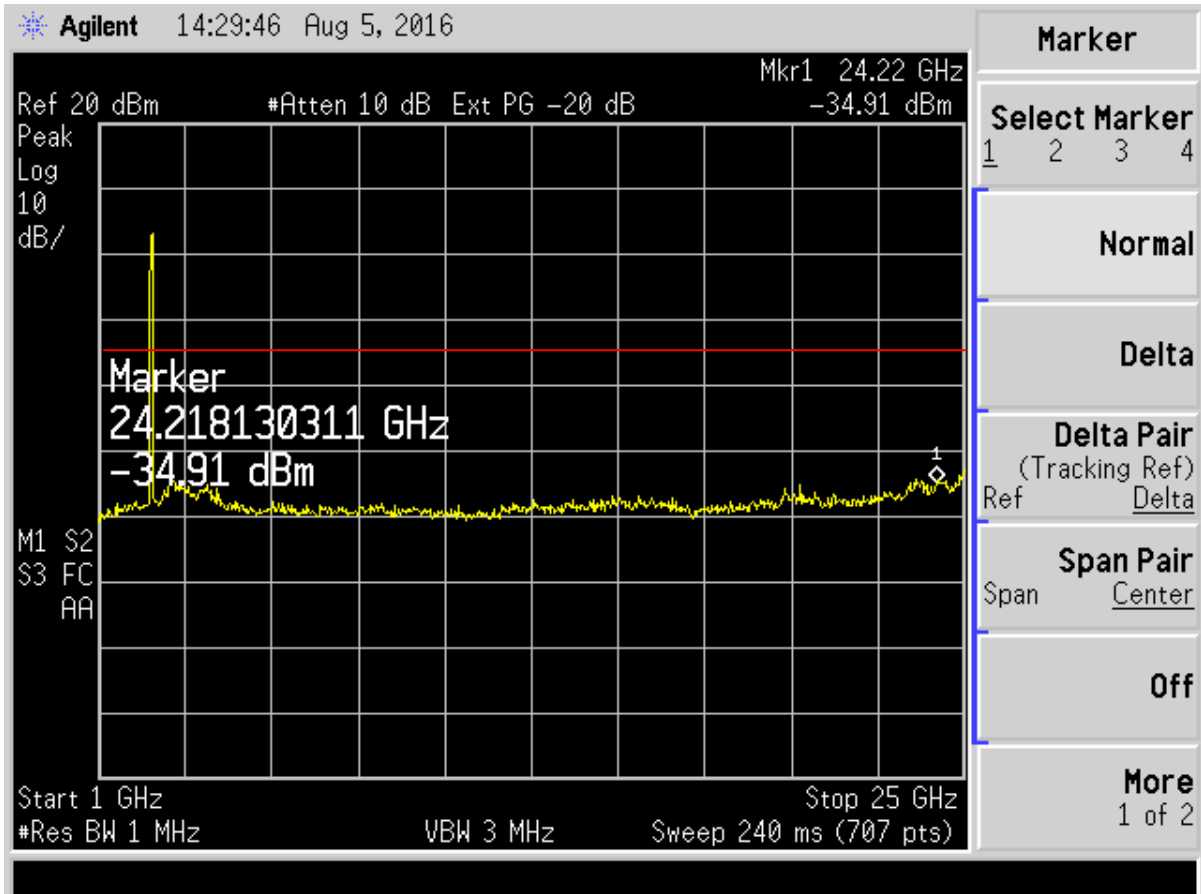


Figure 55. Antenna Conducted Emissions 802.11n, 40 MHz High, Part 2

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

## 2.10.2 Radiated Spurious Emissions (PART 15.209, 15.247)

The EUT was placed into a continuous transmit mode of operation (>98% duty cycle) and tested per FCC KDB Publication 558074 D01 v03r05 and ANSI C63.10:2013. A preliminary scan was performed on the EUT to find signal frequencies that were caused by the transmitter part of the device. To obtain worse case results the EUT was tested in X, Y, and Z axes or in the orientation of normal operation if the device is designed to operation in a fixed position.

Radiated measurements were then conducted between the frequency range of 9kHz (or lowest frequency used/generated by the device) up to the tenth harmonic of the device (no greater than 40 GHz). In the band below 30 MHz a resolution bandwidth (RBW) of 9 kHz was used, emissions below 1 GHz were tested with a RBW of 120 KHz and emissions above 1 GHz were tested with a RBW of 1 MHz. All video bandwidth settings were at least three times the RBW value.

The EUT was investigated to PART 15.209, General requirements for unwanted spurious emissions to address the concerns of unwanted emissions that may radiate from the EUT cabinet, control circuits, or power leads. The results for this test can be found in the sections below.

**Table 14. Intentional Radiator, Spurious Radiated Emissions (PART 15.209), 9 kHz to 1000 MHz**

9 kHz to 30 MHz							
Test: Radiated Emissions				Client: Acuity Brands			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuv)	AF+CA-AMP (dB/m)	Results (dBuV/m)	QP Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or QP
All emissions found were greater than 20dB from the limit.							

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 15. Intentional Radiator, Spurious Radiated Emissions (PART 15.209),  
 30 MHz to 1000 MHz**

30 MHz to 1000 MHz							
Test: Radiated Emissions				Client: Acuity Brands			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	QP Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or QP
30.00	40.86	-13.82	27.04	40.0	3m./VERT	13.0	QP
48.28	49.61	-16.61	33.00	40.0	3m./VERT	7.0	PK
191.93	46.99	-11.57	35.42	43.5	3m./HORZ	8.1	PK
216.00	50.01	-13.52	36.49	43.5	3m./HORZ	7.0	PK
290.00	48.15	-10.22	37.93	46.0	3m./HORZ	8.1	PK
214.00	47.18	-14.02	33.16	43.5	3m./VERT	10.3	PK
314.00	44.61	-9.73	34.88	46.0	3m./VERT	11.1	PK
All emissions found were greater than 20dB from the limit.							

Sample Calculation at 30.00 MHz:

Magnitude of Measured Frequency	40.86	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	-13.82	dB/m
Corrected Result	27.04	dBuV/m



US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

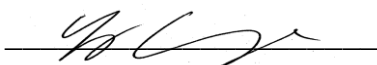
**Table 16. Intentional Radiator, Spurious Radiated Emissions (PART 15.209), above 1 GHz**

1 GHz to 25 GHz							
Test: Radiated Emissions				Client: Acuity Brands			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	QP Limits (dBuV/m)	Antenna Distance/Polarization	Margin (dB)	Detector PK, or QP
1588.00	53.44	-7.82	45.62	54.0	3.0m./HORZ	8.4	PK
1637.50	47.59	-7.36	40.23	54.0	3.0m./VERT	13.8	PK
Fundamental and Harmonic emissions are presented in the tables that follow. No other emissions were seen greater than 20 dB from the limit.							

Sample Calculation at 1588.00 MHz:

Magnitude of Measured Frequency	53.44	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	-07.82	dB/m
Corrected Result	45.62	dBuV/m

Test Date: August 1, 2016

Tested By  
 Signature:  Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**2.10.2.1 Antenna 1 Spurious Emissions Test Results (Part 15.205, 15.209, 15.247)**

EUT connected to Antenna 1.

**Table 17. 802.11b Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	72.87	0.0	30.35	103.22		3.0m./VERT		PK
4824.00	47.74	0.0	3.33	51.07	74.0	3.0m./VERT	22.9	PK
<b>Mid Channel</b>								
2442.00	72.21	0.0	30.32	102.53		3.0m./VERT		PK
4884.00	50.85	0.0	3.52	54.37	74.0	3.0m./VERT	19.6	PK
<b>High Channel</b>								
2462.00	70.36	0.0	30.32	100.68		3.0m./VERT		PK
4944.00	52.53	0.0	3.11	55.64	74.0	3.0m./VERT	18.4	PK

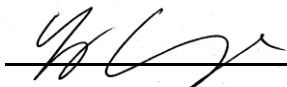
- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 and 15.247
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4824.00 MHz:

Magnitude of Measured Frequency	47.74	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	3.33	dB/m
+Additional Factor (filter loss)	0.00	dB
Corrected Result	51.07	dBuV/m

Test Date: December 6, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 18. 802.11b Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	62.79	0.0	30.35	93.14		3.0m./VERT		<b>AVG</b>
4824.00	47.74	0.0	3.33	51.07	54.0	3.0m./VERT	2.9	<b>AVG</b>
<b>Mid Channel</b>								
2442.00	62.63	0.0	30.32	92.95		3.0m./VERT		<b>AVG</b>
4884.00	37.72	0.0	3.52	41.24	54.0	3.0m./VERT	12.8	<b>AVG</b>
<b>High Channel</b>								
2462.00	59.61	0.0	30.32	89.93		3.0m./VERT		<b>AVG</b>
4944.00	39.83	0.0	3.11	42.94	54.0	3.0m./VERT	11.1	<b>AVG</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4824.00 MHz:

Magnitude of Measured Frequency	47.74	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	3.33	dB/m
+Additional Factor (duty cycle & filter loss)	0.00	dB
Corrected Result	51.07	dBuV/m

Test Date: December 6, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 19. 802.11g Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	73.13	0.0	30.35	103.48		3.0m./VERT		PK
4824.00	53.54	0.0	3.33	56.87	74.0	3.0m./VERT	17.1	PK
<b>Mid Channel</b>								
2442.00	69.23	0.0	30.32	99.55		3.0m./VERT		PK
4884.00	51.96	0.0	3.52	55.48	74.0	3.0m./VERT	18.5	PK
7326.00	49.97	0.0	9.48	59.45	74.0	3.0m./VERT	14.6	PK
<b>High Channel</b>								
2462.00	70.39	0.0	30.32	100.71		3.0m./VERT		PK
4944.00	51.84	0.0	3.11	54.95	74.0	3.0m./VERT	19.0	PK
7416.00	50.45	0.0	8.54	58.99	74.0	3.0m./VERT	15.0	PK

1. (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
3. A High Pass filter was used, that additional factor is added to the HPF column.
4. The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4824.00 MHz:

Magnitude of Measured Frequency	53.54	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	3.33	dB/m
+Additional Factor (filter loss)	0.00	dB
Corrected Result	56.87	dBuV/m

Test Date: December 6, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 20. 802.11g Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	64.14	0.0	30.35	94.49		3.0m./VERT		<b>AVG</b>
4824.00	43.25	0.0	3.33	46.58	54.0	3.0m./VERT	7.4	<b>AVG</b>
<b>Mid Channel</b>								
2442.00	60.90	0.0	30.32	91.22		3.0m./VERT		<b>AVG</b>
4884.00	41.98	0.0	3.52	45.50	54.0	3.0m./VERT	8.5	<b>AVG</b>
7326.00	35.89	0.0	9.48	45.37	54.0	3.0m./VERT	8.6	<b>AVG</b>
<b>High Channel</b>								
2462.00	62.12	0.0	30.32	92.44		3.0m./VERT		<b>AVG</b>
4944.00	39.18	0.0	3.11	42.29	54.0	3.0m./VERT	11.7	<b>AVG</b>
7416.00	36.54	0.0	8.54	45.08	54.0	3.0m./VERT	8.9	<b>AVG</b>

1. (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
3. A High Pass filter was used, that additional factor is added to the HPF column.
4. A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
5. The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4824.00 MHz:

Magnitude of Measured Frequency	43.25	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	3.33	dB/m
+Additional Factor (duty cycle & filter loss)	0.00	dB
Corrected Result	46.58	dBuV/m

Test Date: December 6, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 21. 802.11n Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	79.50	0.0	32.09	111.59		3.0m./HORZ		<b>PK</b>
4857.00	48.76	0.0	9.77	58.53	74.0	3.0m./HORZ	15.5	<b>PK</b>
7292.00	48.90	0.0	13.81	62.71	74.0	3.0m./HORZ	11.3	<b>PK</b>
<b>Mid Channel</b>								
2440.00	76.00	0.0	31.53	107.53		3.0m./HORZ		<b>PK</b>
4896.00	50.43	0.0	9.86	60.29	74.0	3.0m./HORZ	13.7	<b>PK</b>
7358.00	49.78	0.0	15.76	65.54	74.0	3.0m./HORZ	8.5	<b>PK</b>
<b>High Channel</b>								
2462.00	74.00	0.0	31.53	105.53		3.0m./HORZ		<b>PK</b>
4922.00	51.75	0.0	9.98	61.73	74.0	3.0m./HORZ	12.3	<b>PK</b>
7387.00	49.25	0.0	15.69	64.94	74.0	3.0m./HORZ	9.1	<b>PK</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4857.00 MHz:

Magnitude of Measured Frequency	48.76	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	9.77	dB/m
+Additional Factor	0.00	dB
Corrected Result	58.53	dBuV/m

Test Date: July 7, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 22. 802.11n Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	68.27	0.0	32.09	100.36		3.0m./HORZ		<b>AVG</b>
4854.00	29.29	0.0	9.77	39.06	54.0	3.0m./HORZ	14.9	<b>AVG</b>
7305.00	29.20	0.0	14.16	43.36	54.0	3.0m./HORZ	10.6	<b>AVG</b>
<b>Mid Channel</b>								
2440.00	66.15	0.0	31.53	97.68		3.0m./HORZ		<b>AVG</b>
4894.00	32.40	0.0	9.86	42.26	54.0	3.0m./HORZ	11.7	<b>AVG</b>
7357.00	29.92	0.0	15.76	45.68	54.0	3.0m./HORZ	8.3	<b>AVG</b>
<b>High Channel</b>								
2462.00	63.30	0.0	31.53	94.83		3.0m./HORZ		<b>AVG</b>
4928.00	36.60	0.0	10.06	46.66	54.0	3.0m./HORZ	7.3	<b>AVG</b>
7378.00	30.00	0.0	15.69	45.69	54.0	3.0m./HORZ	8.3	<b>AVG</b>

1. (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
3. A High Pass filter was used, that additional factor is added to the HPF column.
4. A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
5. The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4854.00 MHz:

Magnitude of Measured Frequency	29.29	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	9.77	dB/m
+Additional Factor	0.00	dB
Corrected Result	39.06	dBuV/m

Test Date: July 7, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

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 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 23. 802.11n 40 MHz BW Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2422.00	76.00	0.0	31.53	107.53		3.0m./HORZ		<b>PK</b>
4858.00	48.93	0.0	9.77	58.70	74.0	3.0m./HORZ	15.3	<b>PK</b>
7292.00	50.22	0.0	13.81	64.03	74.0	3.0m./HORZ	10.0	<b>PK</b>
<b>Mid Channel</b>								
2437.00	76.86	0.0	31.68	108.54		3.0m./HORZ		<b>PK</b>
4875.00	48.96	0.0	9.87	58.83	74.0	3.0m./HORZ	15.2	<b>PK</b>
7335.00	49.00	0.0	15.74	64.74	74.0	3.0m./HORZ	9.3	<b>PK</b>
<b>High Channel</b>								
2452.00	73.90	0.0	31.53	105.43		3.0m./HORZ		<b>PK</b>
4918.00	51.35	0.0	9.98	61.33	74.0	3.0m./HORZ	12.7	<b>PK</b>
7370.00	49.16	0.0	15.69	64.85	74.0	3.0m./HORZ	9.2	<b>PK</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

**Sample Calculation at 4858.00 MHz:**

Magnitude of Measured Frequency	48.93	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	9.77	dB/m
+Additional Factor	0.00	dB
Corrected Result	58.70	dBuV/m

Test Date: July 7, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama



US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 24. 802.11n 40 MHz BW Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2422.00	63.90	0.0	31.68	95.58		3.0m./HORZ		<b>AVG</b>
4834.00	29.62	0.0	9.67	39.29	54.0	3.0m./HORZ	14.7	<b>AVG</b>
7307.00	29.97	0.0	14.30	44.27	54.0	3.0m./HORZ	9.7	<b>AVG</b>
<b>Mid Channel</b>								
2437.00	65.03	0.0	31.68	96.71		3.0m./HORZ		<b>AVG</b>
4893.00	31.00	0.0	9.86	40.86	54.0	3.0m./HORZ	13.1	<b>AVG</b>
7344.00	30.00	0.0	15.74	45.74	54.0	3.0m./HORZ	8.3	<b>AVG</b>
<b>High Channel</b>								
2452.00	61.92	0.0	31.53	93.45		3.0m./HORZ		<b>AVG</b>
4929.00	33.92	0.0	10.06	43.98	54.0	3.0m./HORZ	10.0	<b>AVG</b>
7347.00	29.95	0.0	15.74	45.69	54.0	3.0m./HORZ	8.3	<b>AVG</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4834.00 MHz:

Magnitude of Measured Frequency	29.62	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	9.67	dB/m
+Additional Factor	-0.00	dB
Corrected Result	39.29	dBuV/m

Test Date: July 7, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**2.10.2.2 Antenna 2 Spurious Emissions Test Results (Part 15.205, 15.209, 15.247)**

EUT connected to Antenna 2.

**Table 25. 802.11b Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	73.19	0.0	30.16	103.35		3.0m./HORZ		PK
4823.77	53.58	0.0	3.30	56.88	74.0	3.0m./HORZ	17.1	PK
<b>Mid Channel</b>								
2442.00	69.55	0.0	30.13	99.68		3.0m./HORZ		PK
4884.08	55.02	0.0	3.49	58.51	74.0	3.0m./HORZ	15.5	PK
<b>High Channel</b>								
2462.00	68.07	0.0	30.13	98.20		3.0m./HORZ		PK
4924.15	57.93	0.0	3.17	61.10	74.0	3.0m./HORZ	12.9	PK

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4823.77 MHz:

Magnitude of Measured Frequency	53.58	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	3.30	dB/m
+Additional Factor	0.00	dB
Corrected Result	56.88	dBuV/m

Test Date: December 6, 2016

Tested By  
 Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 26. 802.11b Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	62.43	0.0	30.16	92.59		3.0m./HORZ		<b>AVG</b>
4823.77	39.99	0.0	3.30	43.29	54.0	3.0m./HORZ	10.7	<b>AVG</b>
<b>Mid Channel</b>								
2442.00	59.25	0.0	30.13	89.38		3.0m./HORZ		<b>AVG</b>
4884.08	42.87	0.0	3.49	46.36	54.0	3.0m./HORZ	7.6	<b>AVG</b>
<b>High Channel</b>								
2462.00	57.63	0.0	30.13	87.76		3.0m./HORZ		<b>AVG</b>
4924.15	44.61	0.0	3.17	47.78	54.0	3.0m./HORZ	6.2	<b>AVG</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4823.77 MHz:

Magnitude of Measured Frequency	39.99	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	3.30	dB/m
+Additional Factor (duty cycle)	0.00	dB
Corrected Result	43.29	dBuV/m

Test Date: December 6, 2016

Tested By  
 Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 27. 802.11g Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	70.01	0.0	30.16	100.17		3.0m./HORZ		<b>PK</b>
4824.60	60.31	0.0	3.30	63.61	74.0	3.0m./HORZ	10.4	<b>PK</b>
<b>Mid Channel</b>								
2442.00	68.12	0.0	30.13	98.25		3.0m./HORZ		<b>PK</b>
4885.50	59.17	0.0	3.49	62.66	74.0	3.0m./HORZ	11.3	<b>PK</b>
<b>High Channel</b>								
2462.00	66.65	0.0	30.13	96.78		3.0m./HORZ		<b>PK</b>
4921.60	60.12	0.0	3.17	63.29	74.0	3.0m./HORZ	10.7	<b>PK</b>

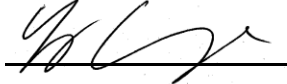
- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4824.60 MHz:

Magnitude of Measured Frequency	60.31	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	3.30	dB/m
+Additional Factor	0.00	dB
Corrected Result	63.61	dBuV/m

Test Date: December 6, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 28. 802.11g Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	61.22	0.0	30.16	91.38		3.0m./HORZ		<b>AVG</b>
4824.60	47.92	0.0	3.30	51.22	54.0	3.0m./HORZ	2.8	<b>AVG</b>
<b>Mid Channel</b>								
2442.00	59.67	0.0	30.13	89.80		3.0m./HORZ		<b>AVG</b>
4885.50	46.51	0.0	3.49	50.00	54.0	3.0m./HORZ	4.0	<b>AVG</b>
<b>High Channel</b>								
2462.00	57.76	0.0	30.13	87.89		3.0m./HORZ		<b>AVG</b>
4921.60	47.12	0.0	3.17	50.29	54.0	3.0m./HORZ	3.7	<b>AVG</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4824.60 MHz:

Magnitude of Measured Frequency	47.92	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	3.30	dB/m
+Additional Factor (duty cycle)	-0.00	dB
Corrected Result	51.22	dBuV/m

Test Date: December 6, 2016

Tested By  
 Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 29. 802.11n Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	73.86	0.0	32.09	105.95		3.0m./HORZ		<b>PK</b>
4827.15	56.54	0.0	8.77	65.31	74.0	3.0m./HORZ	8.7	<b>PK</b>
7249.57	50.29	0.0	14.08	64.37	74.0	3.0m./HORZ	9.6	<b>PK</b>
<b>Mid Channel</b>								
2442.00	73.75	0.0	31.53	105.28		3.0m./HORZ		<b>PK</b>
4882.95	56.24	0.0	9.87	66.11	74.0	3.0m./HORZ	7.9	<b>PK</b>
7339.05	50.38	0.0	15.74	66.12	74.0	3.0m./HORZ	7.9	<b>PK</b>
<b>High Channel</b>								
2462.00	77.36	0.0	31.53	108.89		3.0m./HORZ		<b>PK</b>
4930.00	55.84	0.0	10.06	65.90	74.0	3.0m./HORZ	8.1	<b>PK</b>
7374.60	50.07	0.0	15.69	65.76	74.0	3.0m./HORZ	8.2	<b>PK</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4827.15 MHz:

Magnitude of Measured Frequency	56.54	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	8.77	dB/m
+Additional Factor	0.00	dB
Corrected Result	65.31	dBuV/m

Test Date: July 11, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 30. 802.11n Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2412.00	63.32	0.0	32.09	95.41		3.0m./HORZ		<b>AVG</b>
4827.15	41.46	0.0	8.77	50.23	54.0	3.0m./HORZ	3.8	<b>AVG</b>
<b>Mid Channel</b>								
2442.00	63.61	0.0	31.53	95.14		3.0m./HORZ		<b>AVG</b>
4882.95	40.15	0.0	9.87	50.02	54.0	3.0m./HORZ	4.0	<b>AVG</b>
<b>High Channel</b>								
2462.00	66.94	0.0	31.53	98.47		3.0m./HORZ		<b>AVG</b>
4930.00	40.79	0.0	10.06	50.85	54.0	3.0m./HORZ	3.2	<b>AVG</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4827.15 MHz:

Magnitude of Measured Frequency	41.46	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	8.77	dB/m
+Additional Factor	-0.00	dB
Corrected Result	50.23	dBuV/m

Test Date: July 11, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 31. 802.11n 40 MHz BW Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2422.00	70.38	0.0	31.53	101.91		3.0m./HORZ		<b>PK</b>
4815.00	43.47	0.0	8.77	52.24	74.0	3.0m./HORZ	21.8	<b>PK</b>
7247.00	43.59	0.0	14.08	57.67	74.0	3.0m./HORZ	16.3	<b>PK</b>
<b>Mid Channel</b>								
2437.00	71.40	0.0	31.53	102.93		3.0m./HORZ		<b>PK</b>
4874.00	43.98	0.0	9.87	53.85	74.0	3.0m./HORZ	20.2	<b>PK</b>
7313.00	43.93	0.0	14.30	58.23	74.0	3.0m./HORZ	15.8	<b>PK</b>
<b>High Channel</b>								
2452.00	76.66	0.0	31.53	108.19		3.0m./HORZ		<b>PK</b>
4927.00	43.23	0.0	10.06	53.29	74.0	3.0m./HORZ	20.7	<b>PK</b>
7362.00	43.17	0.0	15.76	58.93	74.0	3.0m./HORZ	15.1	<b>PK</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

**Sample Calculation at 4815.00 MHz:**

Magnitude of Measured Frequency	43.47	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	8.77	dB/m
+Additional Factor	0.00	dB
Corrected Result	52.24	dBuV/m

Test Date: July 11, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama



US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

**Table 32. 802.11n 40 MHz BW Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.247(d)					Client: Acuity Brands			
Project: 16-0139					Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	HPF (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
<b>Low Channel</b>								
2422.00	58.07	0.0	31.53	89.60		3.0m./HORZ		<b>AVG</b>
4827.00	25.45	0.0	8.77	34.22	54.0	3.0m./HORZ	19.8	<b>AVG</b>
7247.00	25.05	0.0	14.08	39.13	54.0	3.0m./HORZ	14.9	<b>AVG</b>
<b>Mid Channel</b>								
2437.00	60.00	0.0	31.53	91.53		3.0m./HORZ		<b>AVG</b>
4880.00	25.02	0.0	9.87	34.89	54.0	3.0m./HORZ	19.1	<b>AVG</b>
7311.00	25.17	0.0	14.30	39.47	54.0	3.0m./HORZ	14.5	<b>AVG</b>
<b>High Channel</b>								
2452.00	64.95	0.0	32.74	97.69		3.0m./HORZ		<b>AVG</b>
4929.00	25.68	0.0	10.06	35.74	54.0	3.0m./HORZ	18.3	<b>AVG</b>
7345.00	25.19	0.0	15.74	40.93	54.0	3.0m./HORZ	13.1	<b>AVG</b>

- (\*) Falls within the restricted bands of PART 15.205. Limits based on PART 15.209 & 15.247.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- A High Pass filter was used, that additional factor is added to the HPF column.
- A Duty Cycle correction factor of 0.0 dB was used, that additional factor is added to the HPF column.
- The EUT was placed in three orthogonal positions, tested while broadcasting from each antenna, and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4827.00 MHz:

Magnitude of Measured Frequency	25.45	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain+ Filter loss	8.77	dB/m
+Additional Factor	-0.00	dB
Corrected Result	34.22	dBuV/m

Test Date: July 11, 2016

Tested By

Signature: Hossein Rahnama Name: Hossein Rahnama

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

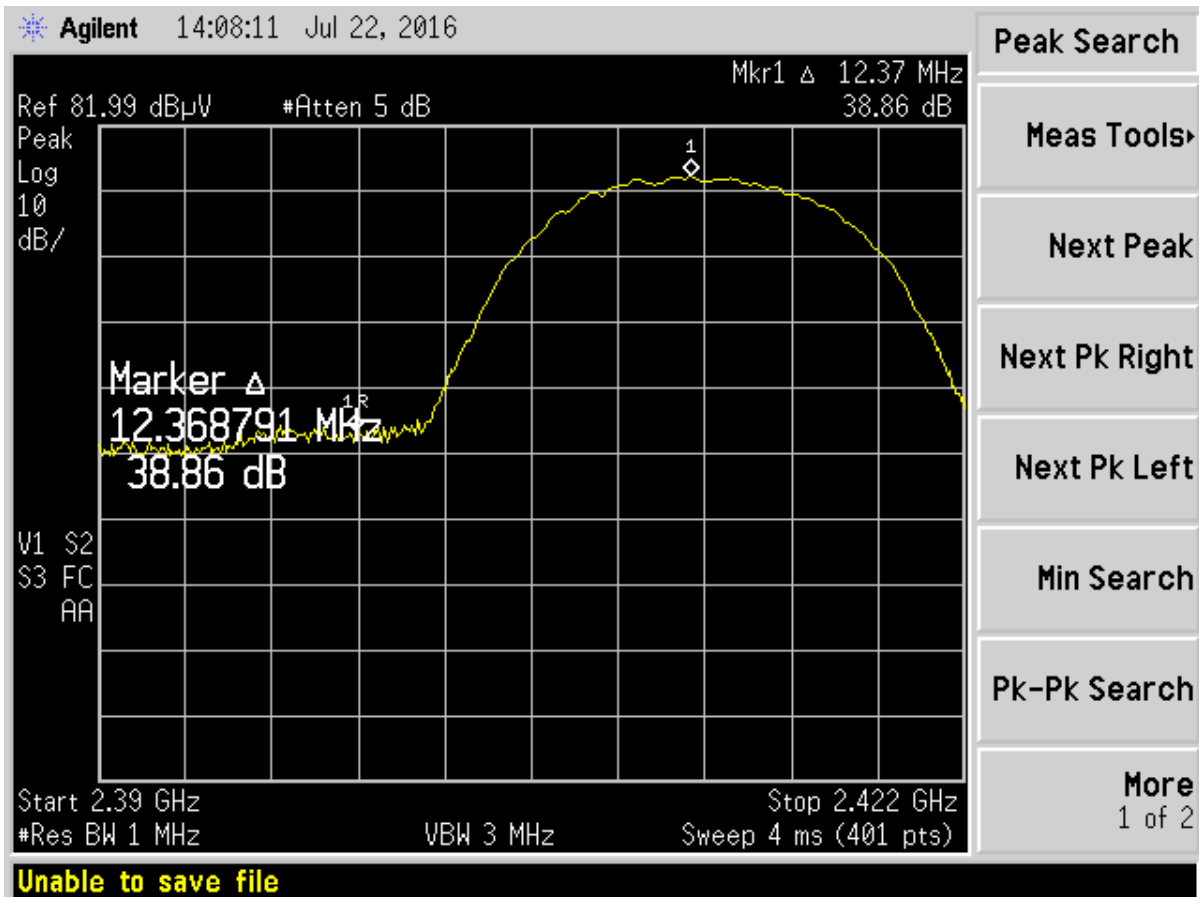
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## **2.11 Band Edge and Restricted Band Measurements (PART 15.247 (d))**

Band Edge measurements are made following the guidelines in FCC KDB Publication No. 558074 and ANSI C63.10:2013 section 6.10.5 with the EUT initially operating on the Lowest Channel and then operating on the Highest Channel within its band of operation. Antenna port conducted measurements are performed to demonstrate compliance with the requirement of 15.247(d) that all emissions outside of the band edges be attenuated by at least 20 dB when compared to its highest in-band value (contained in a 100 kHz band).

To capture the band edge set the Spectrum Analyzer frequency span set to 2 MHz to capture the peak level of the emission operating on the channel closest to the band edge as well as any modulation products falling outside of the authorized band of operation. Conducted measurements are performed with RBW approximately 1.5\* Span. In all cases, the VBW is set  $\geq$  RBW. See figure and calculations below for more detail.

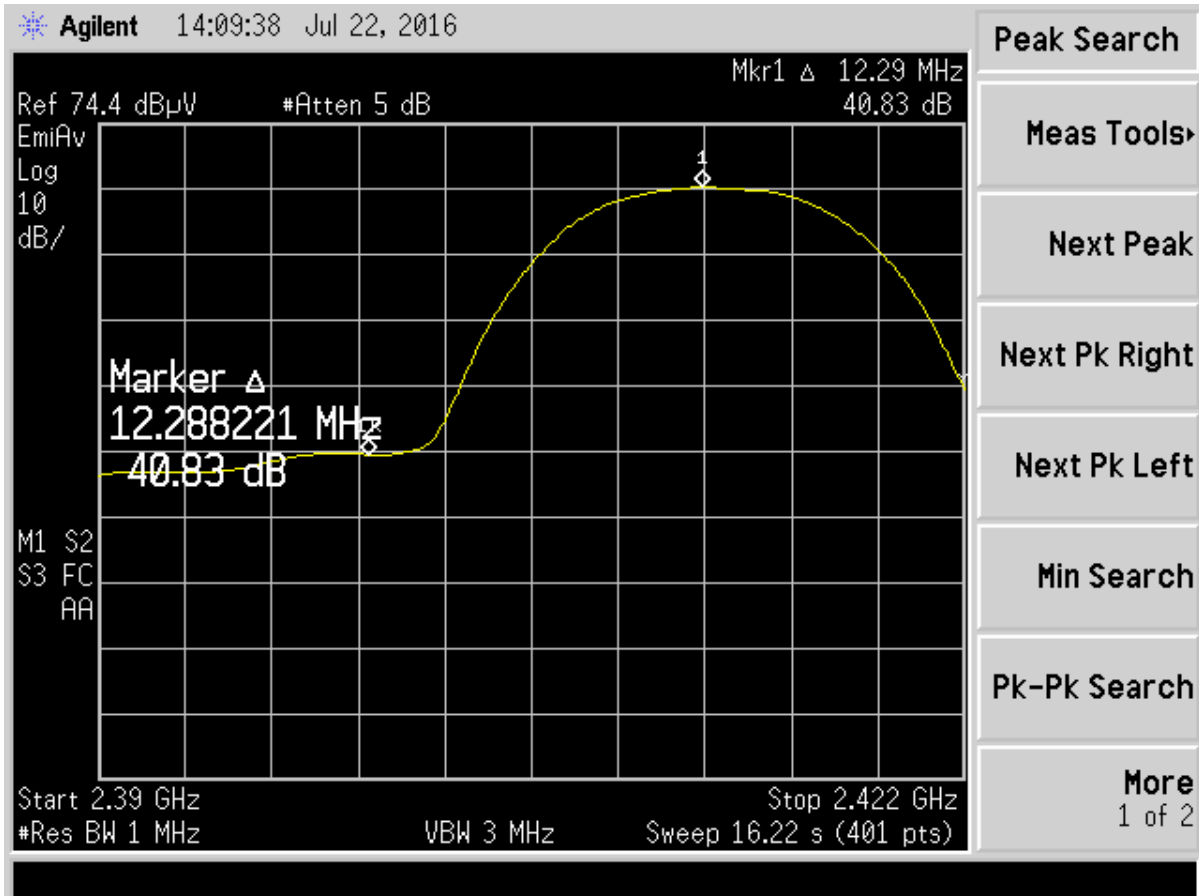
### 2.11.1 Band Edge Measurements



**Figure 56. Band Edge Compliance, 802.11b Low Channel Delta - Peak**

Calculation of worst case lower band edge measurement:

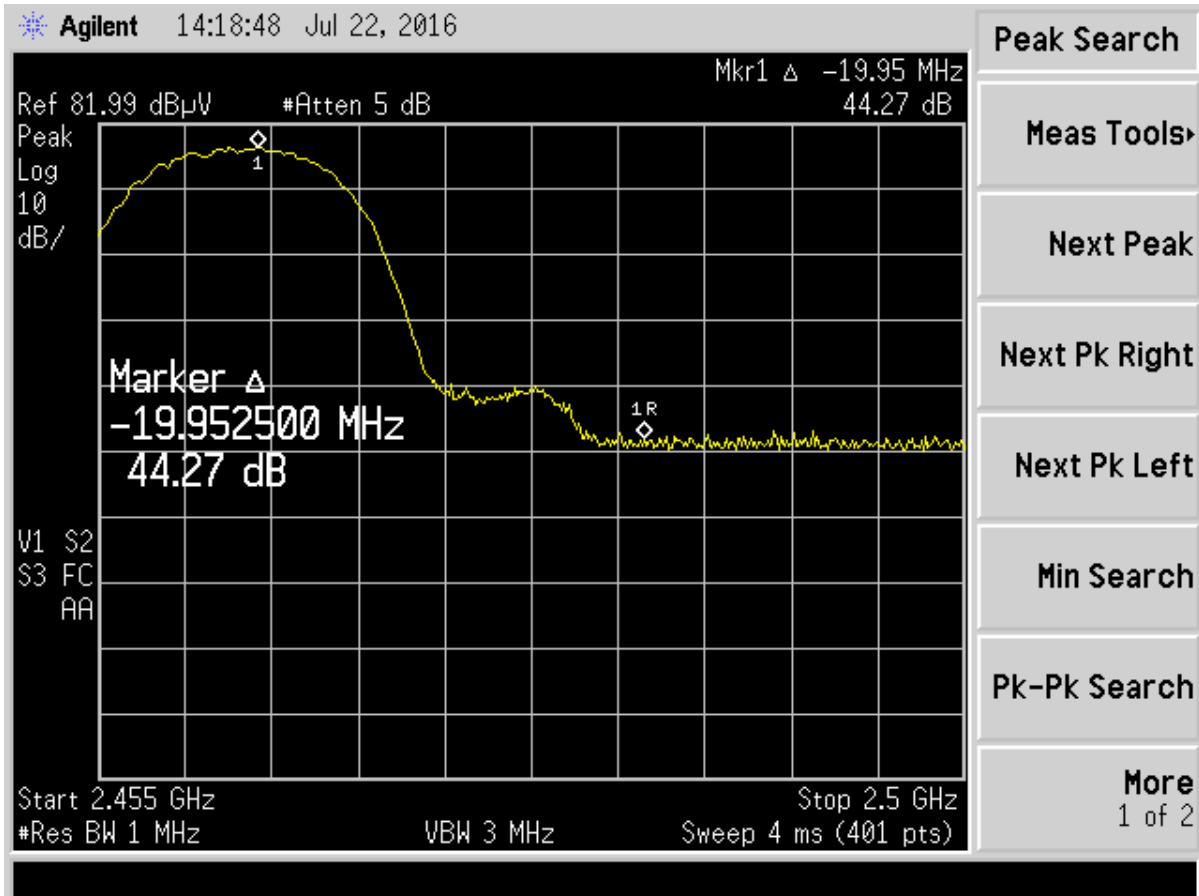
Band Edge Delta	38.86	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	18.86	dB



**Figure 57. Band Edge Compliance, 802.11b Low Channel Delta - Average**

Calculation of worst case lower band edge measurement:

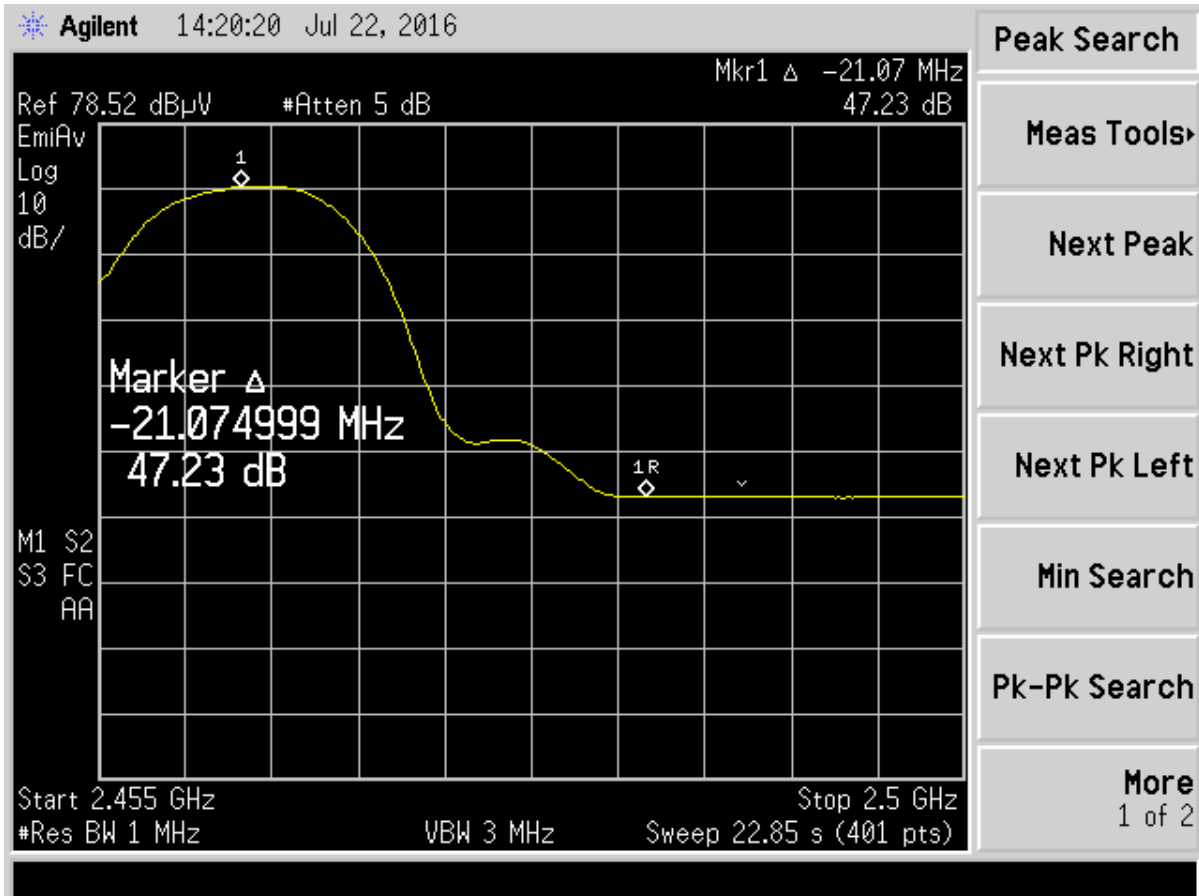
Band Edge Delta	40.83	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	20.83	dB



**Figure 58. Band Edge Compliance,802.11b High Channel Delta – Peak**

Calculation of worst case lower band edge measurement:

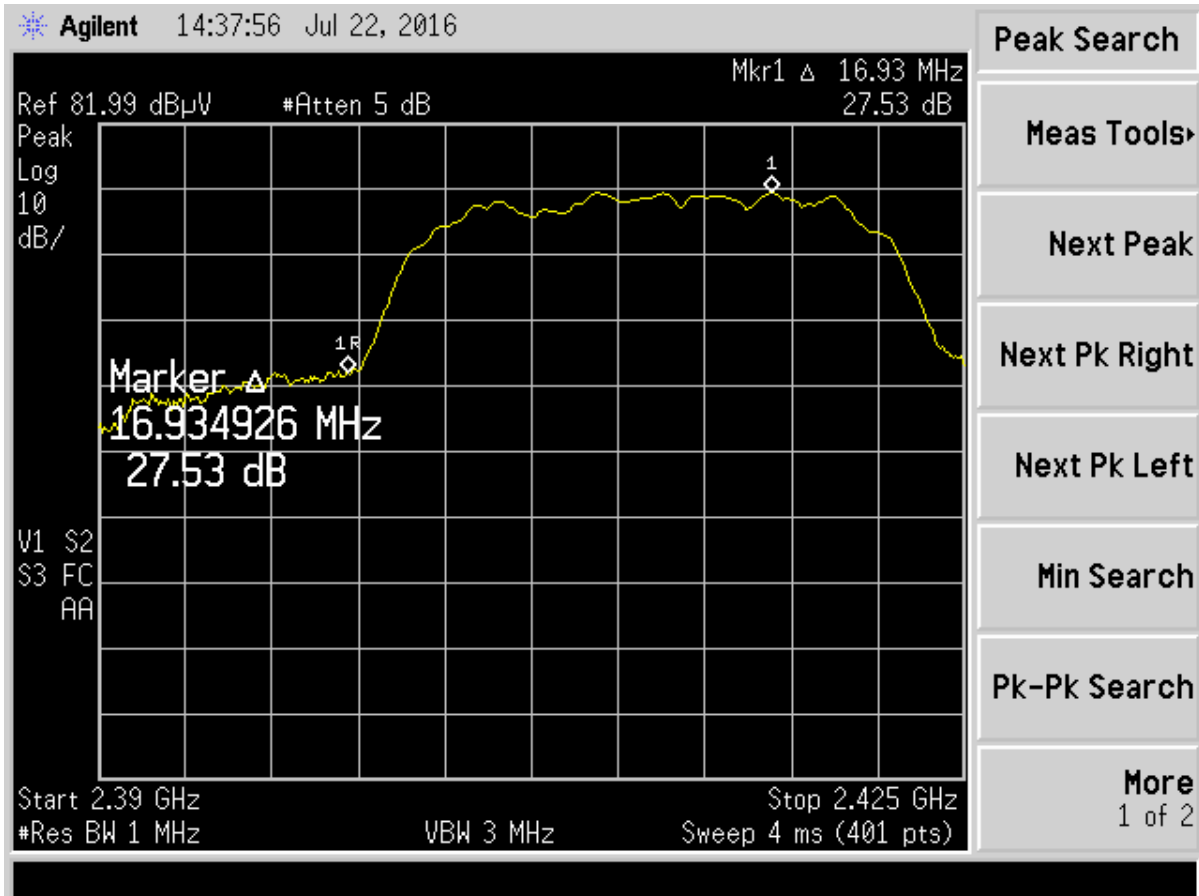
Band Edge Delta	44.27	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	24.27	dB



**Figure 59. Band Edge Compliance, 802.11b High Channel Delta – Average**

Calculation of worst case lower band edge measurement:

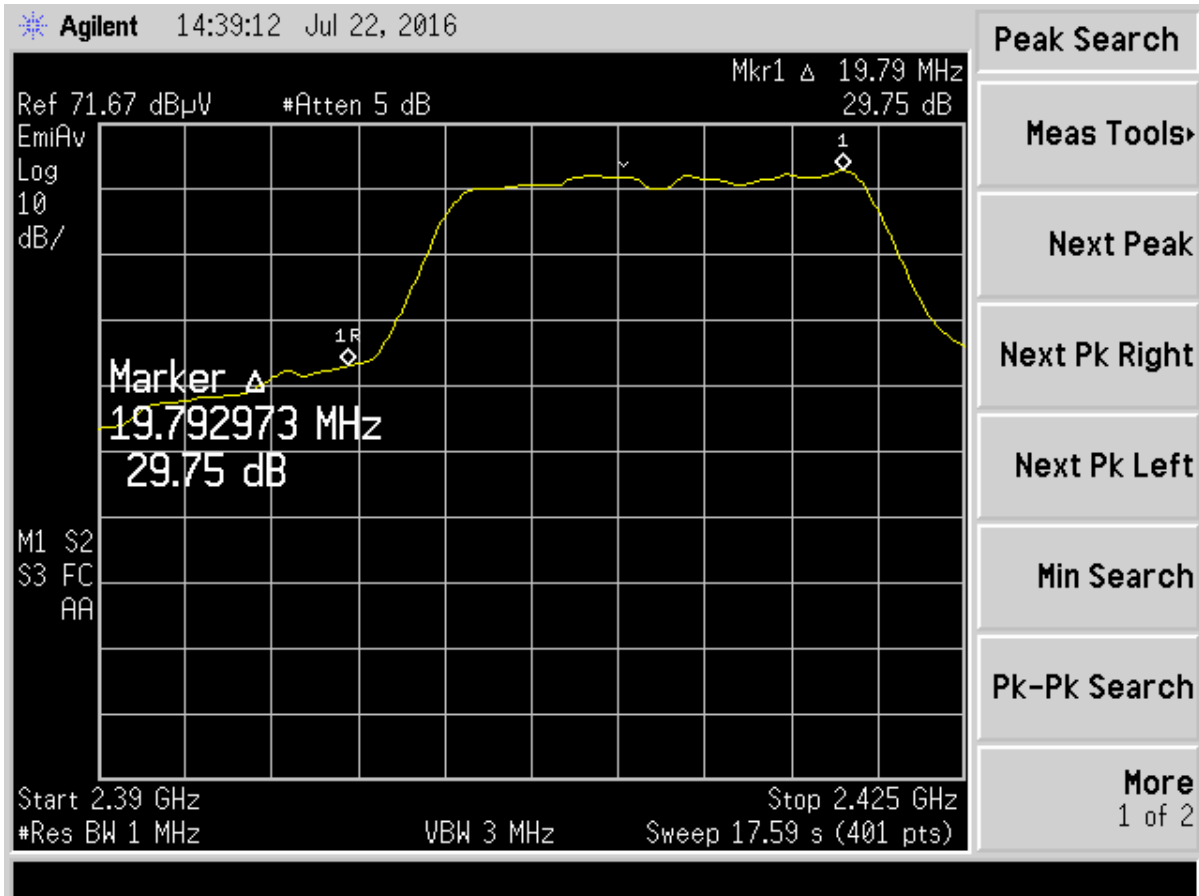
Band Edge Delta	47.23	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	27.23	dB



**Figure 60. Band Edge Compliance, 802.11g Low Channel Delta - Peak**

Calculation of worst case lower band edge measurement:

Band Edge Delta	27.53	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	7.53	dB

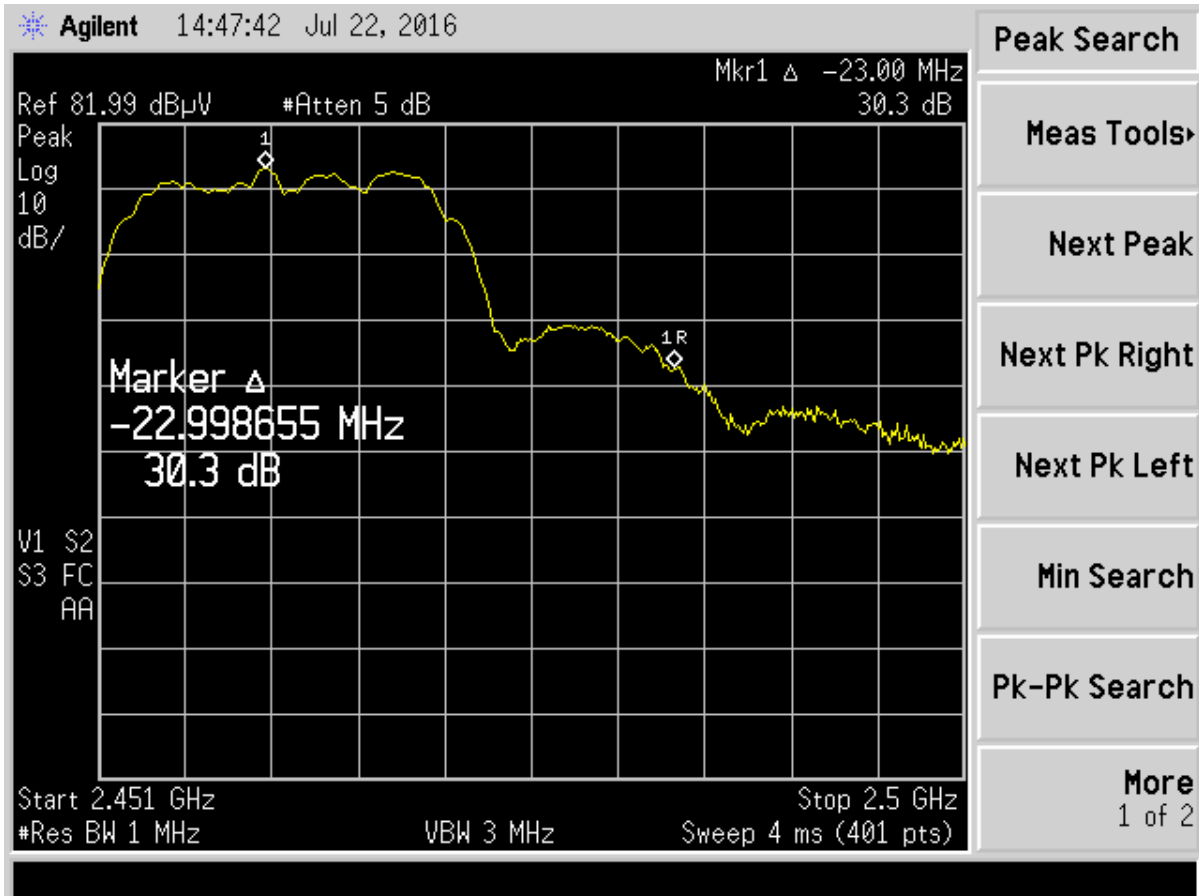


**Figure 61. Band Edge Compliance, 802.11g Low Channel Delta - Average**

Calculation of worst case lower band edge measurement:

Band Edge Delta	29.75	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	9.75	dB

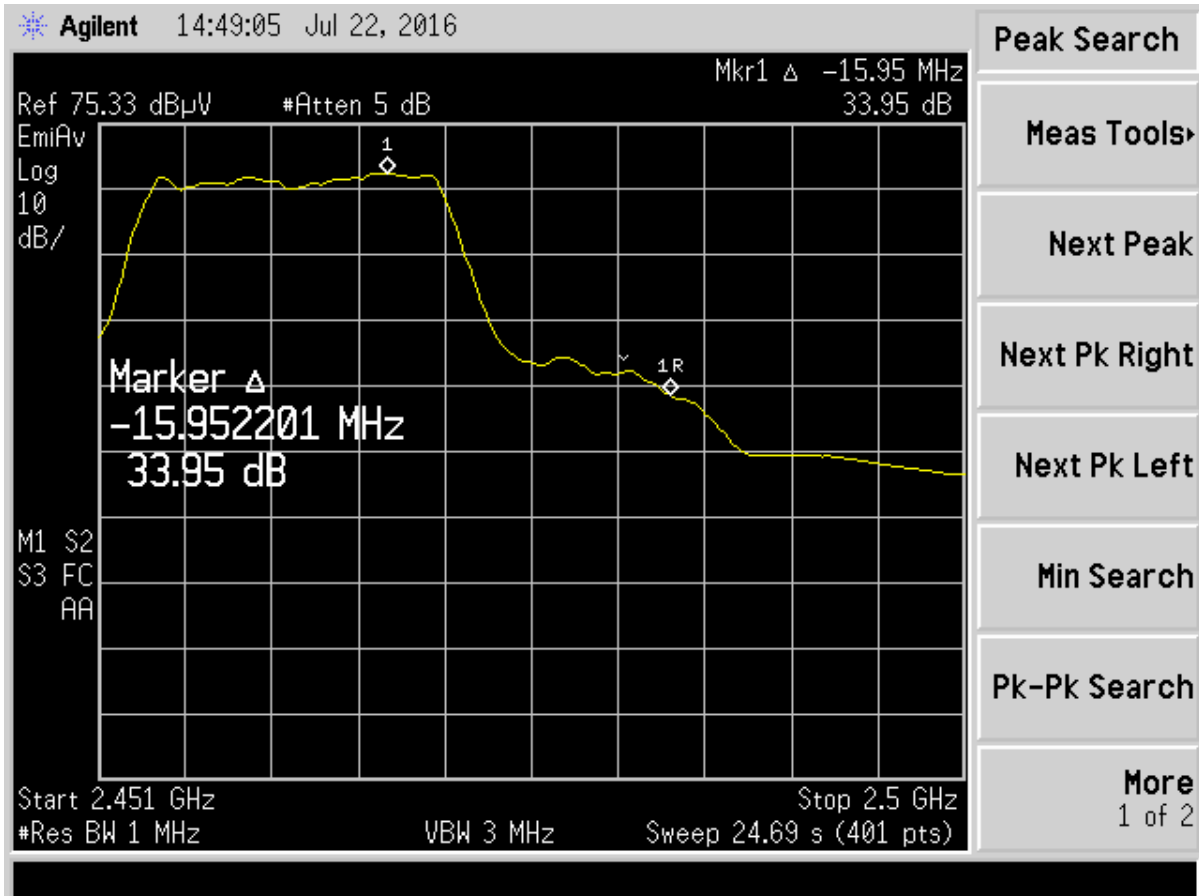




**Figure 62. Band Edge Compliance, 802.11g High Channel Delta – Peak**

Calculation of worst case lower band edge measurement:

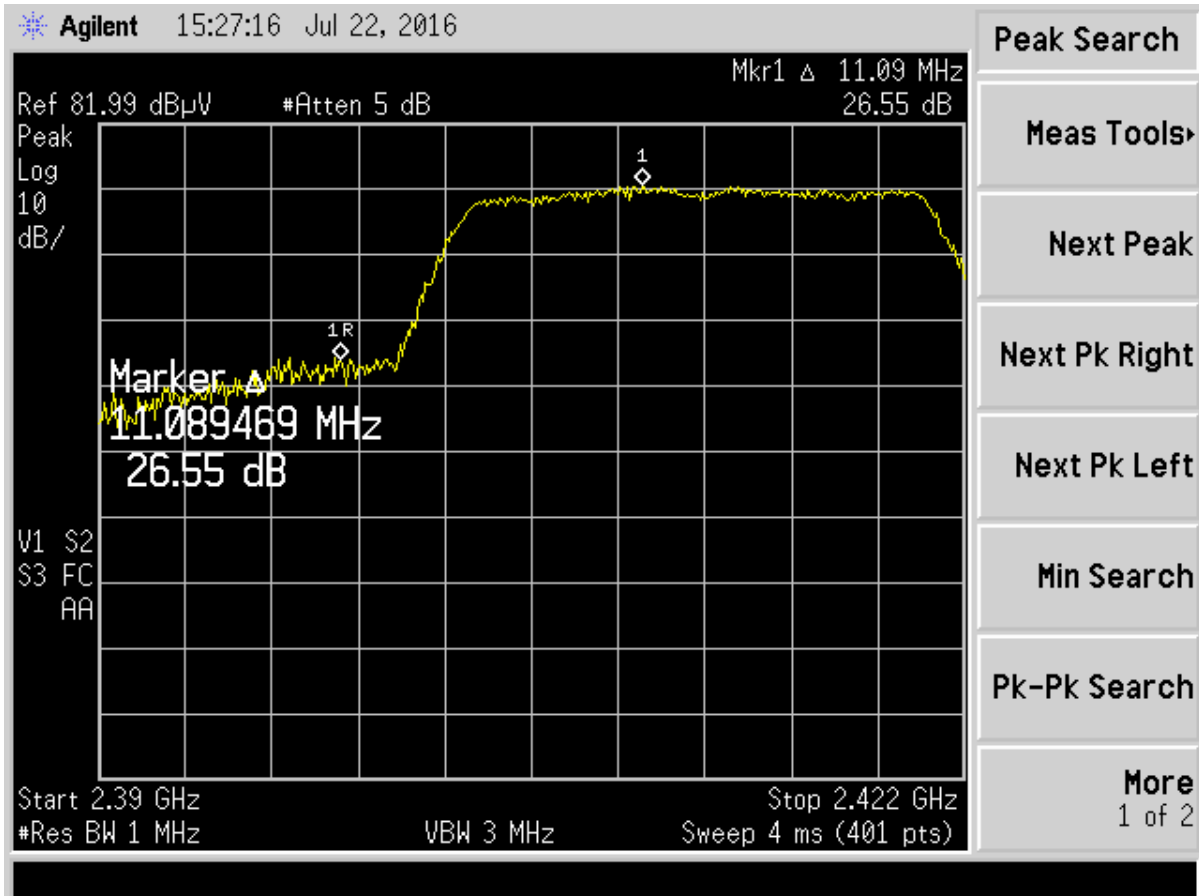
Band Edge Delta	30.30	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	10.30	dB



**Figure 63. Band Edge Compliance, 802.11g High Channel Delta – Average**

Calculation of worst case lower band edge measurement:

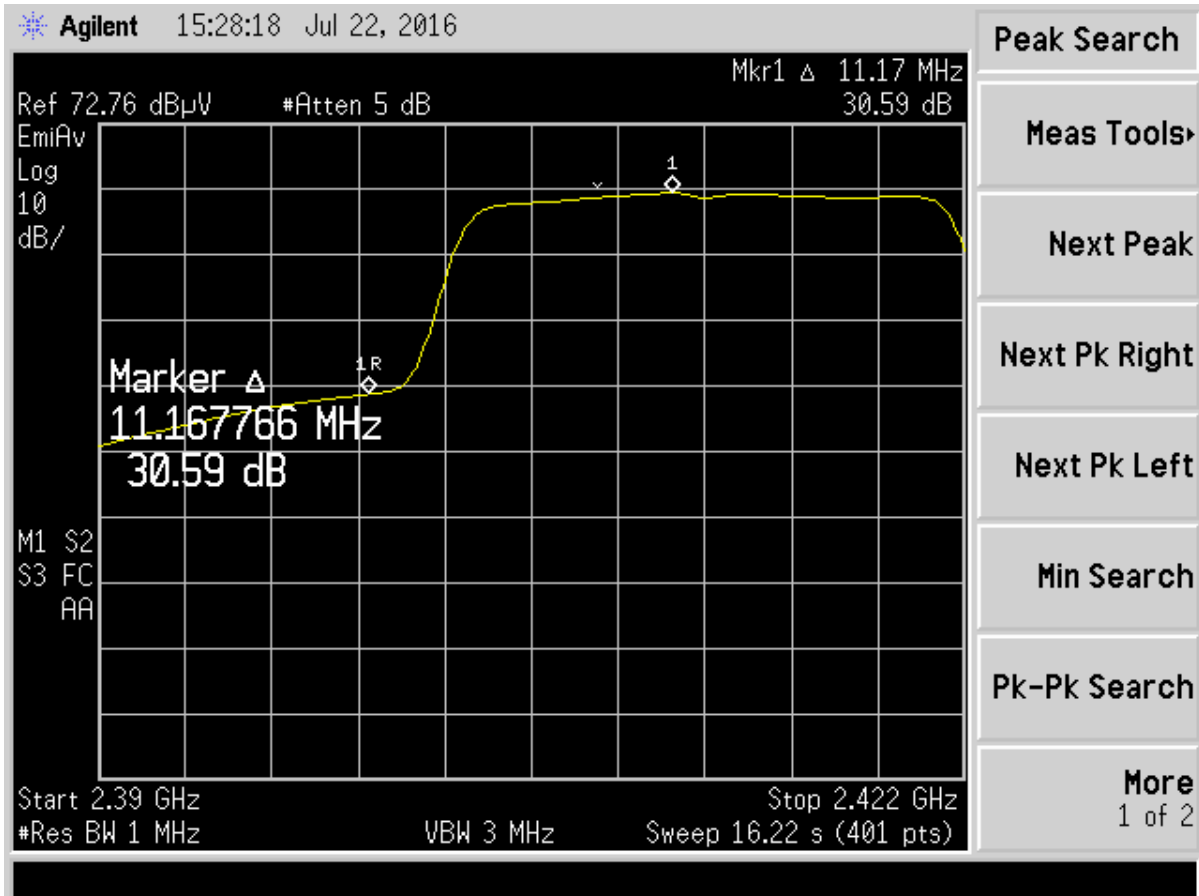
Band Edge Delta	33.95	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	13.95	dB



**Figure 64. Band Edge Compliance, 802.11n Low Channel Delta – Peak**

Calculation of worst case lower band edge measurement:

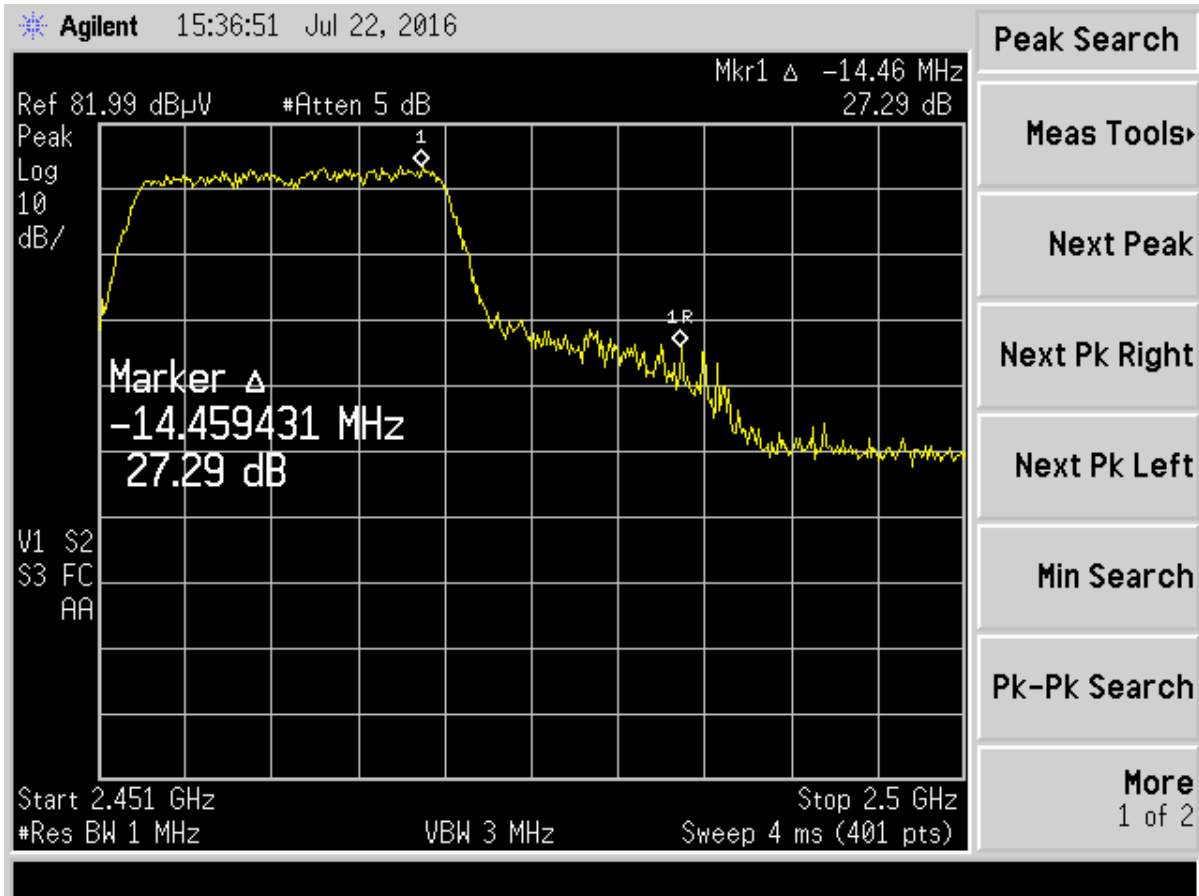
Band Edge Delta	26.55	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	6.55	dB



**Figure 65. Band Edge Compliance, 802.11n Low Channel Delta - Average**

Calculation of worst case lower band edge measurement:

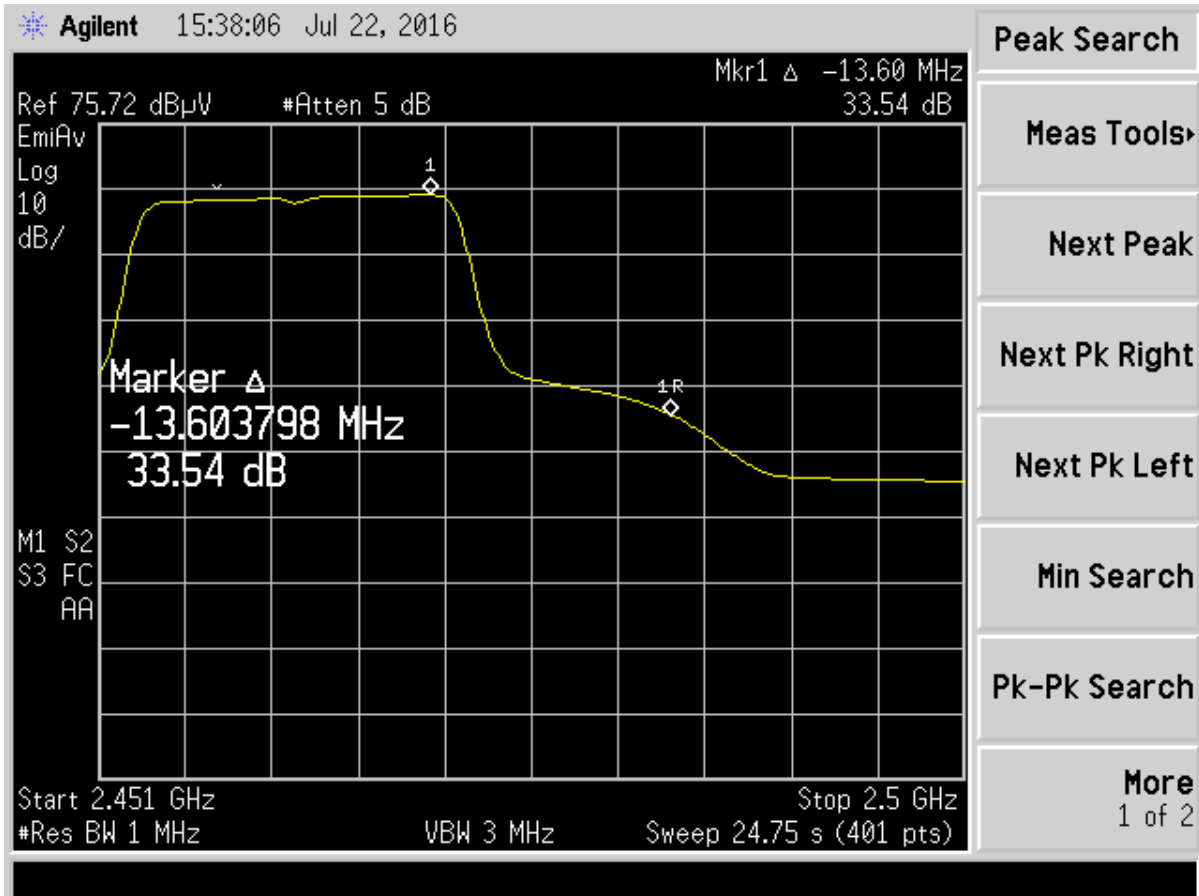
Band Edge Delta	30.59	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	10.59	dB



**Figure 66. Band Edge Compliance, 802.11n High Channel Delta – Peak**

Calculation of worst case lower band edge measurement:

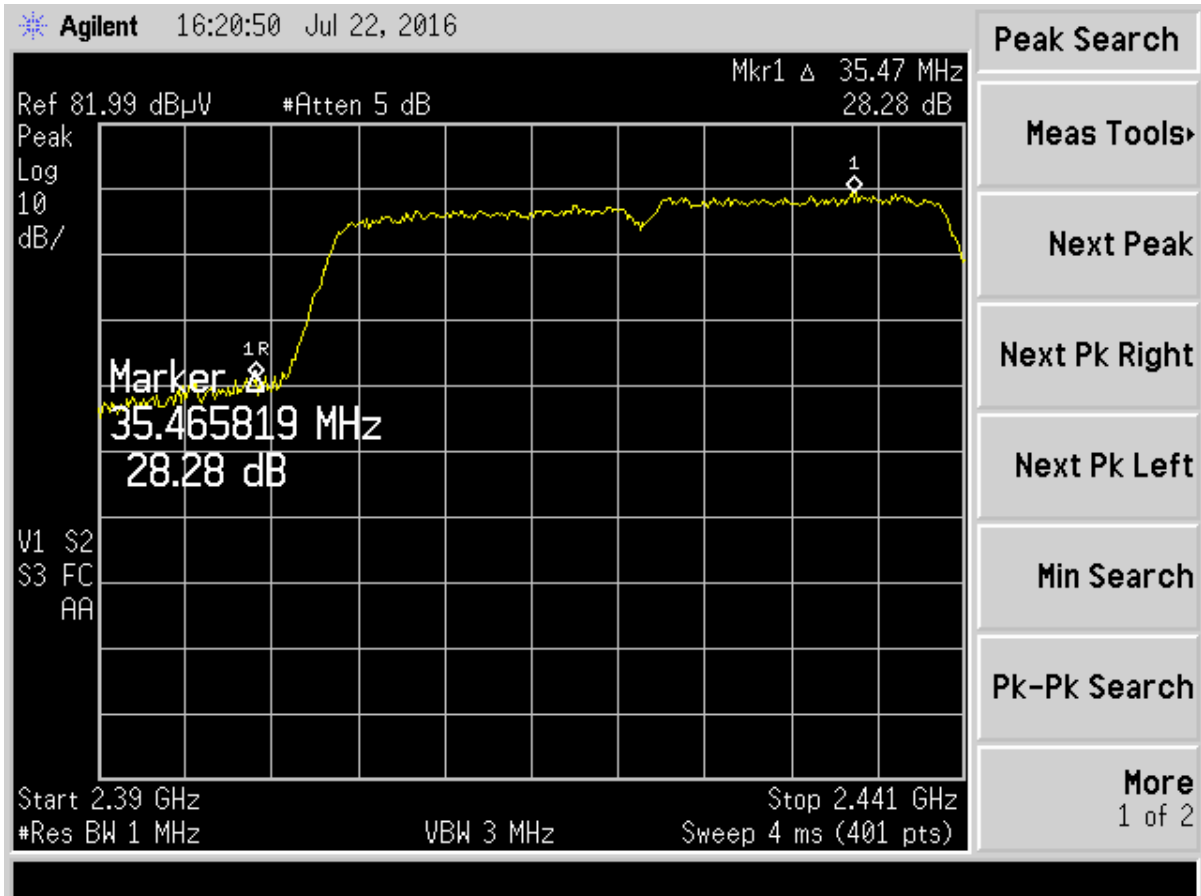
Band Edge Delta	27.29	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	7.29	dB



**Figure 67. Band Edge Compliance, 802.11n High Channel Delta – Average**

Calculation of worst case lower band edge measurement:

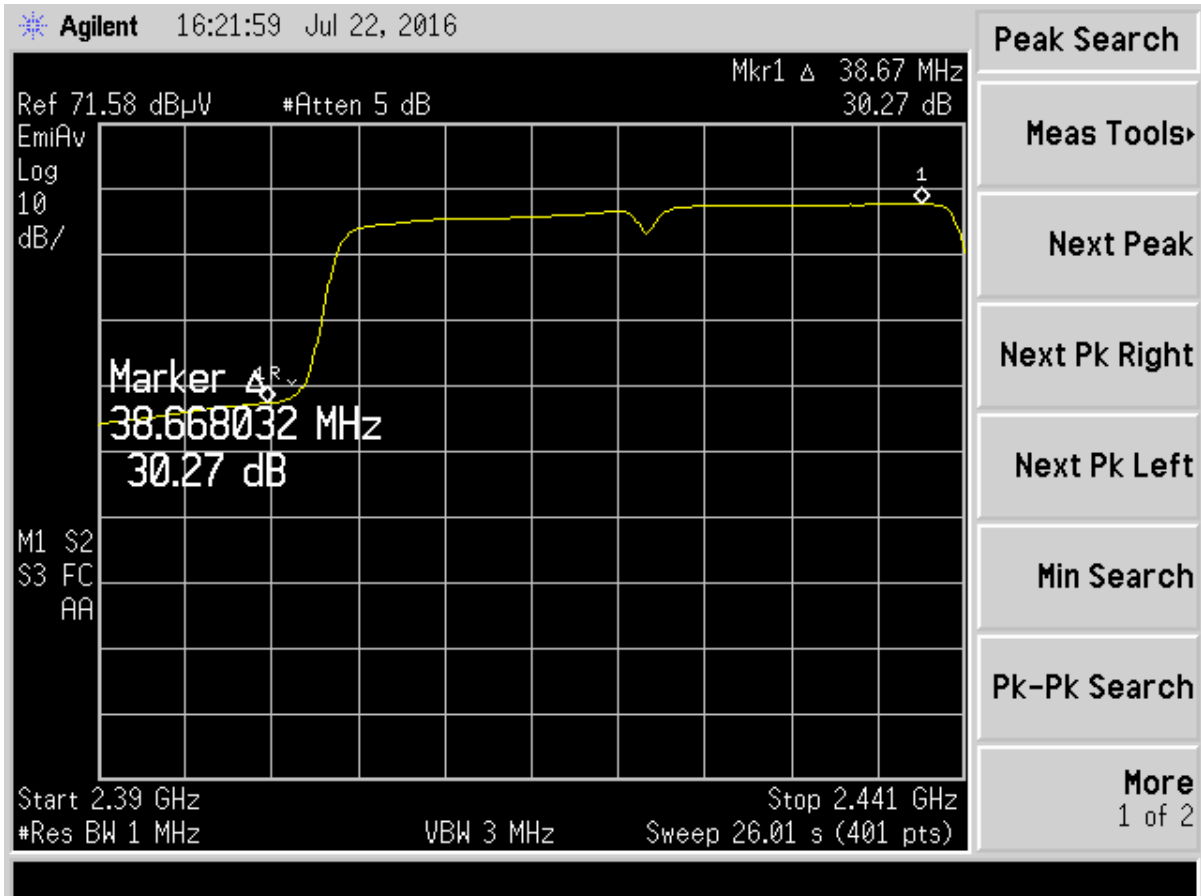
Band Edge Delta	33.54	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	13.54	dB



**Figure 68. Band Edge Compliance, 802.11 40 MHz BW Low Channel Delta – Peak**

Calculation of worst case lower band edge measurement:

Band Edge Delta	28.28	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	8.28	dB

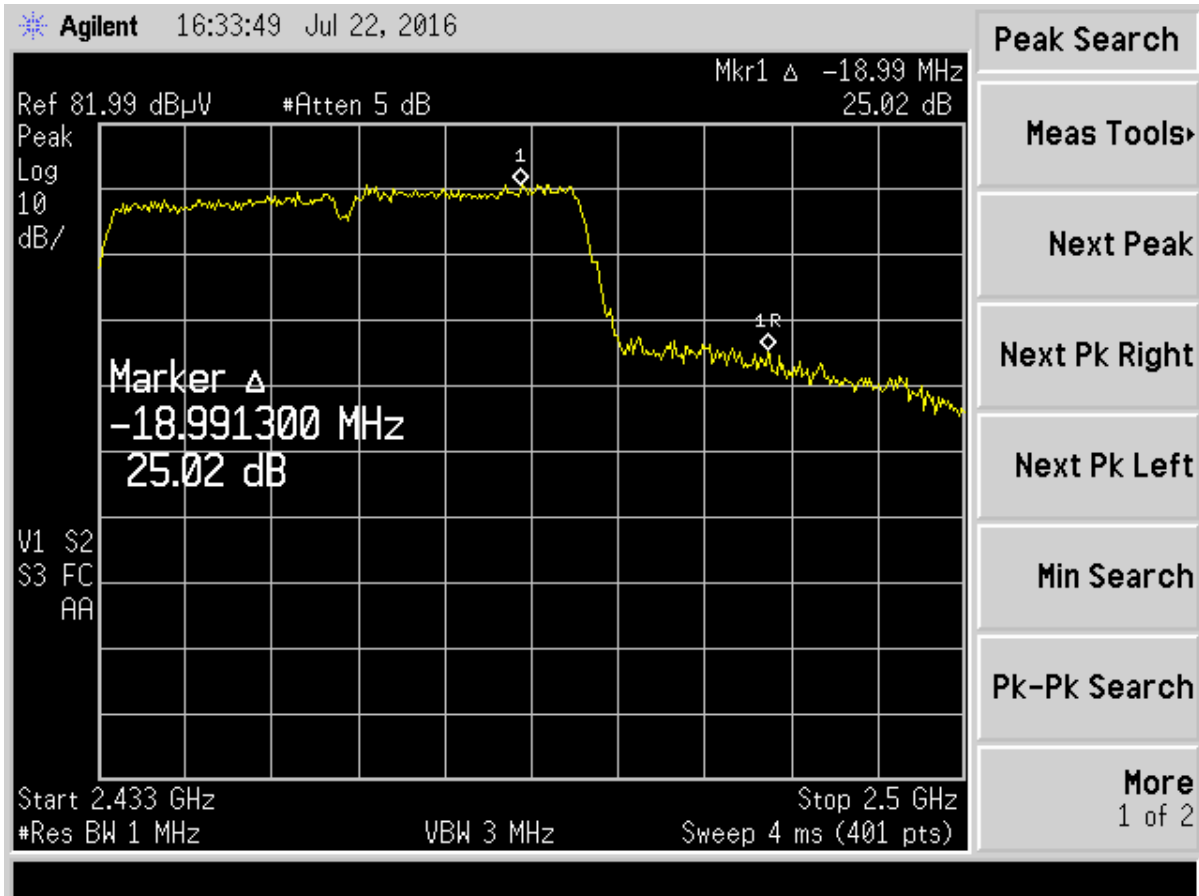


**Figure 69. Band Edge Compliance, 802.11 40 MHz BW Low Channel Delta – Average**

Calculation of worst case lower band edge measurement:

Band Edge Delta	30.27	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	10.27	dB

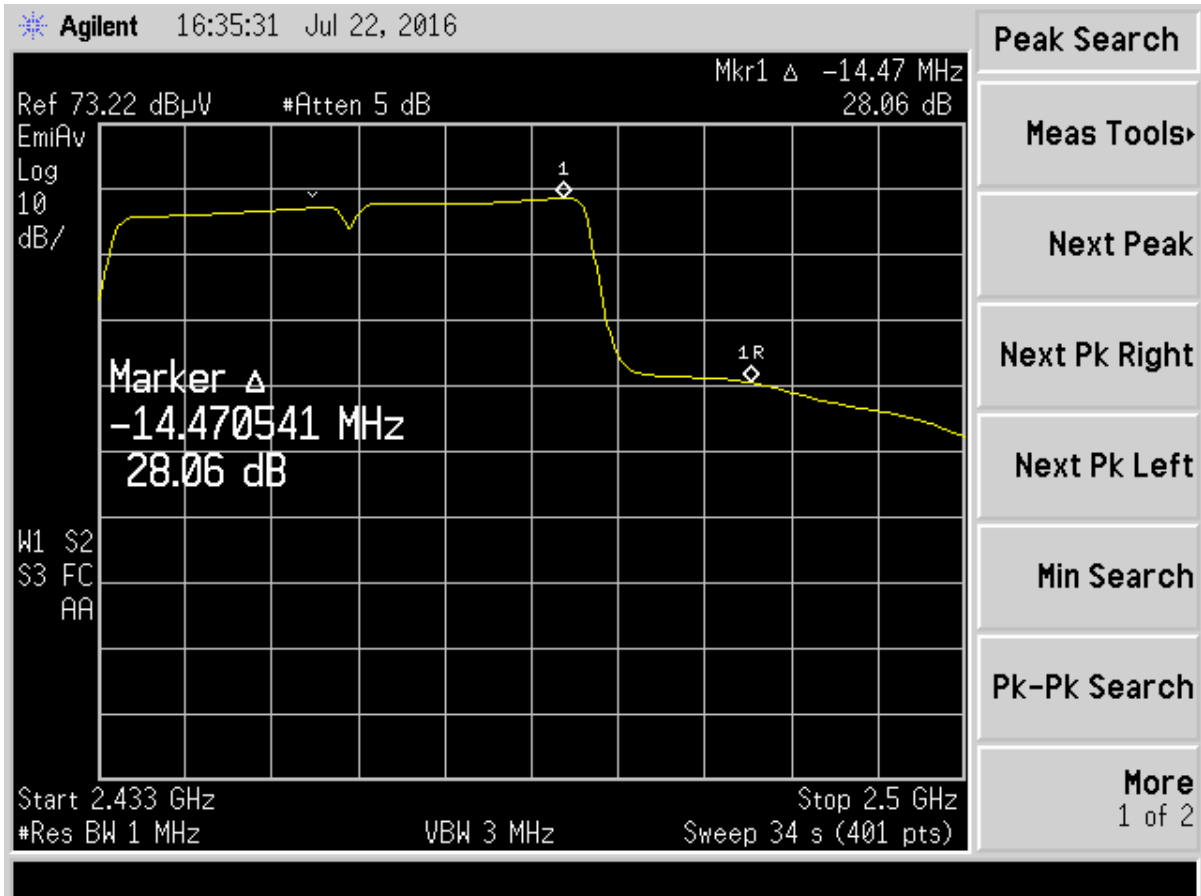




**Figure 70. Band Edge Compliance, 802.11 40 MHz BW High Channel Delta – Peak**

Calculation of worst case lower band edge measurement:

Band Edge Delta	25.02	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	5.02	dB



**Figure 71. Band Edge Compliance, 802.11 40 MHz BW High Channel Delta – Average**

Calculation of worst case lower band edge measurement:

Band Edge Delta	28.06	dB
Band Edge Limit (20 dB from Fundamental)	20.00	dB
Band Edge Margin	8.06	dB

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

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### **2.11.2 Restricted Band measurements (Radiated)**

Restricted band measurements were performed using the radiated emissions method. The EUT was tested once with Antenna 1 and then again with Antenna 2. The plots and calculations using Antenna 1, the highest gain antenna, follow.

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

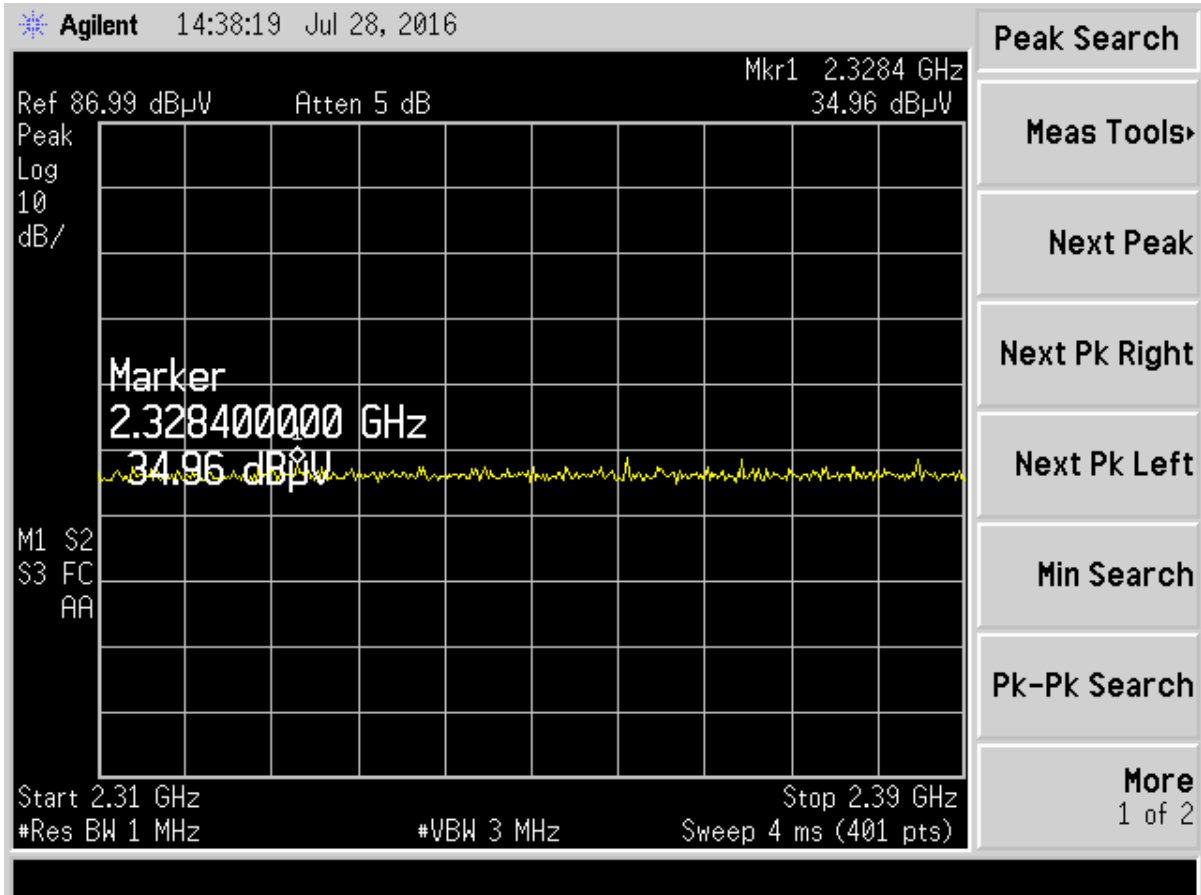


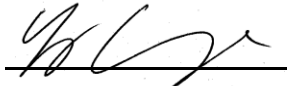
Figure 72. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11b - Peak

Table 33. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11b – Peak

2310 MHz to 2390 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2328.40	34.96	31.68	66.64	74.0	3.0m./HORZ	7.4	PK

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

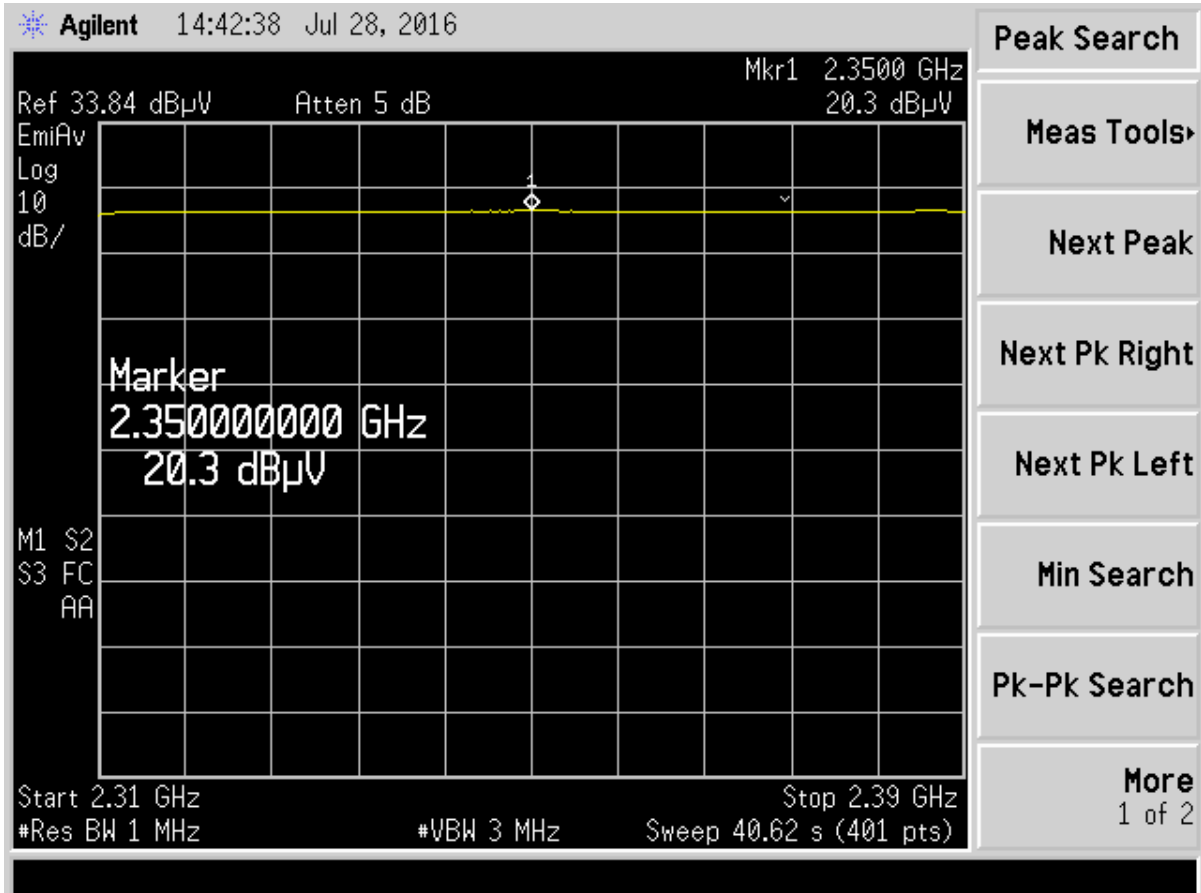


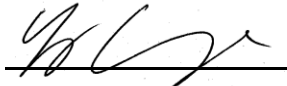
Figure 73. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11b - Average

Table 34. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11b – Average

2310 MHz to 2390 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	AVG Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2350.00	20.30	31.68	51.98	54.0	3.0m./HORZ	2.0	AVG

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

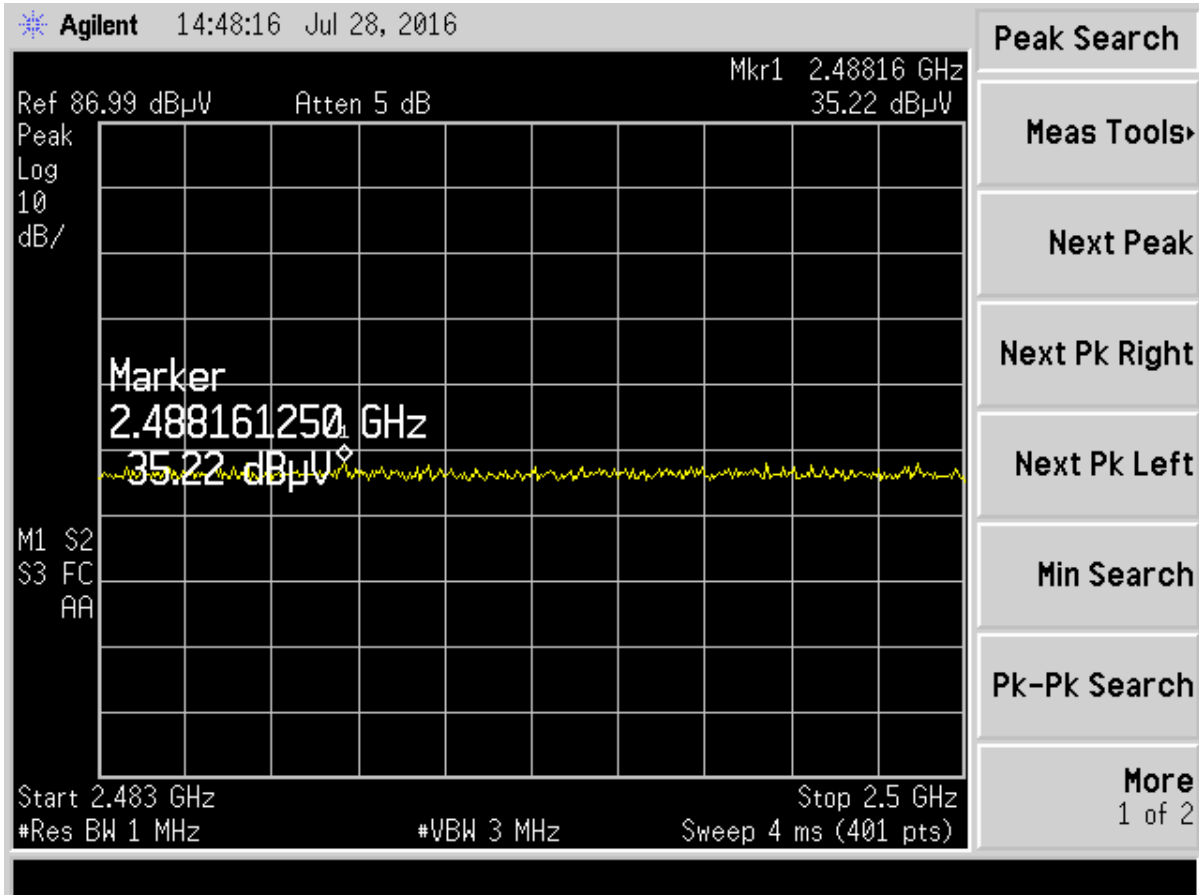


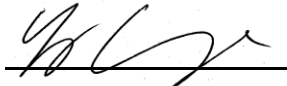
Figure 74. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11b - Peak

Table 35. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11b – Peak

2483.5 MHz to 2500 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2488.16	35.22	31.53	66.75	74.0	3.0m./HORZ	7.3	PK

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

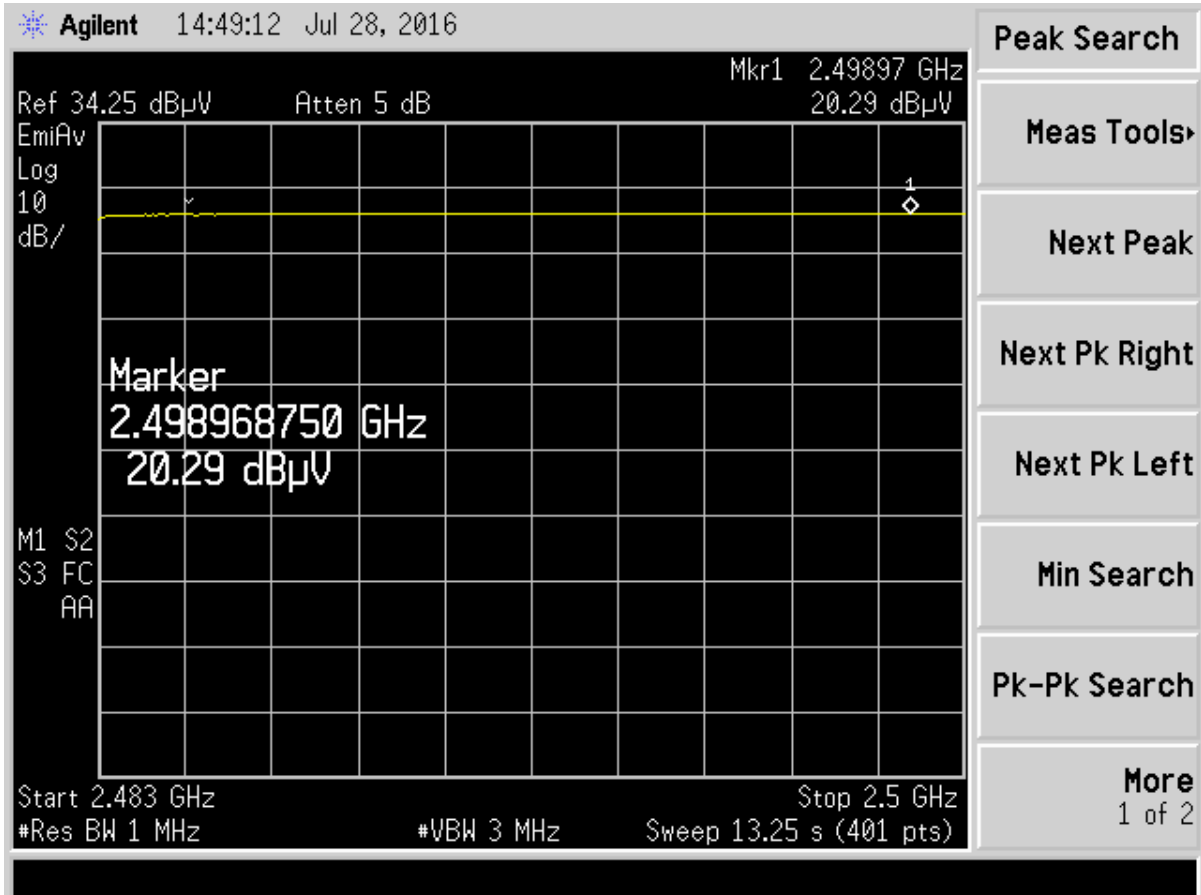
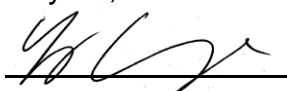


Figure 75. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11b - Average

Table 36. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11b – Average

2483.5 MHz to 2500 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2498.96	20.29	31.53	51.82	54.0	3.0m./HORZ	2.2	AVG

Test Date: July 28, 2016

Tested By  
 Signature: 

Name: George Yang

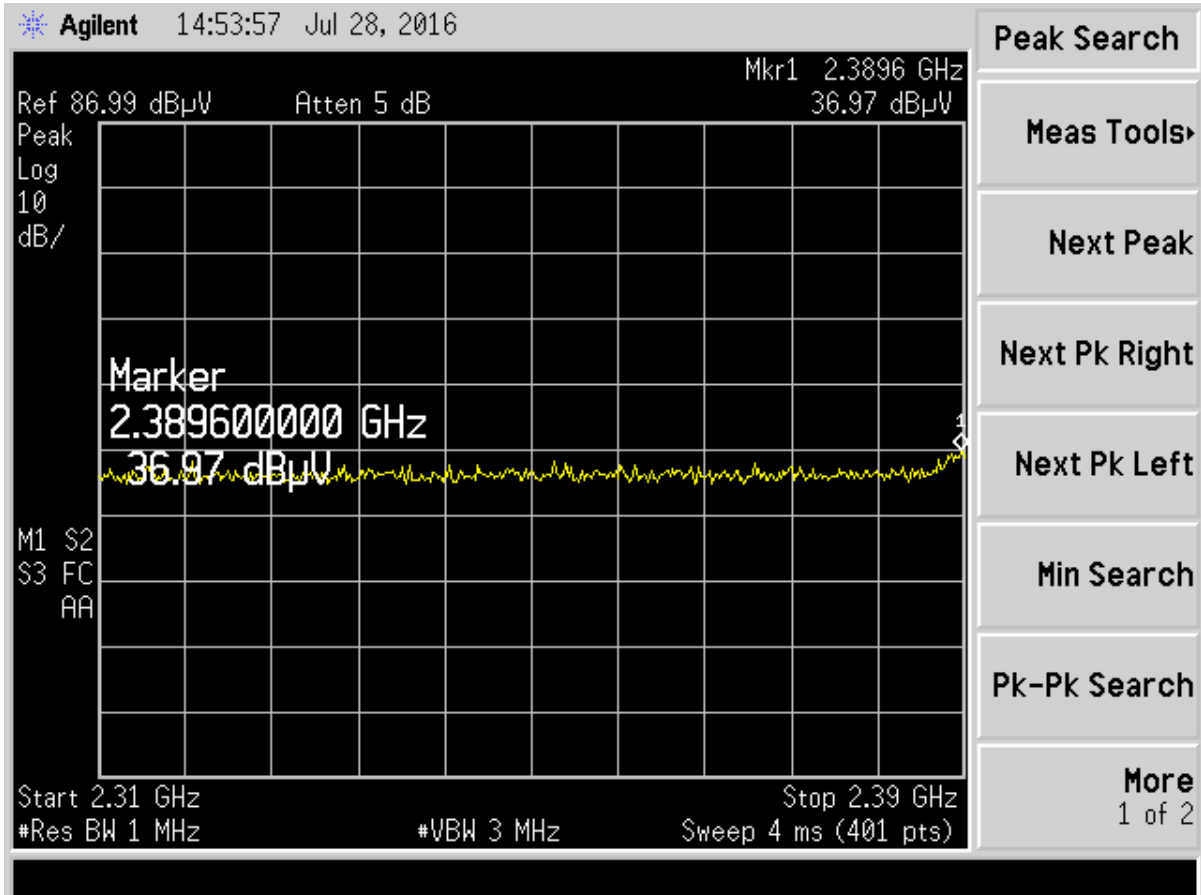


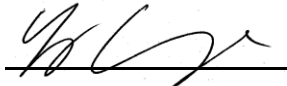
Figure 76. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11g - Peak

Table 37. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11g – Peak

2310 MHz to 2390 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2389.60	36.97	31.68	68.65	74.0	3.0m./HORZ	5.3	PK

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang



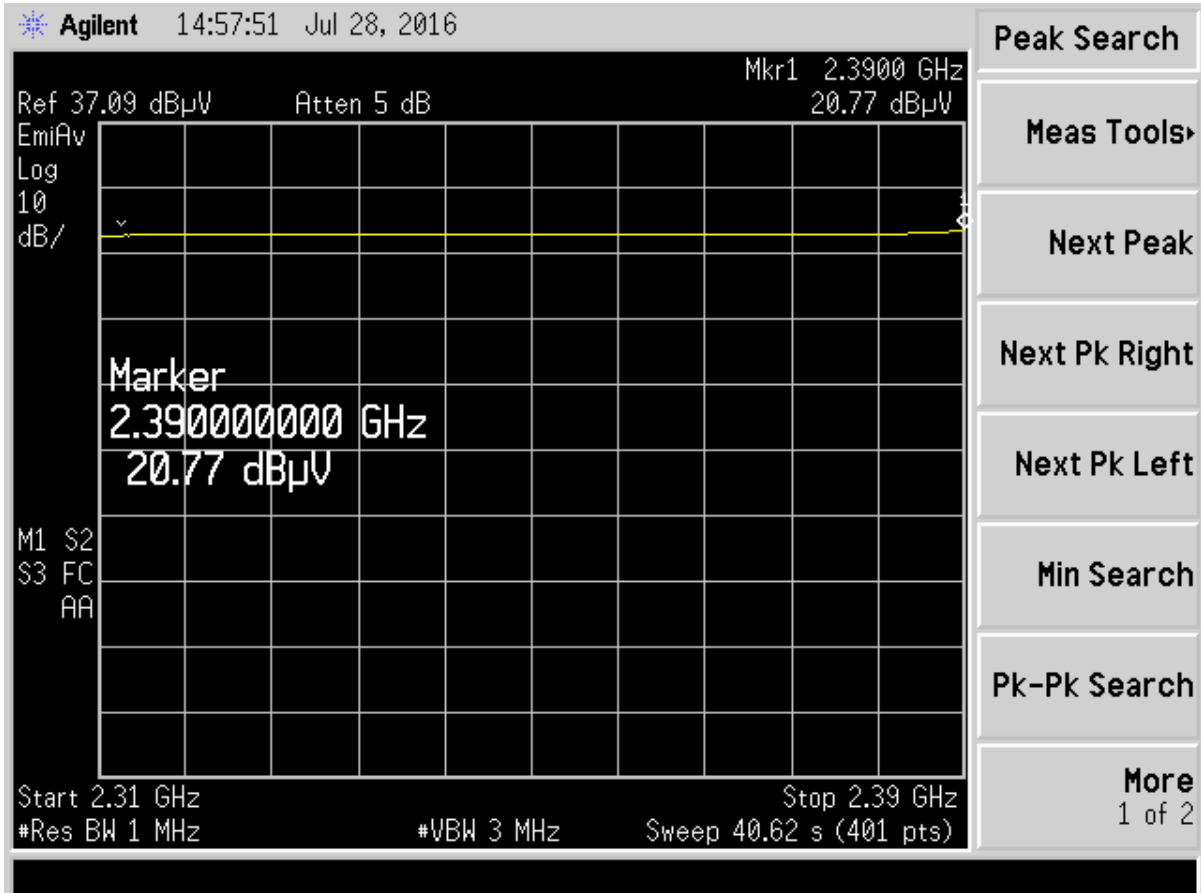


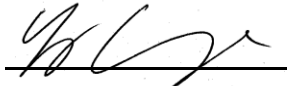
Figure 77. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11g - Average

Table 38. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11g – Average

2310 MHz to 2390 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	AVG Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2390.00	20.77	31.68	52.45	54.0	3.0m./HORZ	1.5	AVG

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

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 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

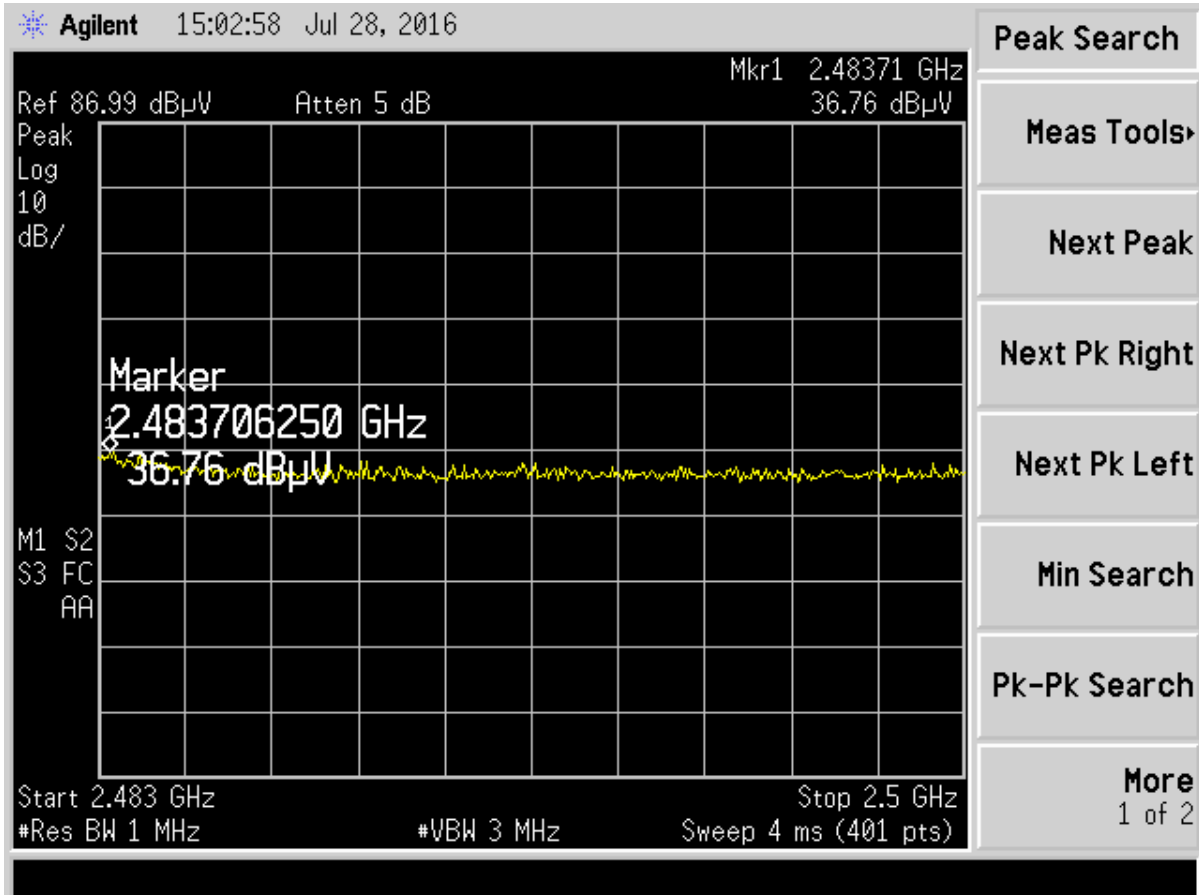


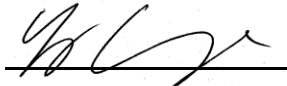
Figure 78. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11g - Peak

Table 39. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11g – Peak

2483.5 MHz to 2500 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2483.70	36.76	31.53	68.29	74.0	3.0m./HORZ	5.7	PK

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

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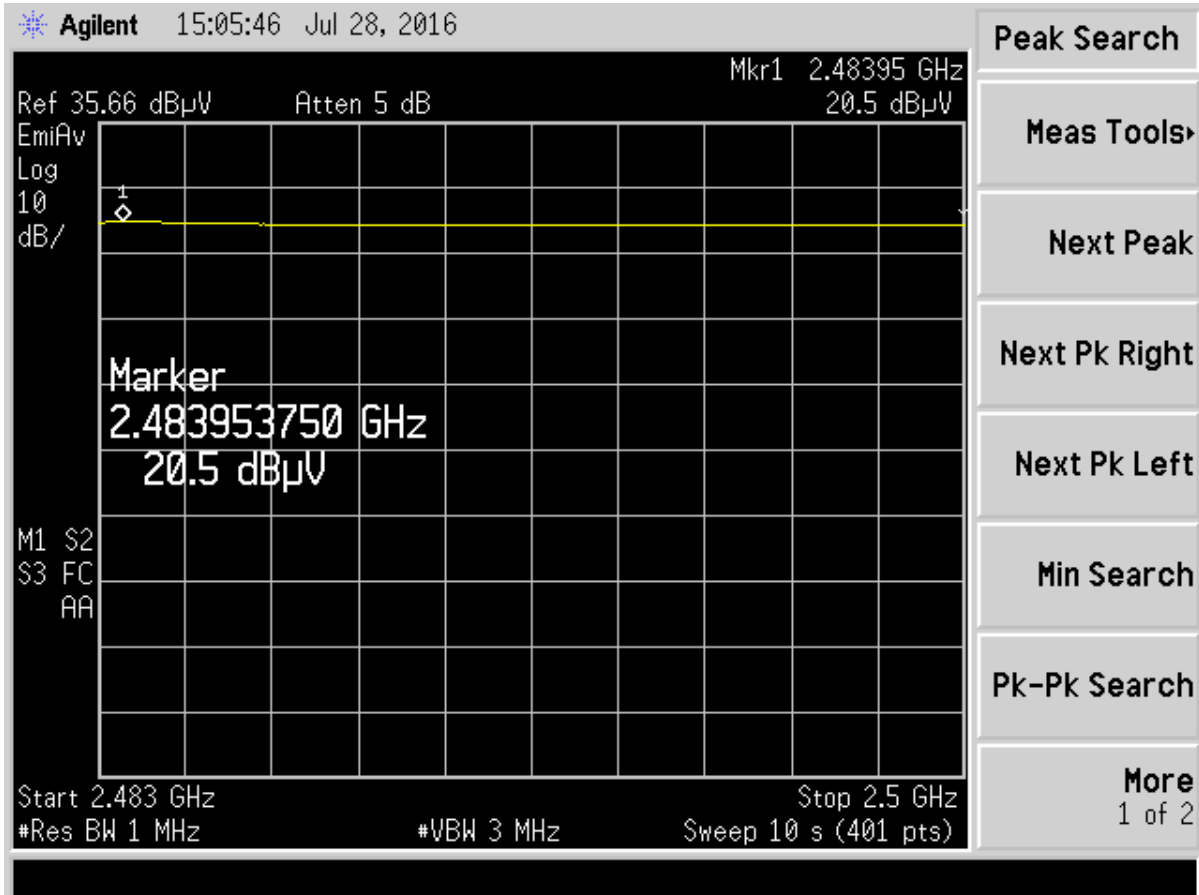
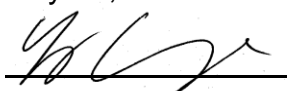


Figure 79. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11g - Average

Table 40. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11g – Average

2483.5 MHz to 2500 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2483.95	20.50	31.53	52.03	54.0	3.0m./HORZ	2.0	AVG

Test Date: July 28, 2016

Tested By  
 Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

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 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

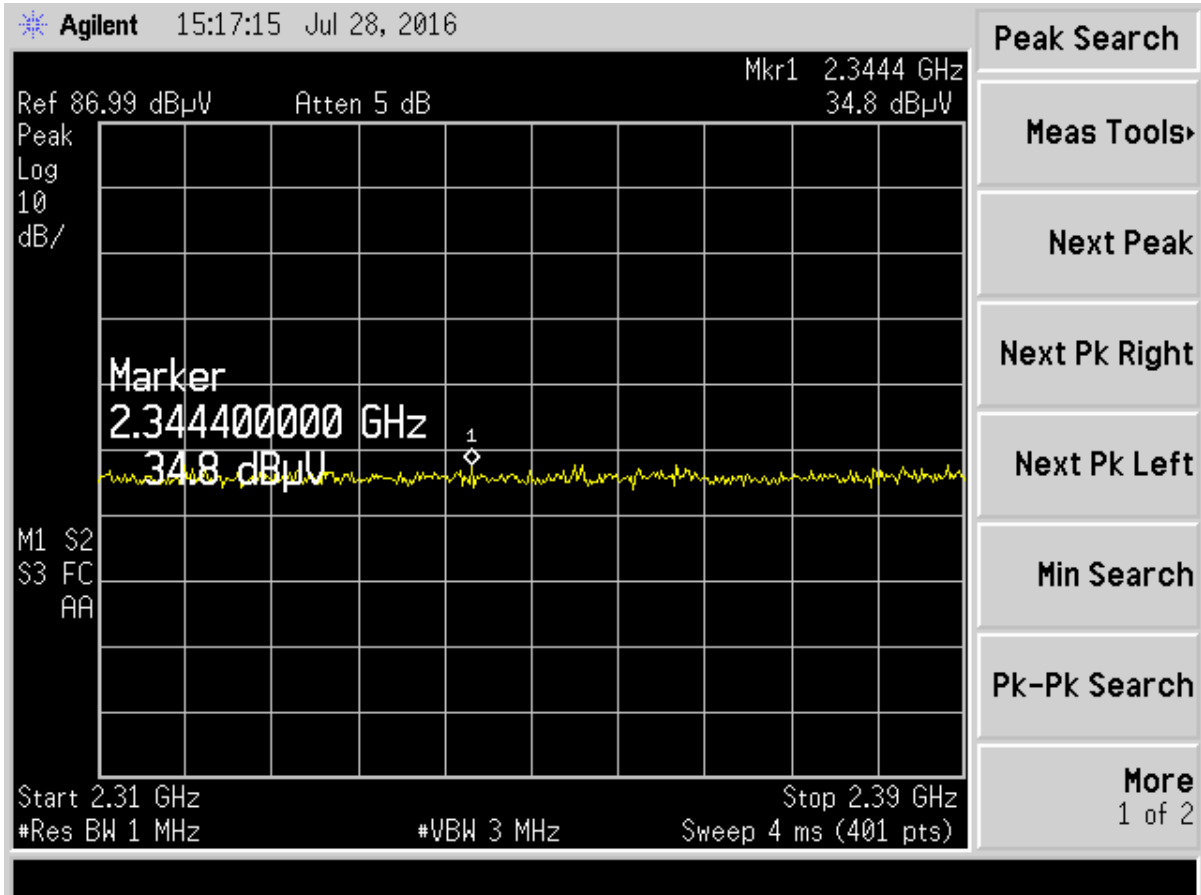


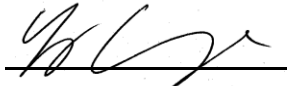
Figure 80. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n - Peak

Table 41. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n – Peak

2310 MHz to 2390 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2344.40	34.80	31.68	66.48	74.0	3.0m./HORZ	7.5	PK

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

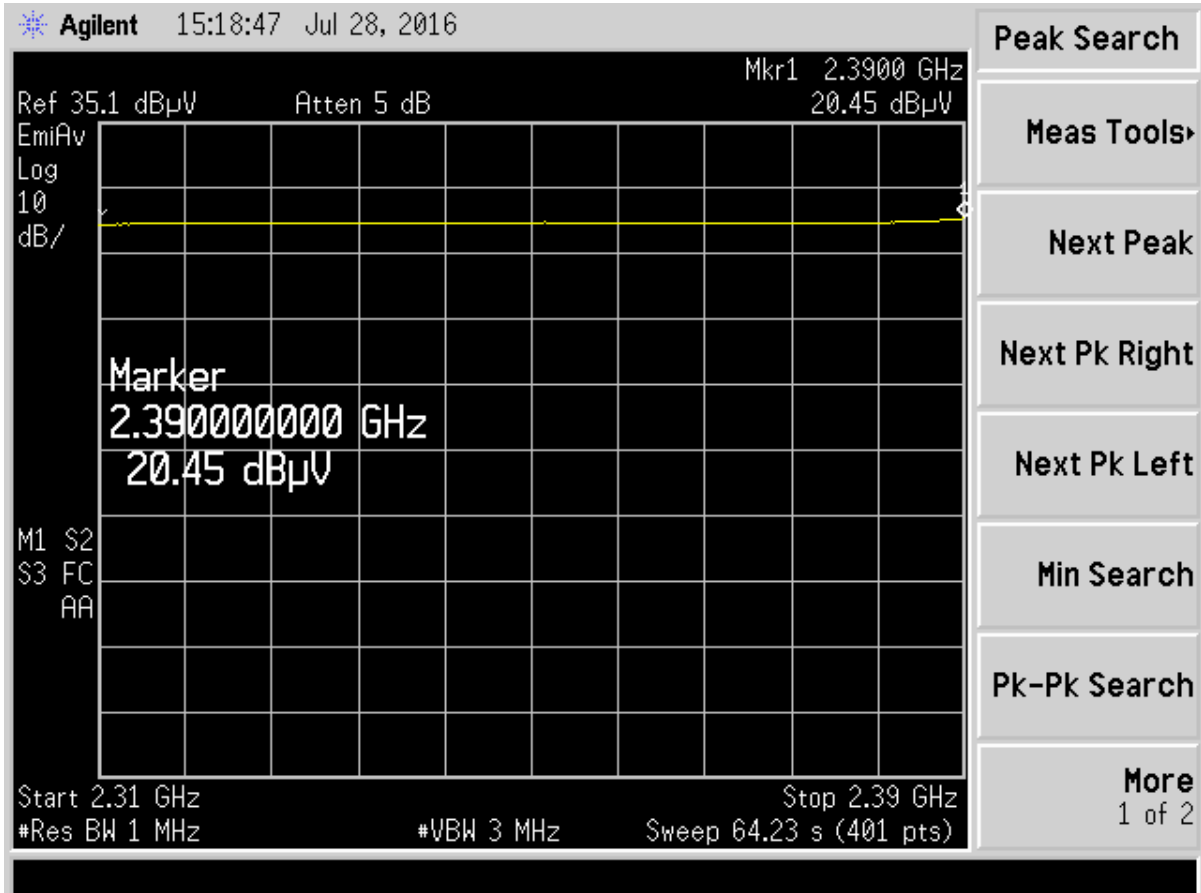


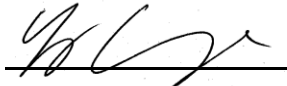
Figure 81. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n - Average

Table 42. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n – Average

2310 MHz to 2390 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	AVG Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2390.00	20.45	31.68	52.13	54.0	3.0m./HORZ	1.9	AVG

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

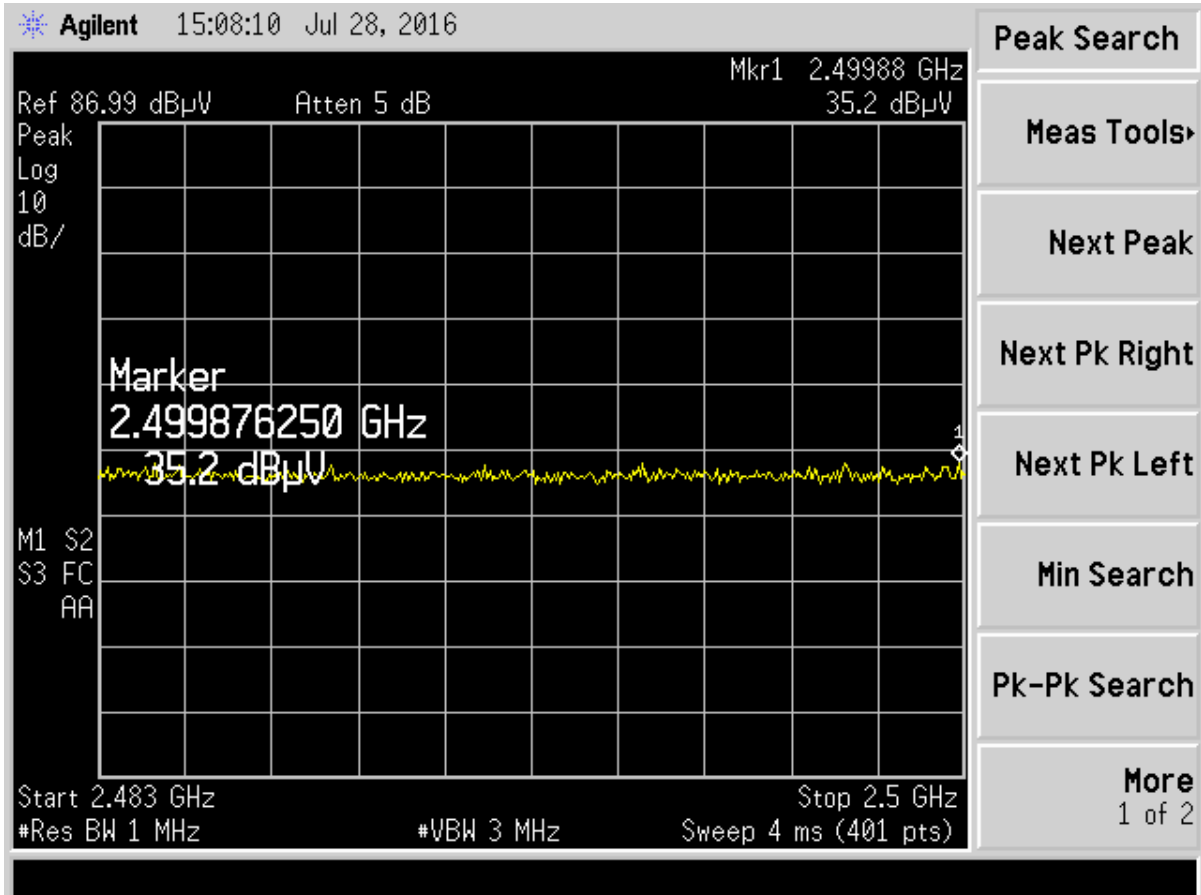


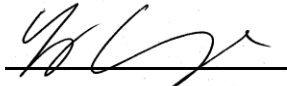
Figure 82. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11n- Peak

Table 43. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11n – Peak

2483.5 MHz to 2500 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2499.87	35.2	31.53	66.73	74.0	3.0m./HORZ	7.3	PK

Test Date: July 28, 2016

Tested By

Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

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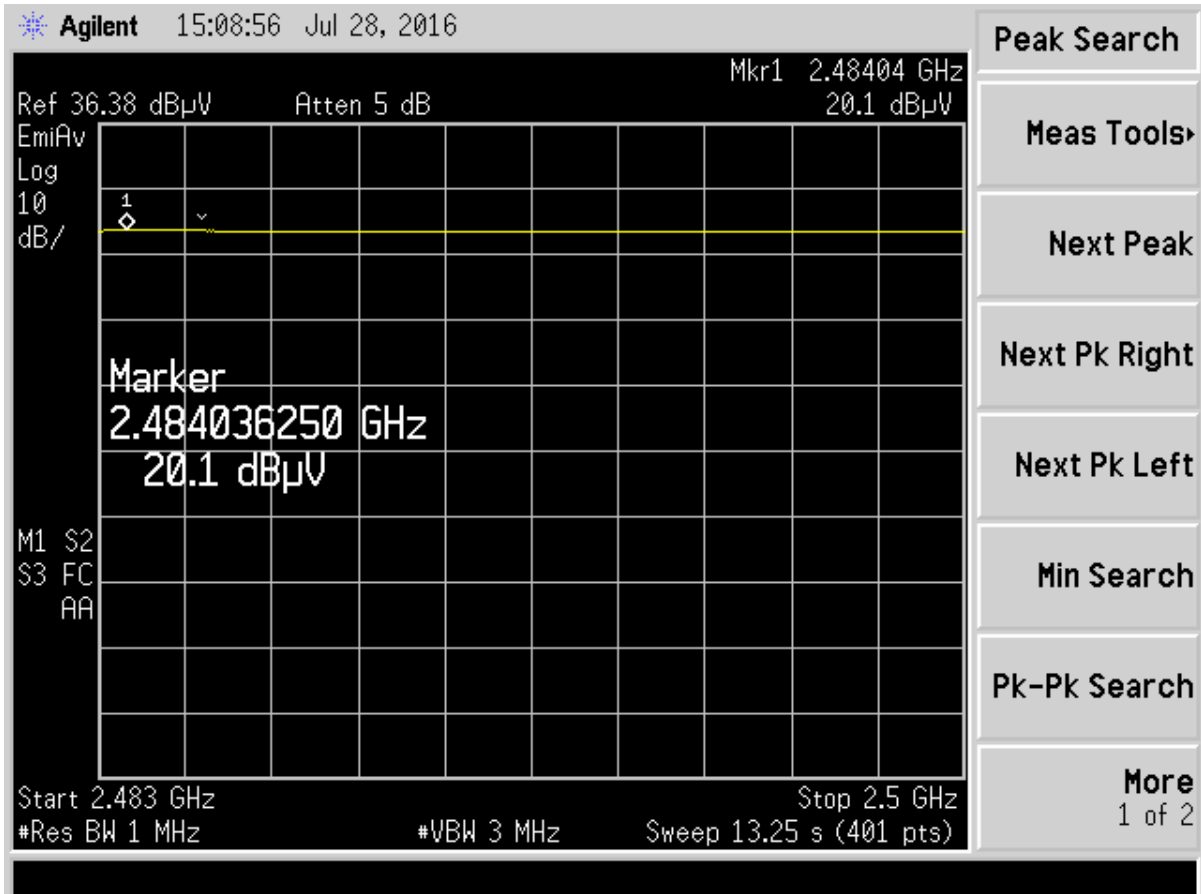
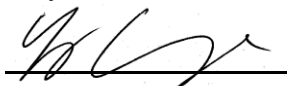


Figure 83. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11 n - Average

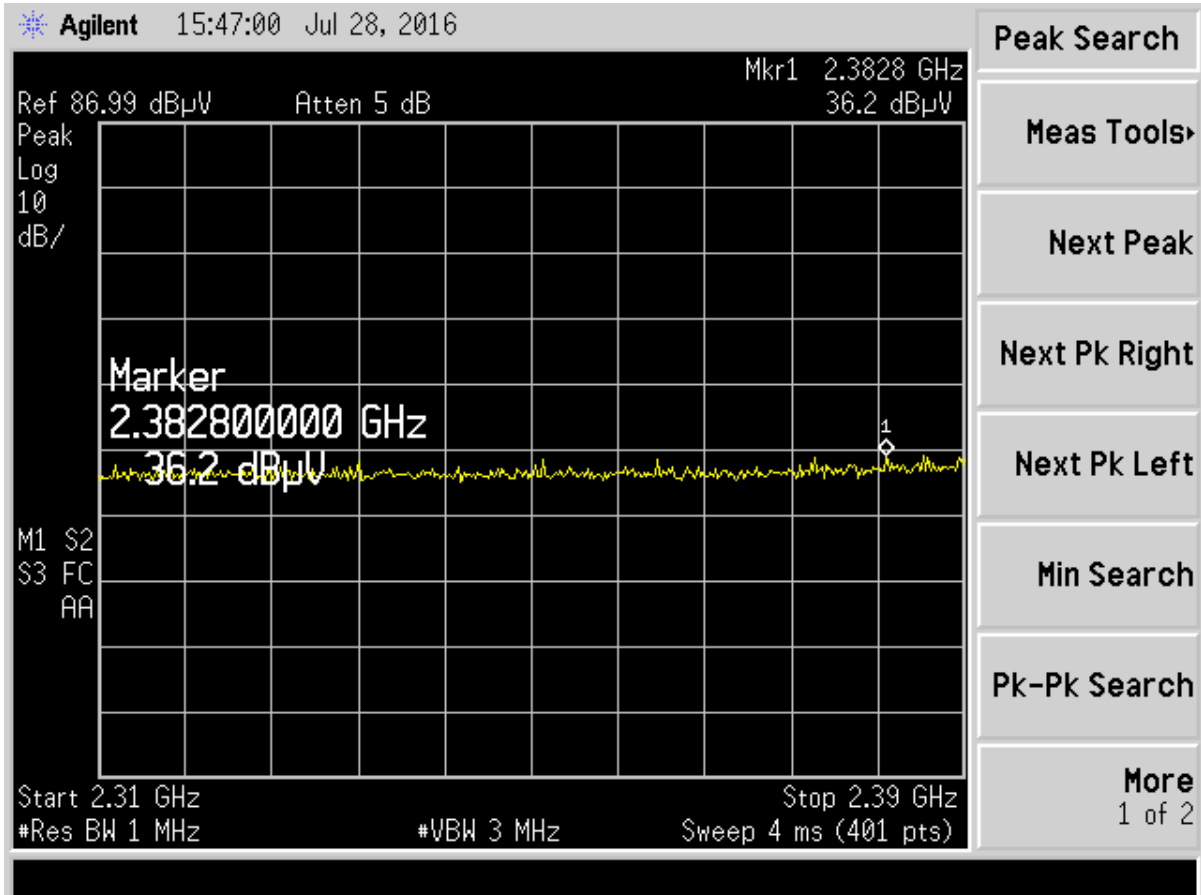
Table 44. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11 n – Average

2483.5 MHz to 2500 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2484.03	20.10	31.53	51.63	54.0	3.0m./HORZ	2.4	AVG

Test Date: July 28, 2016

Tested By  
 Signature: 

Name: George Yang

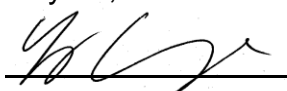


**Figure 84. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n (40MHz) - Peak**

**Table 45. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n (40MHz) – Peak**

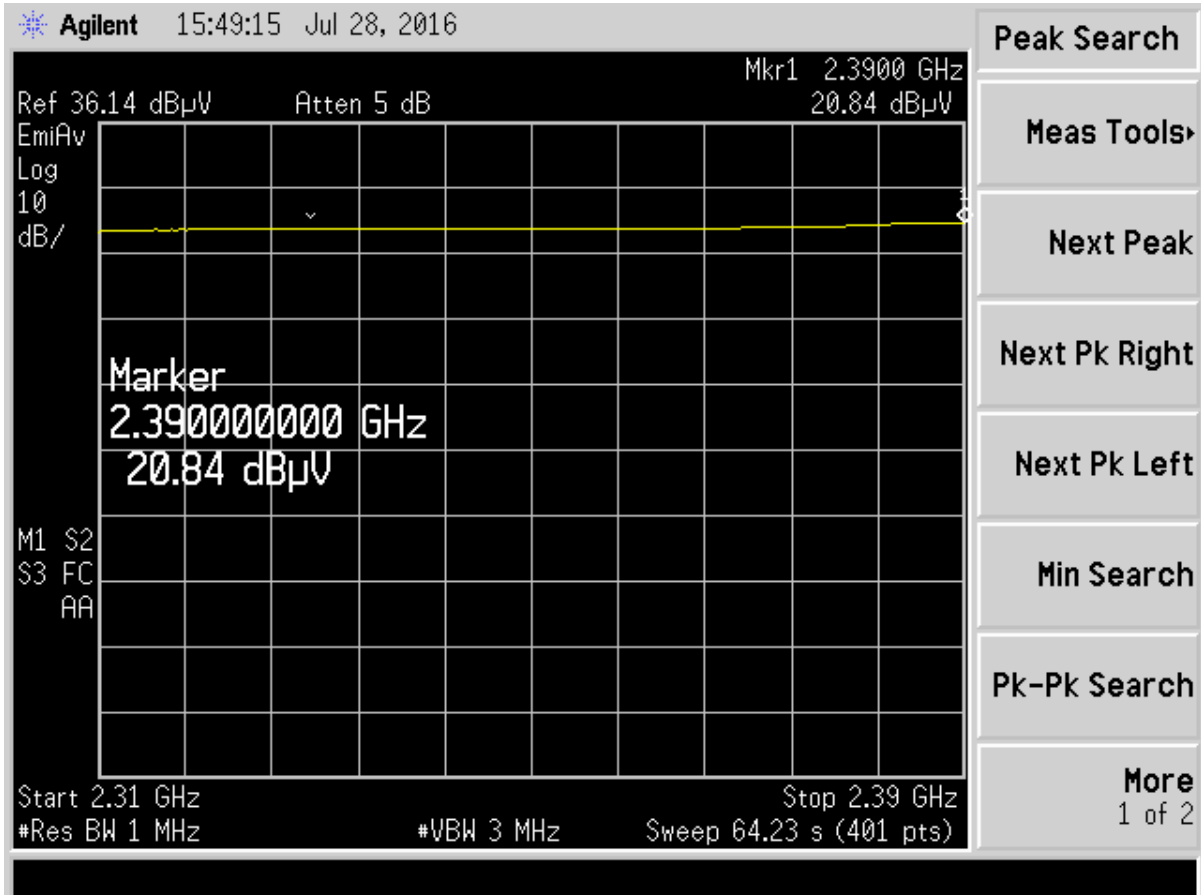
2310 MHz to 2390 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2382.80	36.20	31.68	67.88	74.0	3.0m./HORZ	6.1	PK

Test Date: July 28, 2016

Tested By  
 Signature: 

Name: George Yang



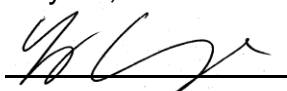


**Figure 85. Radiated Restricted band 2310 MHz to 2390 MHz, 802.11n (40MHz) - Average**

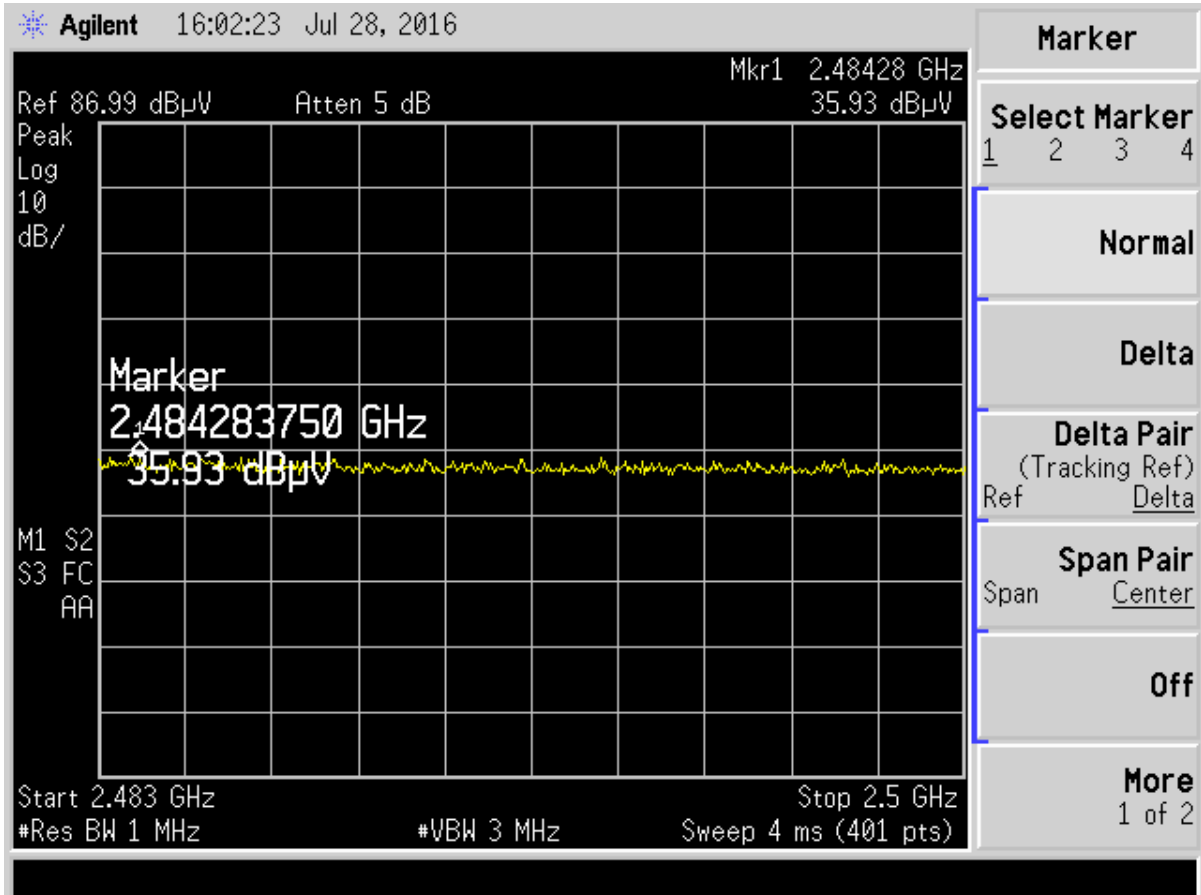
**Table 46. Radiated Restricted Band 2310 MHz to 2390 MHz, 802.11n (40MHz) – Average**

2310 MHz to 2390 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	AVG Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2390.00	20.84	31.68	52.52	54.0	3.0m./HORZ	1.5	AVG

Test Date: July 28, 2016

Tested By  
 Signature: 

Name: George Yang

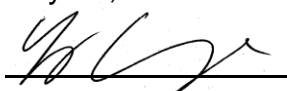


**Figure 86. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) - Peak**

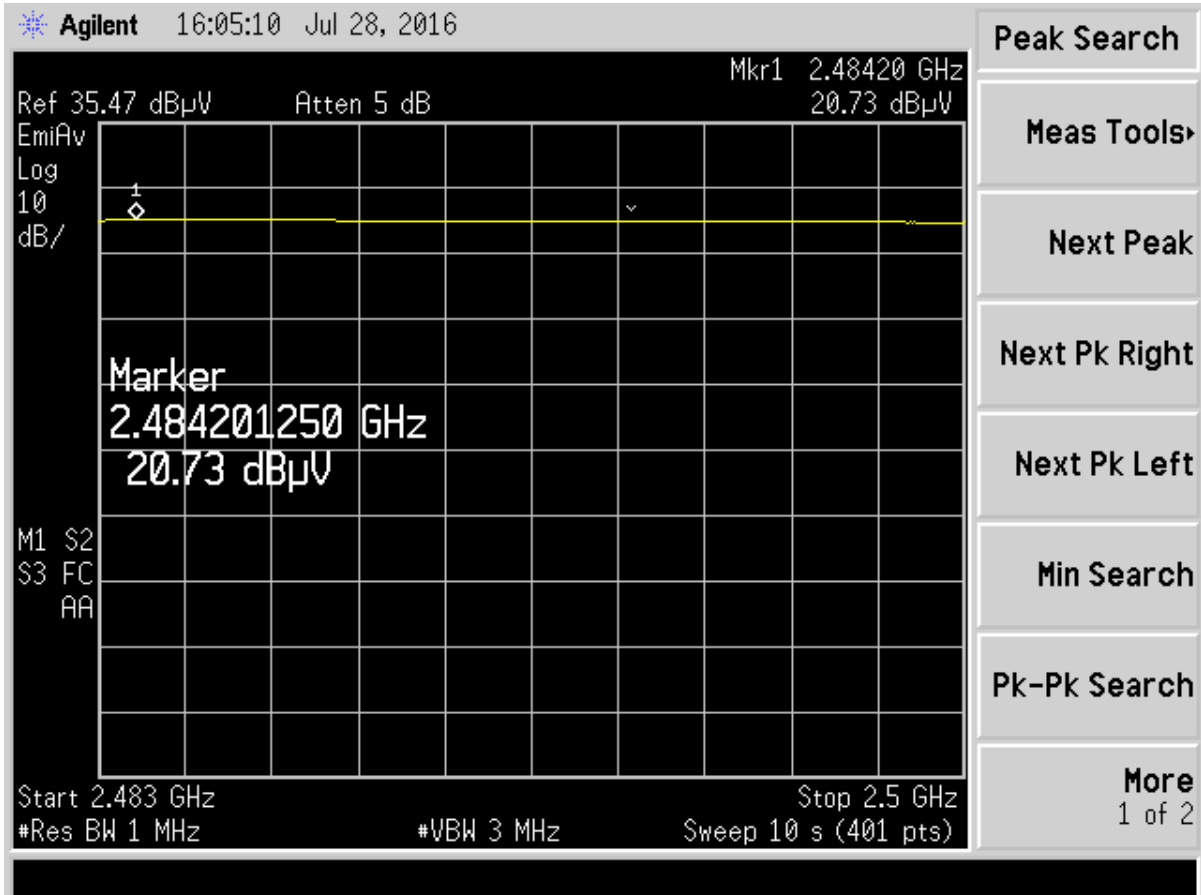
**Table 47. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) - Peak**

2483.5 MHz to 2500 MHz Restricted Band Peak Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2484.28	35.93	31.53	67.46	74.0	3.0m./HORZ	6.5	PK

Test Date: July 28, 2016

Tested By  
 Signature: 

Name: George Yang

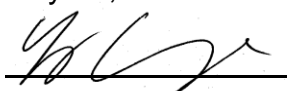


**Figure 87. Radiated Restricted band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) - Average**

**Table 48. Radiated Restricted Band 2483.5 MHz to 2500 MHz, 802.11n (40MHz) - Average**

2483.5 MHz to 2500 MHz Restricted Band Average Measurements							
Test: Radiated Emissions				Client: Acuity Brands Technology Services, Inc.			
Project: 16-0139				Model: ACWIFI001			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
2484.20	20.73	31.53	52.26	54.0	3.0m./HORZ	1.7	AVG

Test Date: July 28, 2016

Tested By  
 Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

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 6715A-ACWIFI001  
 16-0139  
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 Acuity Brands  
 ACWIFI001

**2.14 Six (6) dB Bandwidth per PART 15.247(a)(2),**

The EUT antenna port was connected to a spectrum analyzer having a 50 Ω input impedance. Measurements were performed similar to the method of FCC, KDB Publication No. 558074 for a bandwidth of 6 dB. The RBW was set to 100 kHz and with the VBW ≥ RBW. The results of this test are given in the table below and Figures below.

**Table 49. 802.11b Six (6) dB Bandwidth**

Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum FCC Bandwidth (MHz)
2412	9.162	0.500
2442	9.175	0.500
2462	9.175	0.500

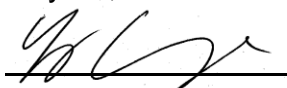
**Table 50. 802.11g Six (6) dB Bandwidth**

Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum FCC Bandwidth (MHz)
2412	16.583	0.500
2442	16.537	0.500
2462	16.500	0.500

**Table 51. 802.11n Six (6) dB Bandwidth**

Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum FCC Bandwidth (MHz)
2412	17.825	0.500
2442	17.874	0.500
2462	17.839	0.500

Test Date: July 22, 2016

Tested By  
 Signature: 

Name: George Yang

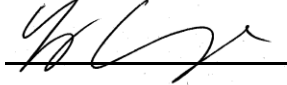
US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

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**Table 52. 802.11n 40 MHz BW Six (6) dB Bandwidth**

Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum FCC Bandwidth (MHz)
2422	35.587	0.500
2437	36.555	0.500
2452	36.521	0.500

Test Date: July 22, 2016

Tested By  
Signature: 

Name: George Yang

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

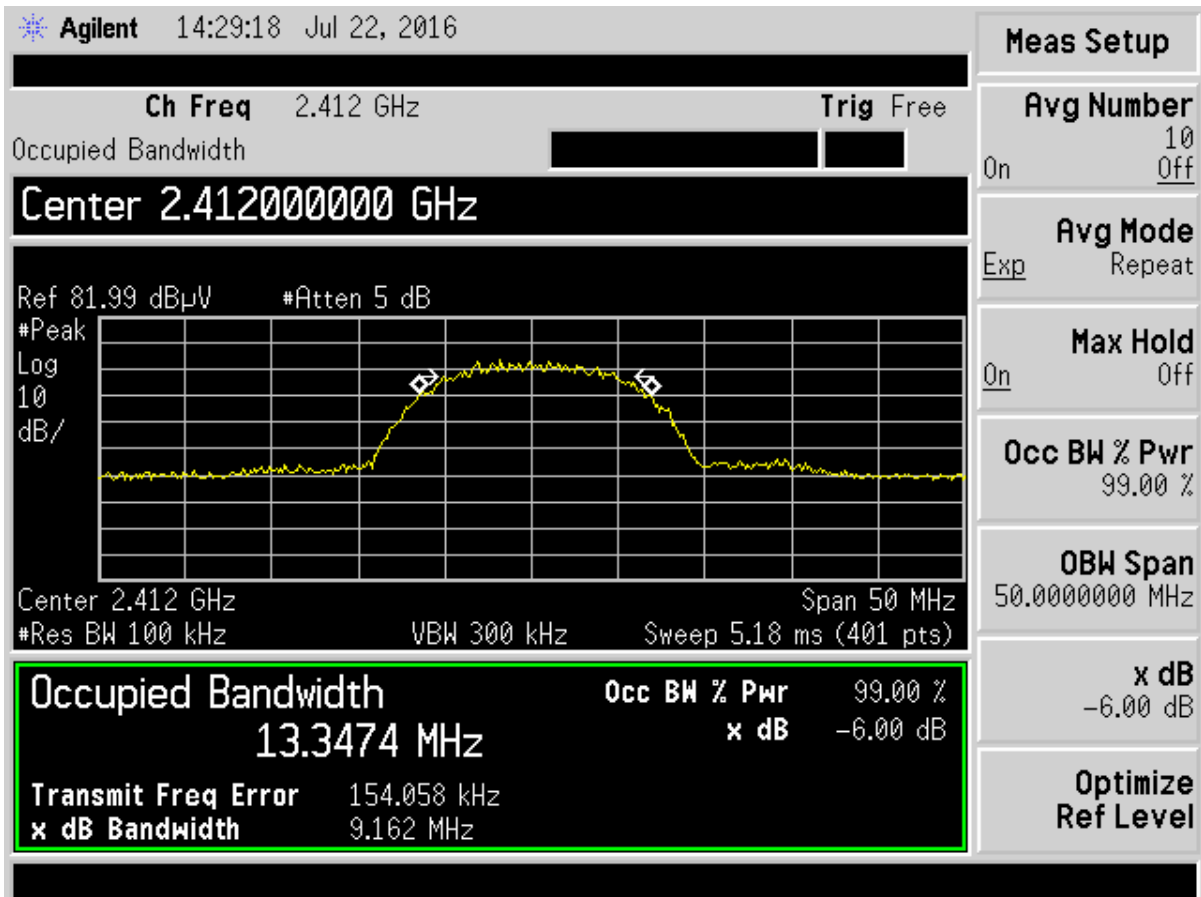


Figure 88. Six dB Bandwidth 802.11b Low Channel

US Tech Test Report:  
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 Test Report Number:  
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 Customer:  
 Model:

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 Acuity Brands  
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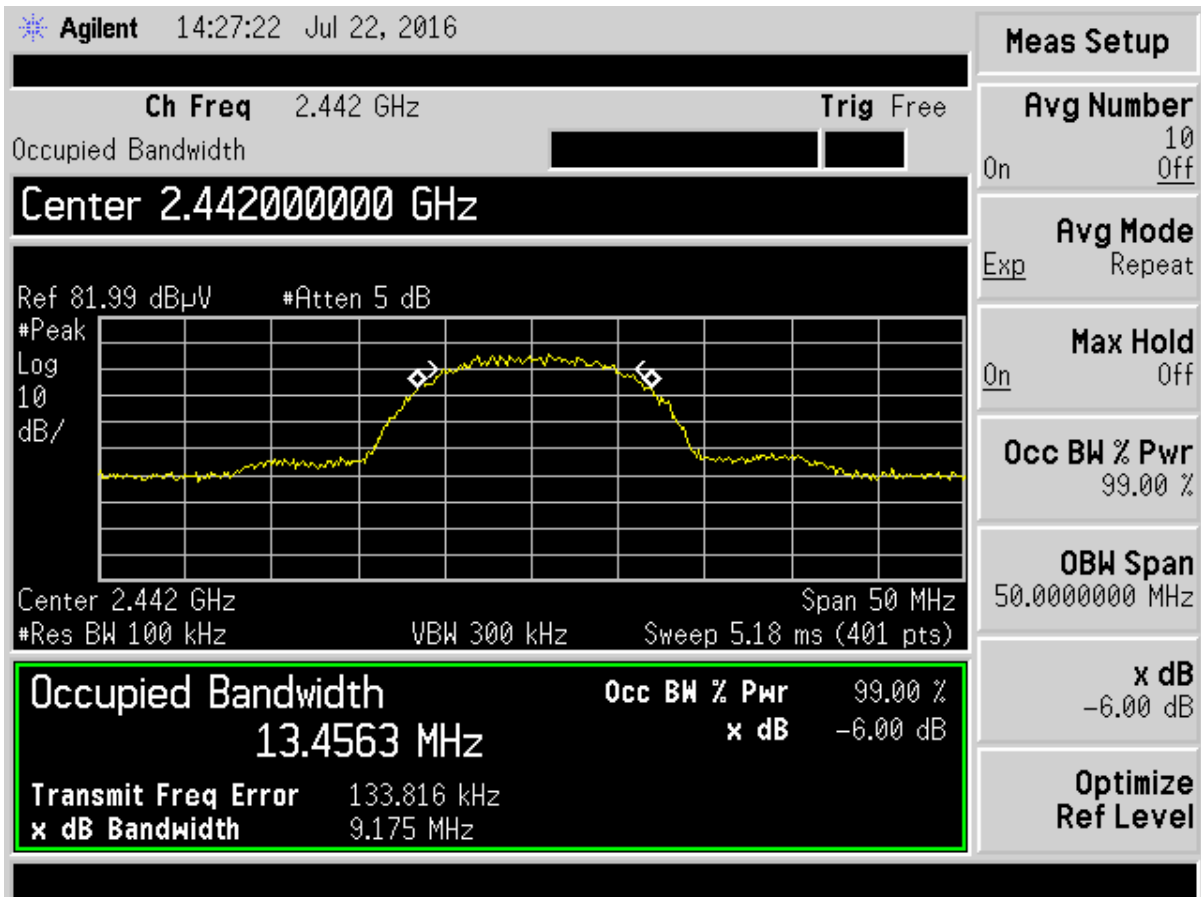


Figure 89. Six dB Bandwidth 802.11b Mid Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
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 Model:

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 August 26, 2016  
 Acuity Brands  
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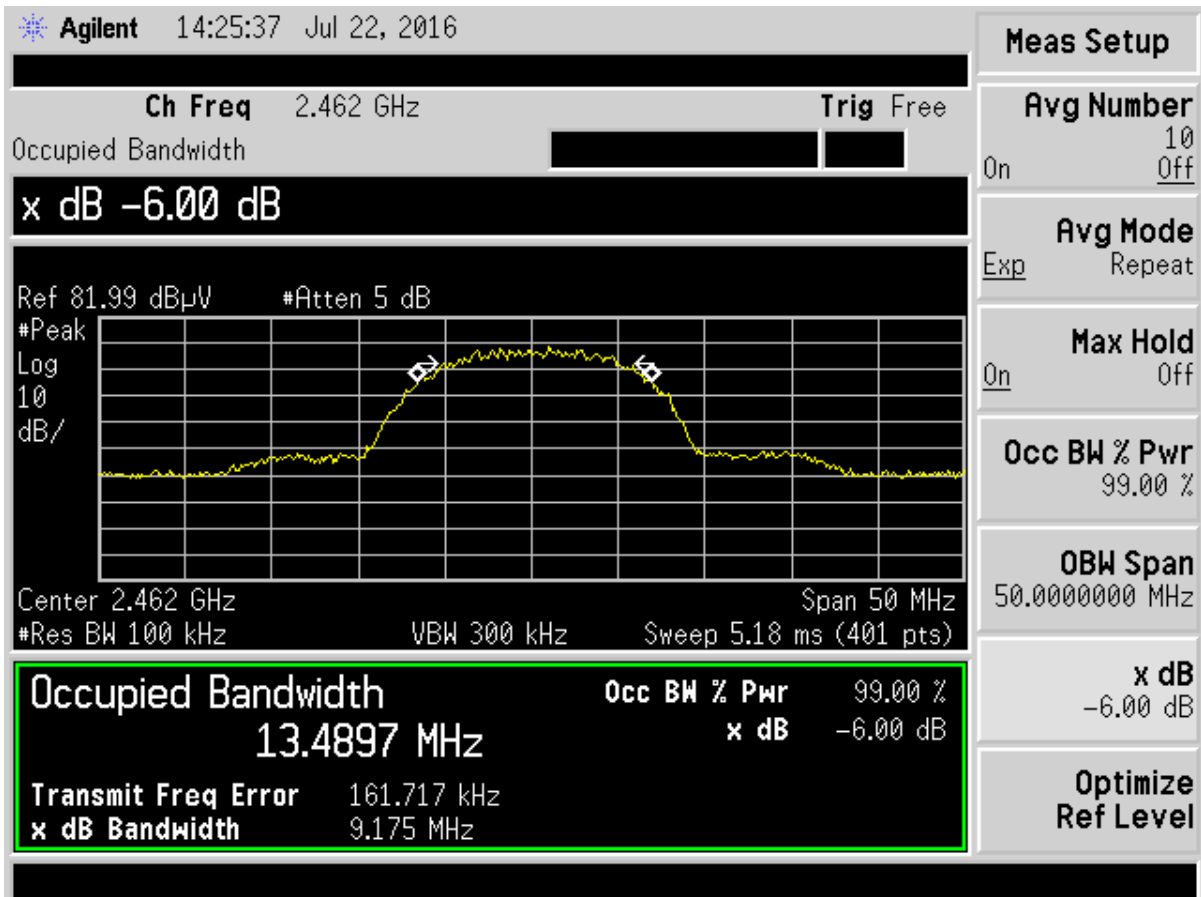


Figure 90. Six dB Bandwidth 802.11b High Channel



US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

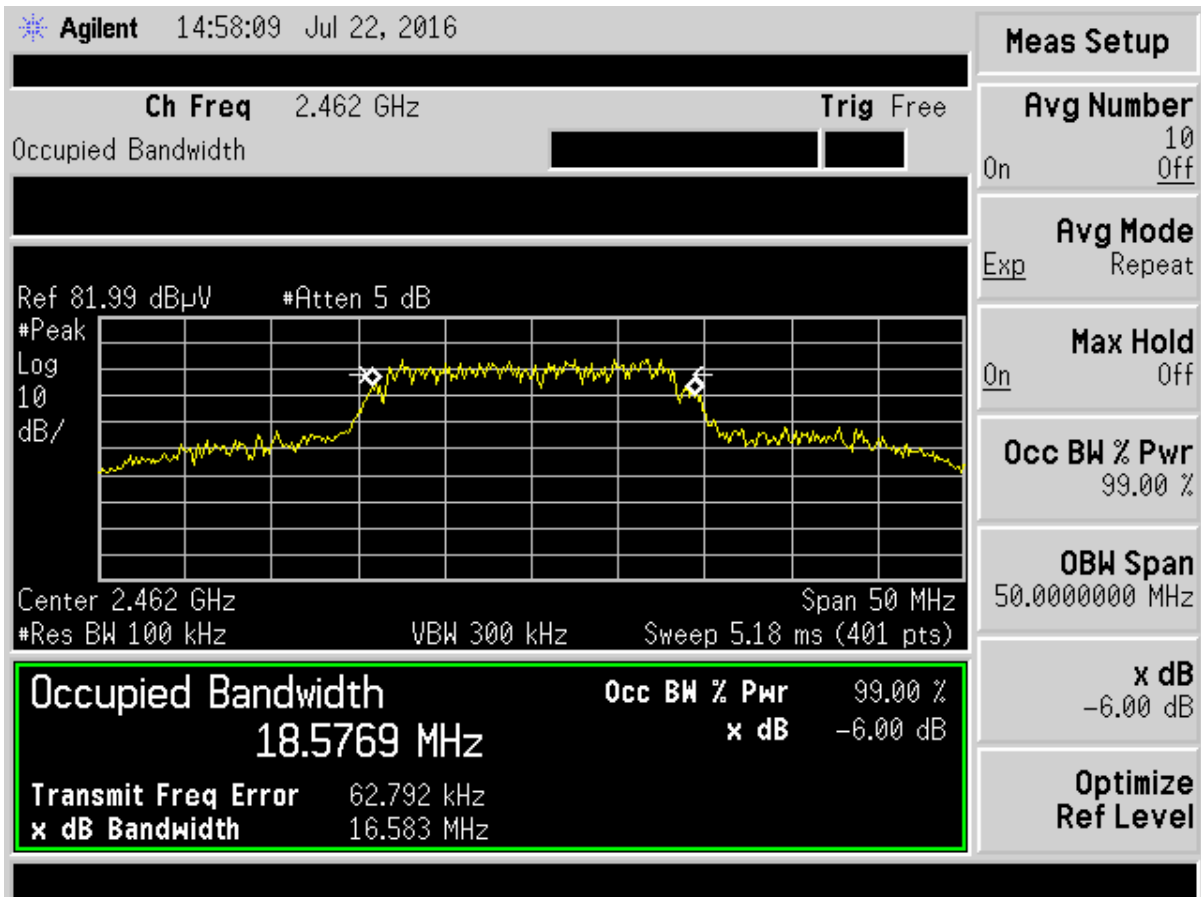


Figure 91. Six dB Bandwidth 802.11g Low Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

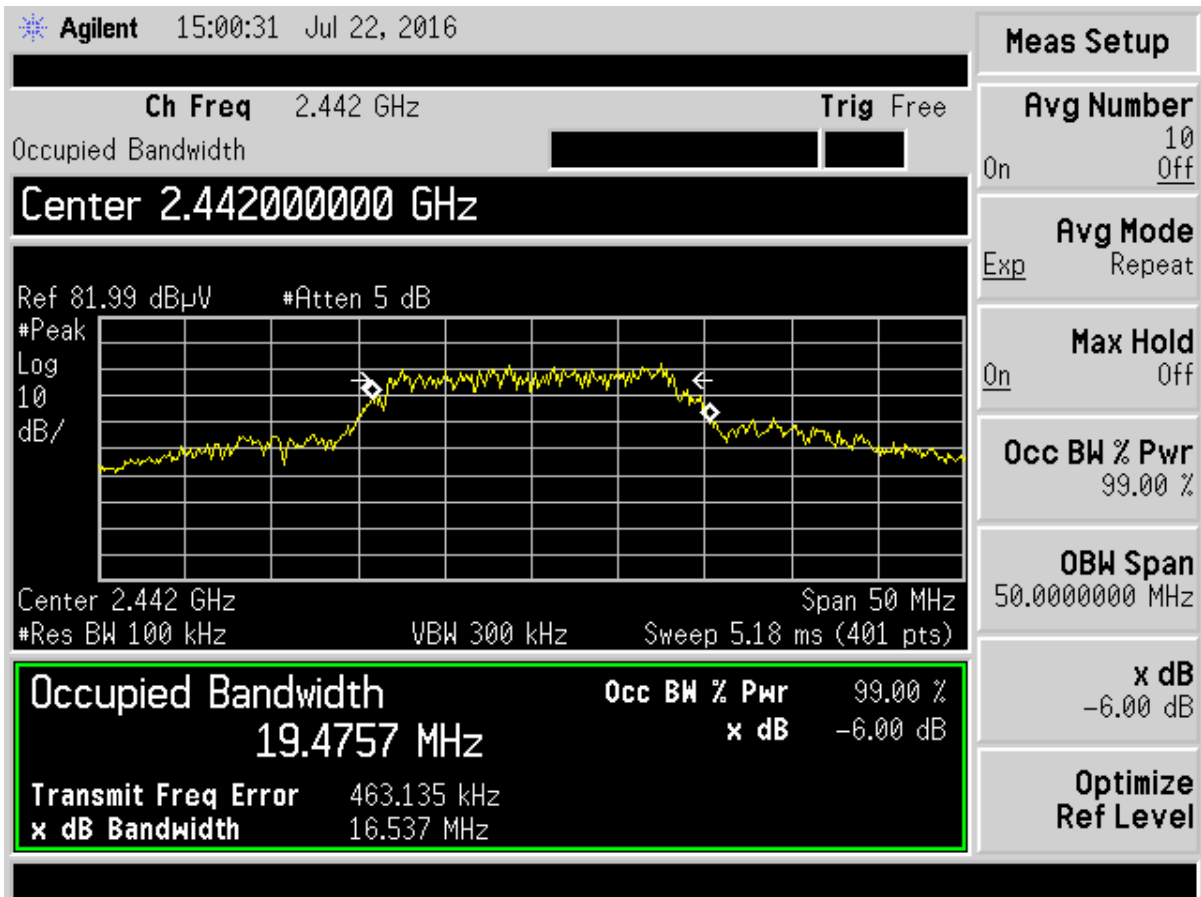


Figure 92. Six dB Bandwidth 802.11g Mid Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

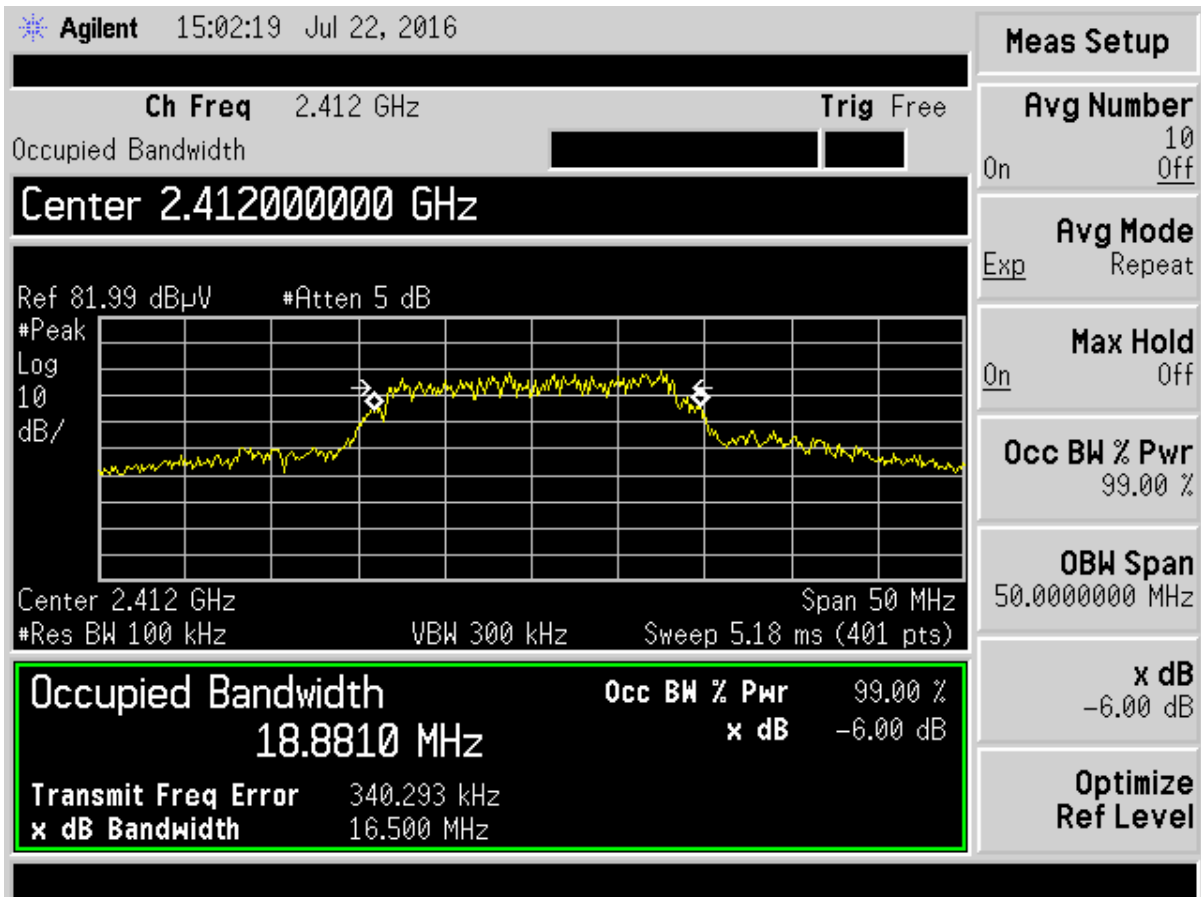


Figure 93. Six dB Bandwidth 802.11g High Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

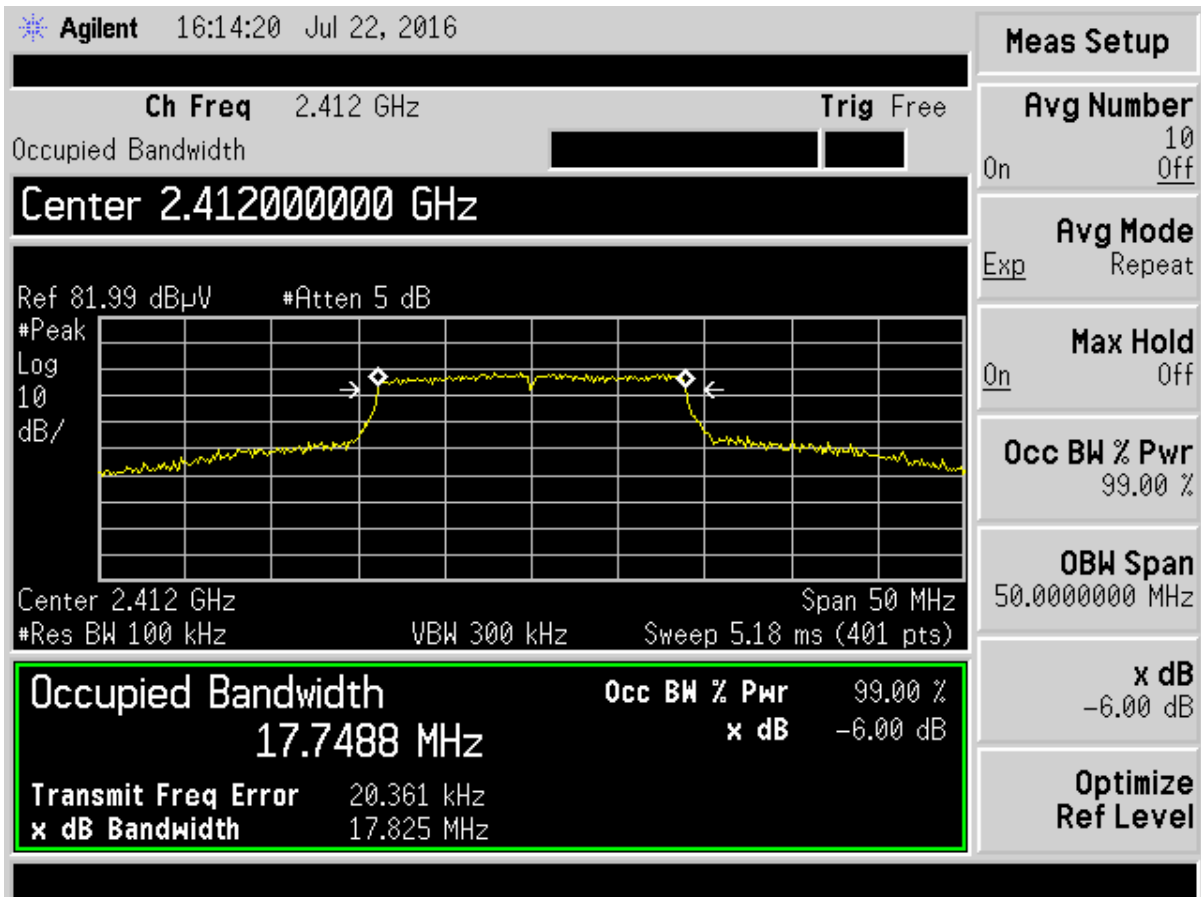


Figure 94. Six dB Bandwidth 802.11n Low Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

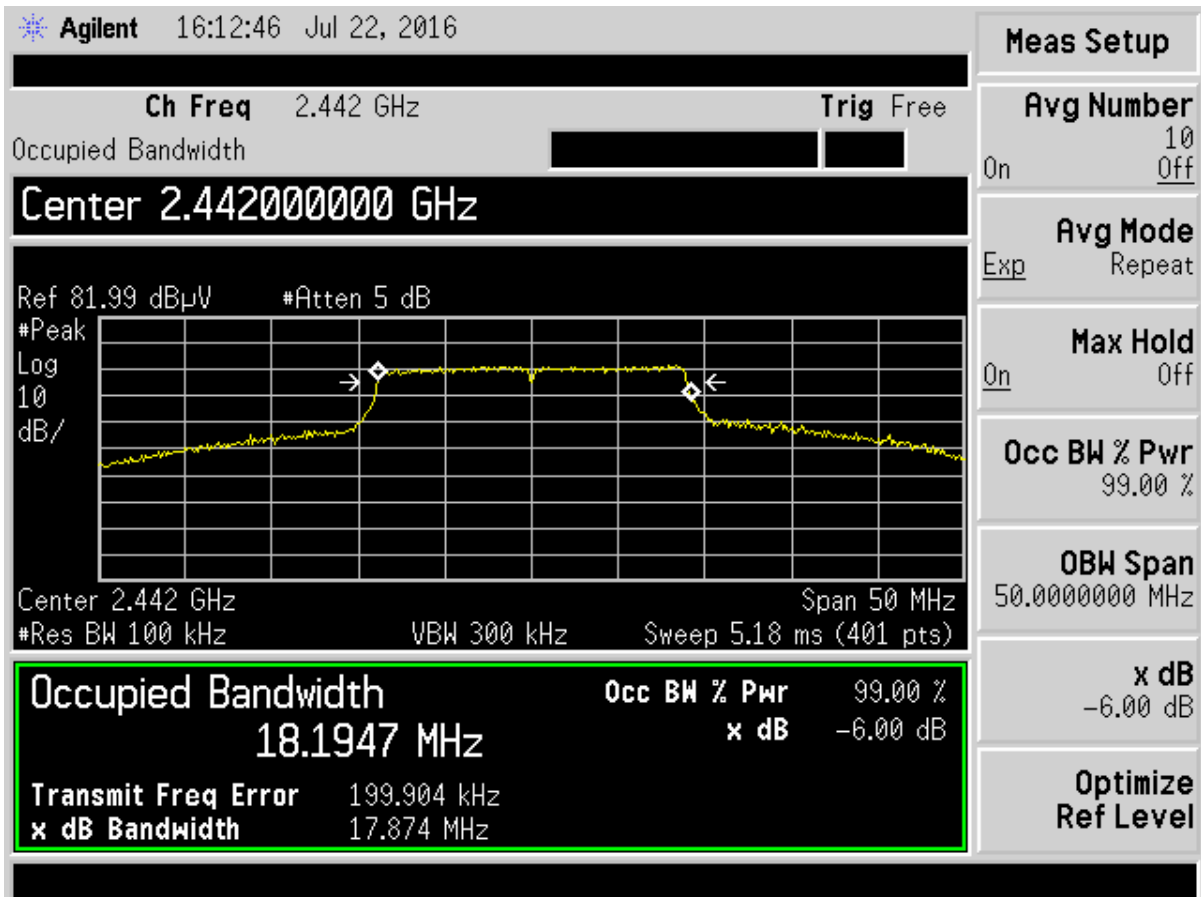


Figure 95. Six dB Bandwidth 802.1n Mid Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

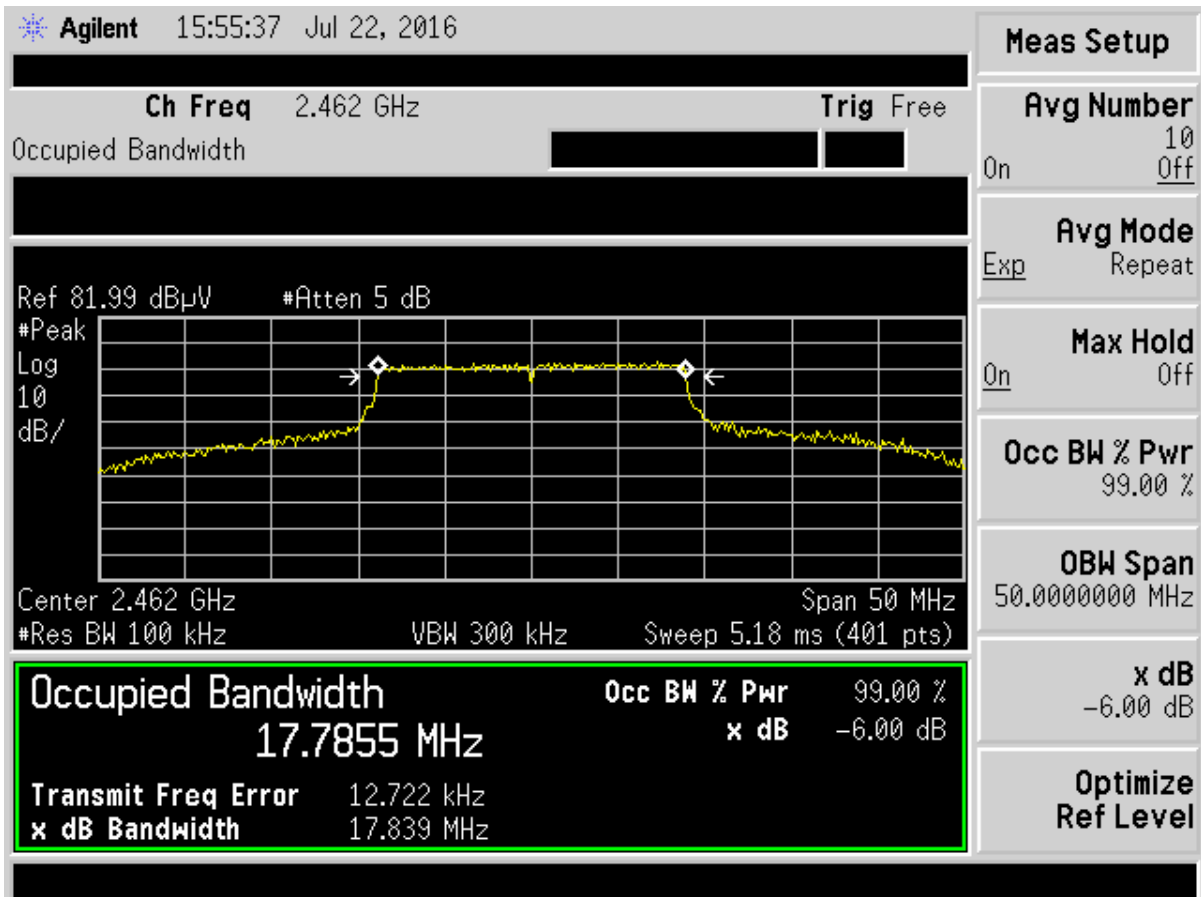


Figure 96. Six dB Bandwidth 802.11n High Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

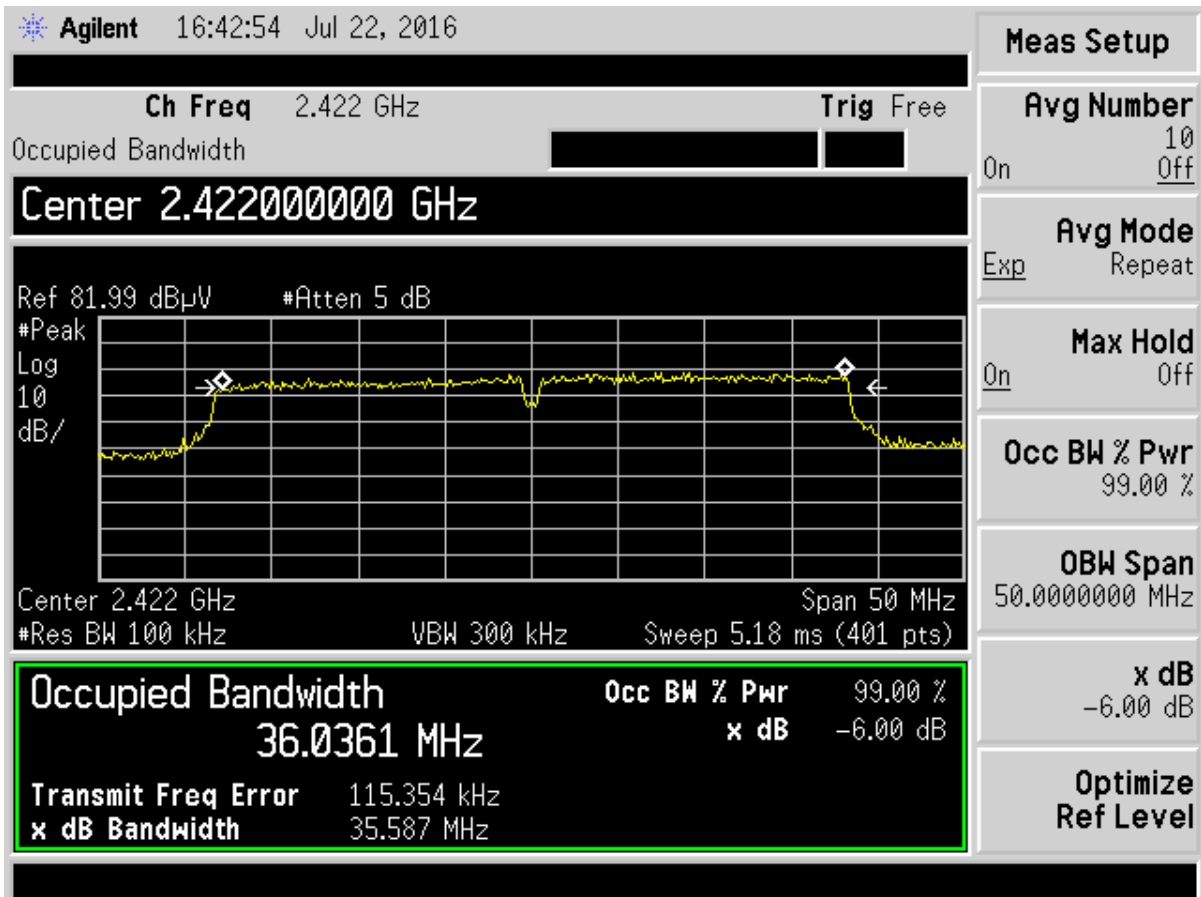


Figure 97. Six dB Bandwidth 802.11 40 MHz BW Low Channel

US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

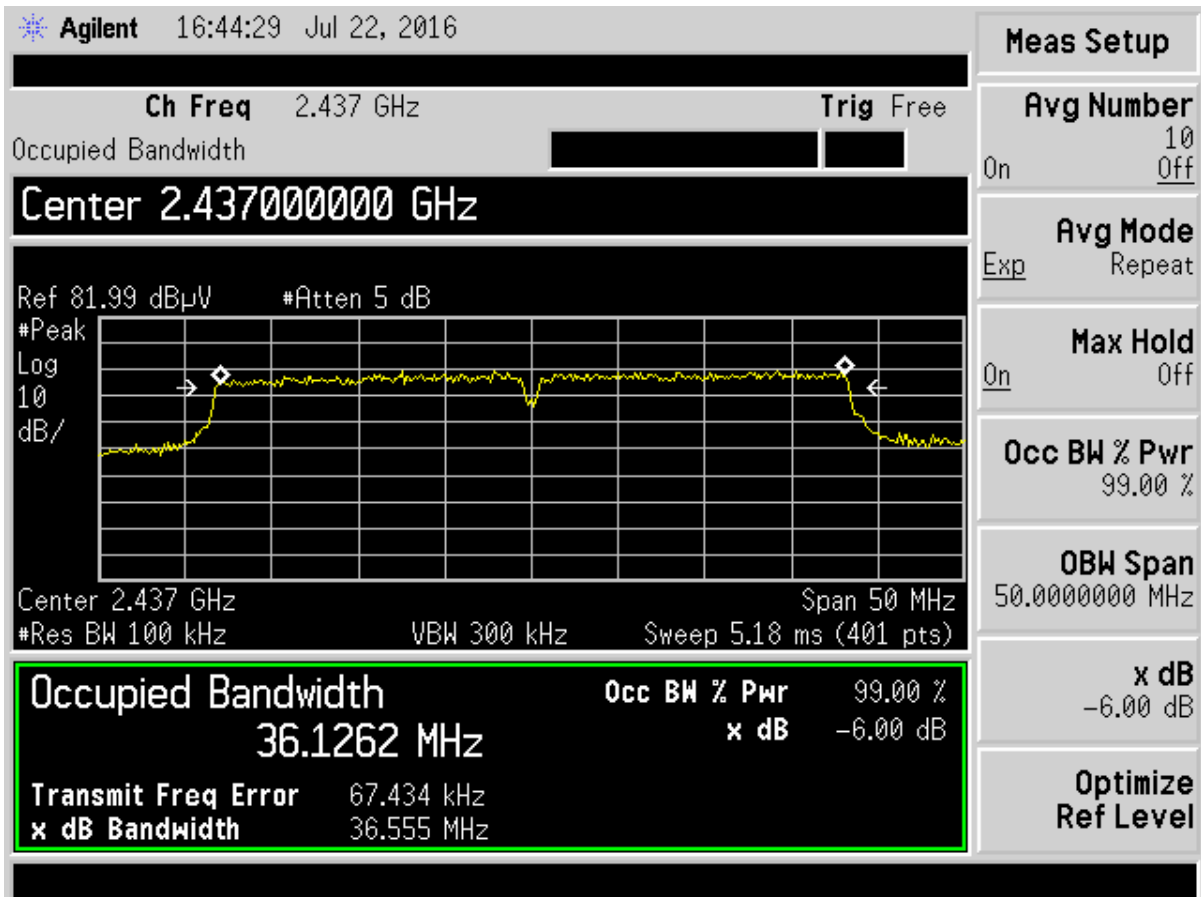


Figure 98. Six dB Bandwidth - 15.247 – 802.11 40 MHz BW Mid Channel



US Tech Test Report:  
 FCC ID:  
 IC:  
 Test Report Number:  
 Issue Date:  
 Customer:  
 Model:

FCC Part 15 Certification/ RSS 247  
 2ADCB-ACWIFI001  
 6715A-ACWIFI001  
 16-0139  
 August 26, 2016  
 Acuity Brands  
 ACWIFI001

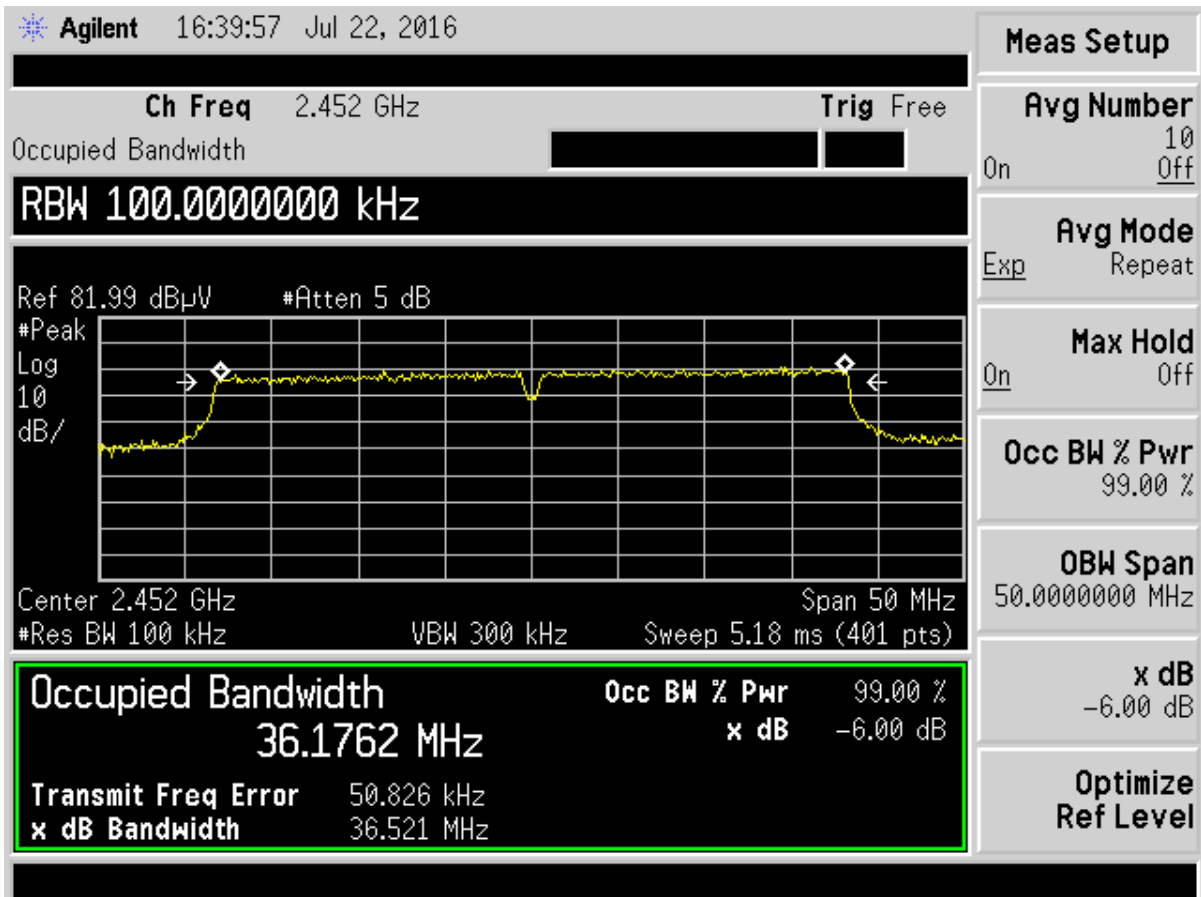


Figure 99. Six dB Bandwidth - 15.247 – 802.11 40 MHz BW High Channel

**2.12 99% Occupied Bandwidth (IC RSS Gen, 6.6)**

These measurements were performed while the EUT was in a constant transmit mode. A method similar to the marker delta method was used to capture the points. The RBW was set to approximately 1/100 of the manufacturers claimed RBW and with the VBW  $\geq$  RBW.

**Table 53. 802.11b 20 dB Bandwidth and 99% Occupied Bandwidth**

Frequency (MHz)	99% Occupied Bandwidth (MHz)
2412	13.347
2442	13.456
2462	13.489

**Table 54. 802.11g 20 dB Bandwidth and 99% Occupied Bandwidth**

Frequency (MHz)	99% Occupied Bandwidth (MHz)
2412	18.576
2442	19.475
2462	18.881

**Table 55. 802.11n 20 dB Bandwidth and 99% Occupied Bandwidth**

Frequency (MHz)	99% Occupied Bandwidth (MHz)
2412	17.748
2442	18.194
2462	17.785

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

**Table 56. 802.11n (40MHz) 20 dB Bandwidth and 99% Occupied Bandwidth**

Frequency (MHz)	99% Occupied Bandwidth (MHz)
2422	36.036
2437	36.126
2452	36.176

Test Date: July 22, 2016

Tested By  
Signature: 

Name: George Yang

US Tech Test Report:  
FCC ID:  
IC:  
Test Report Number:  
Issue Date:  
Customer:  
Model:

FCC Part 15 Certification/ RSS 247  
2ADCB-ACWIFI001  
6715A-ACWIFI001  
16-0139  
August 26, 2016  
Acuity Brands  
ACWIFI001

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## **2.13 Measurement Uncertainty**

The measurement uncertainties given were calculated using the method detailed in CISPR 16-4. A coverage factor of  $k=2$  was used to give a level of confidence of approximately 95%.

### **2.13.1 Conducted Emissions Measurement Uncertainty**

Measurement Uncertainty (within a 95% confidence level) for this test is  $\pm 2.78$  dB.

### **2.13.2 Radiated Emissions Measurement Uncertainty**

For a measurement distance of 3 m the measurement uncertainty (with a 95% confidence level) for this test using a Biconical Antenna (30 MHz to 200 MHz) is  $\pm 5.39$  dB. This value includes all elements of measurement.

The measurement uncertainty (with a 95% confidence level) for this test using a Log Periodic Antenna (200 MHz to 1000 MHz) is  $\pm 5.18$  dB.

The measurement uncertainty (with a 95% confidence level) for this test using a Horn Antenna is  $\pm 5.21$  dB.

## **2.14 FCC 15.407(c) Compliance**

Per FCC 15.407(c), this device automatically discontinues transmission in case of either the absence of information to transmit or operational failures.

Data transmission is always initiated by software, which enables the transmitter to operate. The transmitter will only run when the data is being transmitted and then turns off at the end of the transmission.