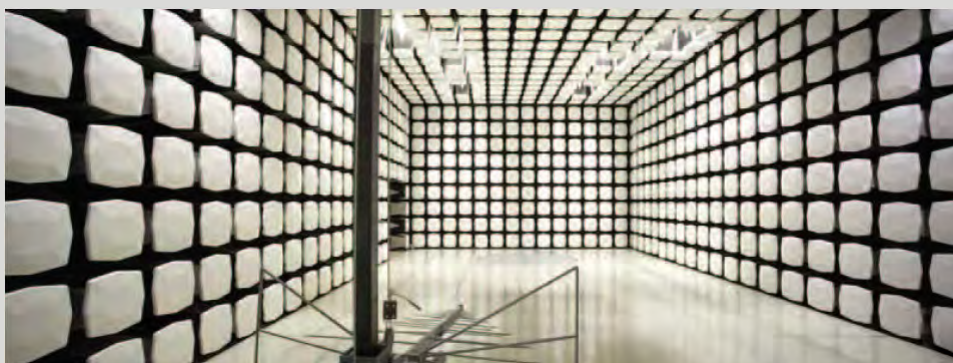




Summit Semiconductor
Model 444-2225 (Athena UFL)
FCC 15.207:2013
FCC 15.247:2013

Report #: FOCU0140.1



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: May 14, 2013
Summit Semiconductor
Model: Model 444-2225 (Athena UFL)

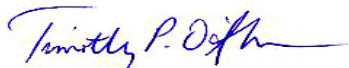
Emissions

Test Description	Specification	Test Method	Pass/Fail
Duty Cycle	FCC 15.247:2013	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2013	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2013	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2013	ANSI C63.10:2009	Pass
Spurious Conducted Emissions	FCC 15.247:2013	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2013	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2013	ANSI C63.10:2009	Pass
AC Powerline Conducted Emissions	FCC 15.207:2013	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:



Tim O'Shea, Operations Manager



NVLAP Lab Code: 200630-0

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834D-1).

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Hong Kong

OFTA – Recognized by OFTA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>

How Important Is It To Understand Performance Criteria?

It is the responsibility of the test laboratory to observe the results of the tests that are performed and to accurately report those results. The data sheets detail the observable and repeatable performance criterion.

The variety and diversity of the apparatus within the scope of standard make it difficult to define precise criteria for the evaluation of the immunity test results. The manufacturer has the obligation to express the performance criteria in terms which relate to the performance of his specific product when used as intended. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then it may be derived from the product description, documentation, and/or by what the user may reasonably expect from the EUT if used as intended.

As the responsible party (manufacturer, importer, etc.) it is your responsibility that you are fully aware of the requirements, how your device performs when tested to those requirements, and what information is being used to declare conformity.

To better assist you in making those conformity decisions, Northwest EMC has adopted a very simple, yet very clear performance assessment procedure. The following criteria's are used when performing immunity or susceptibility tests. In all cases the observed phenomena will be documented in the data sheets.

Performance Criteria 1:

The EUT exhibited no change in performance when operating as specified by the manufacturer.

- ☐ In most cases this would be equivalent to Performance Criteria A. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, no changes were observed, user intervention was not required, nothing happened.

Performance Criteria 2:

The EUT exhibited a temporary change in performance when operating as specified by the manufacturer- Operator Intervention was not required to resume normal operation.

- ☐ In most cases this would be equivalent to Performance Criteria B. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, a Temporary loss of function was observed. The EUT was able to recover from those changes without any operator intervention, once the test signal was removed. The apparatus continued to operate as intended after the test. No loss of data was observed.
- ☐ Example: During testing, an analogue function value may deviate. After the test, the deviation vanishes.

Performance Criteria 3:

A temporary loss of function was observed. User intervention is required to restore the operation of device to the mode specified by the responsible party.

- ☐ In most cases this would be equivalent to Performance Criteria C. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT requires some sort of operator intervention to recover. There was no permanent damage and the EUT appeared to function normally after completion of test.
- ☐ Example: The EUT locked up during the immunity test; User intervention is required to restore the device to the specified mode of operation.

Performance Criteria 4:

- ☐ In this case the equipment was damaged and/or would not recover to the mode specified by the responsible party. The data sheets will detail the exact phenomena observed.

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

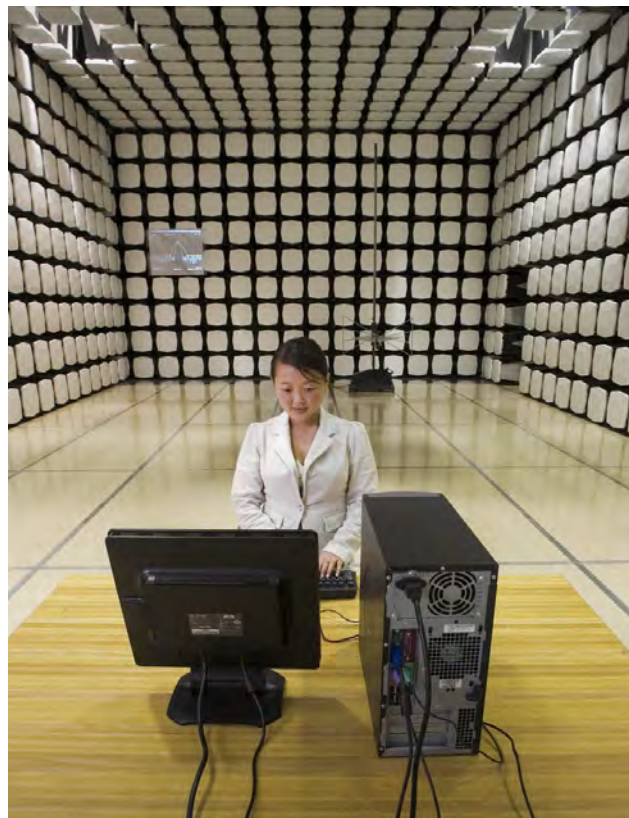
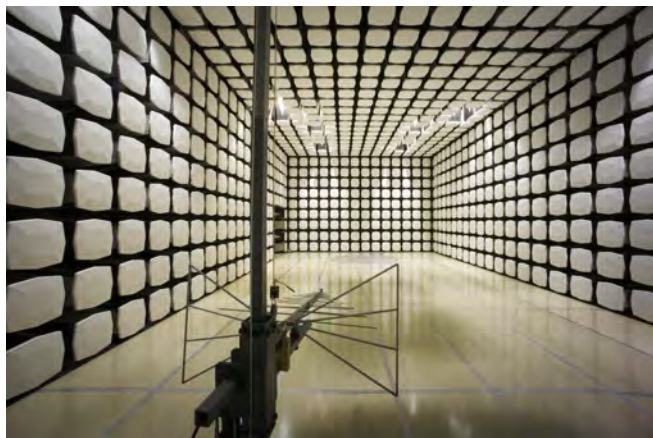
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is listed below. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94



Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Minnesota Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Washington Labs NC01-05, SU02, SU07 19201 120 th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1
NVLAP				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0



Client and Equipment Under Test (EUT) Information

Company Name:	Summit Semiconductor
Address:	22867 NW Bennett St, Suite 200
City, State, Zip:	Hillsboro, OR 97124
Test Requested By:	Ponnappa Pasura
Model:	Model 444-2225 (Athena UFL)
First Date of Test:	May 1, 2013
Last Date of Test:	May 14, 2013
Receipt Date of Samples:	May 1, 2013
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
Digital wireless Audio client device (Athena UFL)
Testing Objective:
Seeking modular approval of the client under FCC 15.247 for operation in the 5.8 GHz band.

Configuration FOCU0140- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Athena UFL	Summit Semiconductor	444-2225	02EA4D000027

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D820	26000021917
La Grande Amplifier/DC Power Supply	Summit Semiconductor	Unknown	1
Inverted F Antenna	Tyco	Unknown	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop DC Power Supply	Dell	AC-PA-10	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	2.4m	No	AC Mains	La Grande Amplifier/DC Power Supply
Antenna Wires x 4	No	0.36m	No	Athena UFL	Inverted F Antenna
RS232	Yes	1.7m	No	I/O to Serial Adapter	Laptop
DC Power	No	1.1m	Yes	Laptop DC Power Supply	Laptop
AC Power	No	0.8	No	AC Mains	Laptop DC Power Supply
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration FOCU0140- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Athena UFL	Summit Semiconductor	444-2225	02EA4D000027

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Inverted F Antenna	Tyco	Unknown	Unknown
Topward DC Power Supply	Topward Electronic Instruments Co., LTD.	TPS-2000	946425

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D820	26000021917

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Antenna Wires x 4	No	0.36m	No	Athena UFL	Inverted F Antenna
RS232	Yes	1.7m	No	I/O to Serial Adapter	Laptop
DC Power	No	1.1m	Yes	Laptop DC Power Supply	Laptop
AC Power	No	0.8	No	AC Mains	Laptop DC Power Supply
AC Power	No	1.4m	No	AC Mains	Topward DC Supply
I/O to Serial Adapter	No	.1m	No	RS232	Athena
DC Power Cable x1	No	1.5m	No	Topward DC Power Supply	Athena

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Configuration FOCU0140- 3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Athena UFL	Summit Semiconductor	444-2225	02EA4D000003

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Topward DC Power Supply	Topward Electronic Instruments Co., LTD.	TPS-2000	946425
Laptop DC Power Supply	Dell	AC-PA-10	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D820	26000021917

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
RS232	Yes	1.7m	No	I/O to Serial Adapter	Laptop
DC Power	No	1.1m	Yes	Laptop DC Power Supply	Laptop
AC Power	No	0.8	No	AC Mains	Laptop DC Power Supply
AC Power	No	1.4m	No	AC Mains	Topward DC Supply
I/O to Serial Adapter	No	.1m	No	RS232	Athena
DC Power Cable x1	No	1.5m	No	Topward DC Power Supply	Athena
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration FOCU0140- 4

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Athena UFL	Summit Semiconductor	444-2225	02EA4D000027

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Topward DC Power Supply	Topward Electronic Instruments Co., LTD.	TPS-2000	946425
Laptop DC Power Supply	Dell	AC-PA-10	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D820	26000021917

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
RS232	Yes	1.7m	No	I/O to Serial Adapter	Laptop
DC Power	No	1.1m	Yes	Laptop DC Power Supply	Laptop
AC Power	No	0.8	No	AC Mains	Laptop DC Power Supply
AC Power	No	1.4m	No	AC Mains	Topward DC Supply
I/O to Serial Adapter	No	.1m	No	RS232	Athena
DC Power Cable x1	No	1.5m	No	Topward DC Power Supply	Athena
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration FOCU0140- 5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Athena UFL	Summit Semiconductor	444-2225	02EA4D000027

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop DC Power Supply	Dell	AC-PA-10	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D820	26000021917

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
RS232	Yes	1.7m	No	I/O to Serial Adapter	Laptop
DC Power	No	1.1m	Yes	Laptop DC Power Supply	Laptop
AC Power	No	0.8	No	AC Mains	Laptop DC Power Supply
I/O to Serial Adapter	No	.1m	No	RS232	Athena
AC/DC Power Adapter Cable	PA	1.5m	Yes	AC Mains	Athena
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration FOCU0140- 6

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Inverted F Antenna	Tyco	Unknown	Unknown
Athena UFL	Summit Semiconductor	444-2225	02EA4D000003

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D820	26000021917
La Grande Amplifier/DC Power Supply	Summit Semiconductor	Unknown	1
Laptop DC Power Supply	Dell	AC-PA-10	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	2.4m	No	AC Mains	La Grande Amplifier/DC Power Supply
Antenna Wires x 4	No	0.36m	No	Athena UFL	Inverted F Antenna
RS232	Yes	1.7m	No	I/O to Serial Adapter	Laptop
DC Power	No	1.1m	Yes	Laptop DC Power Supply	Laptop
AC Power	No	0.8	No	AC Mains	Laptop DC Power Supply
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration FOCU0140- 7

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Athena UFL	Summit Semiconductor	444-2225	02EA4D000003

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Inverted F Antenna	Tyco	Unknown	Unknown
Topward DC Power Supply	Topward Electronic Instruments Co., LTD.	TPS-2000	946425

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D820	26000021917

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Antenna Wires x 4	No	0.36m	No	Athena UFL	Inverted F Antenna
RS232	Yes	1.7m	No	I/O to Serial Adapter	Laptop
DC Power	No	1.1m	Yes	Laptop DC Power Supply	Laptop
AC Power	No	0.8	No	AC Mains	Laptop DC Power Supply
AC Power	No	1.4m	No	AC Mains	Topward DC Supply
I/O to Serial Adapter	No	.1m	No	RS232	Athena
DC Power Cable x1	No	1.5m	No	Topward DC Power Supply	Athena
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/1/2013	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	5/1/2013	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	5/1/2013	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	5/1/2013	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	5/1/2013	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	5/3/2013	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	5/6/2013	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	5/14/2013	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Duty Cycle

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/25/2013	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	3/5/2013	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used


The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

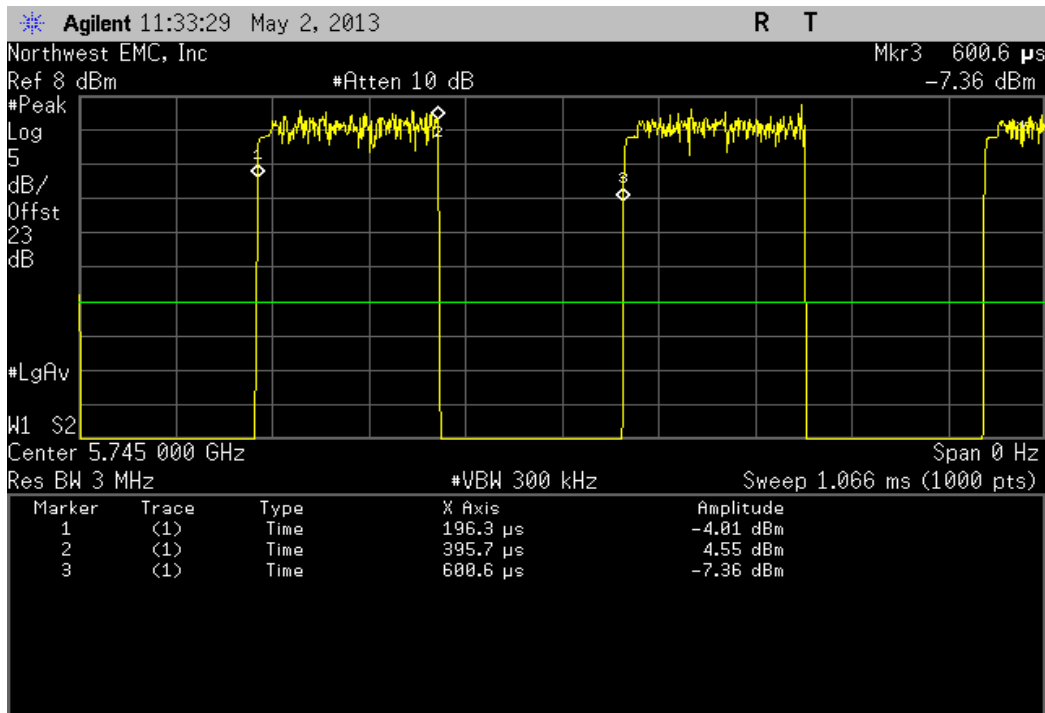


Duty Cycle

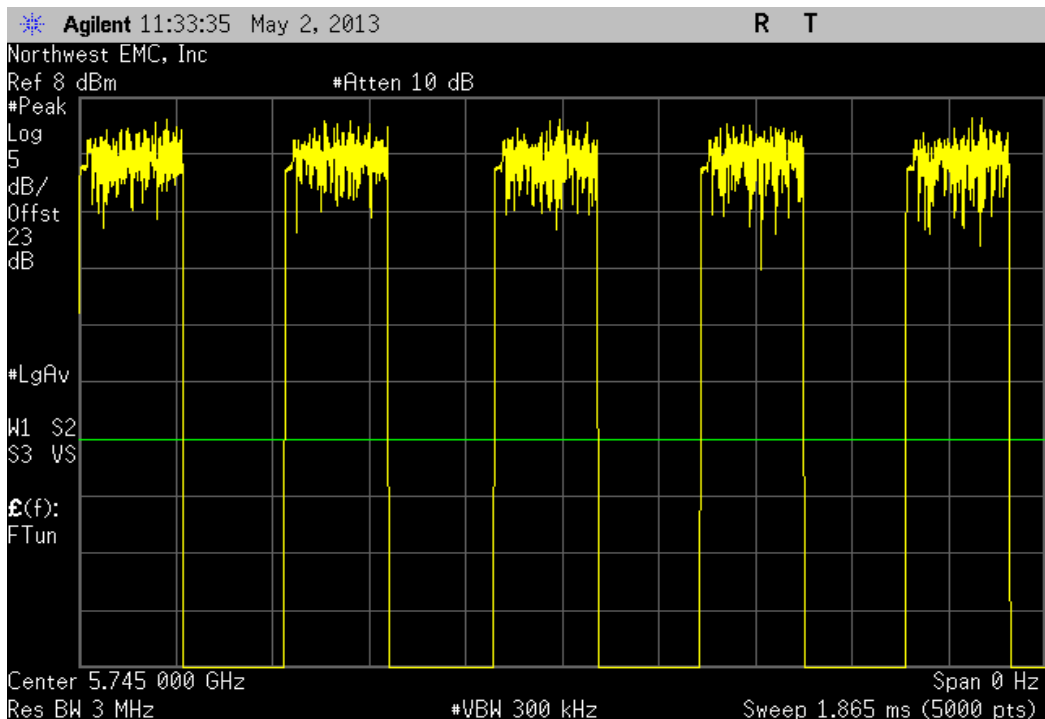
XMit 2013.02.28
PsaTx 2013.01.10

EUT: Model 444-2225 (Athena UFL)		Work Order: FOCU0140					
Serial Number: 02EA4D000027		Date: 05/03/13					
Customer: Summit Semiconductor		Temperature: 24°C					
Attendees: None		Humidity: 30%					
Project: None		Barometric Pres.: 1023					
Tested by: Brandon Hobbs		Power: 3.3V DC					
		Job Site: EV06					
TEST SPECIFICATIONS		Test Method					
FCC 15.247:2013		ANSI C63.10:2009					
COMMENTS							
All testing was completed on the highest output power antenna port A2.							
DEVIATIONS FROM TEST STANDARD							
None							
Configuration #	5	Signature 					
		Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
5725 MHz - 5850 MHz Band							
802.11(a) 6 Mbps							
	Low Channel 149, 5745 MHz	199.432 uS	404.267 uS	1	49.3	N/A	N/A
	Low Channel 149, 5745 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MHz	199.484 uS	397.901 uS	1	50.1	N/A	N/A
	Mid Channel 157, 5785 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 MHz	199.449 uS	396.8 uS	1	50.3	N/A	N/A
	High Channel 165, 5825 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 18 Mbps							
	Low Channel 149, 5745 MHz	87.484 uS	294.4 uS	1	29.7	N/A	N/A
	Low Channel 149, 5745 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MHz	87.432 uS	284.8 uS	1	30.7	N/A	N/A
	Mid Channel 157, 5785 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 MHz	86.366 uS	283.716 uS	1	30.4	N/A	N/A
	High Channel 165, 5825 MHz	N/A	N/A	5	N/A	N/A	N/A

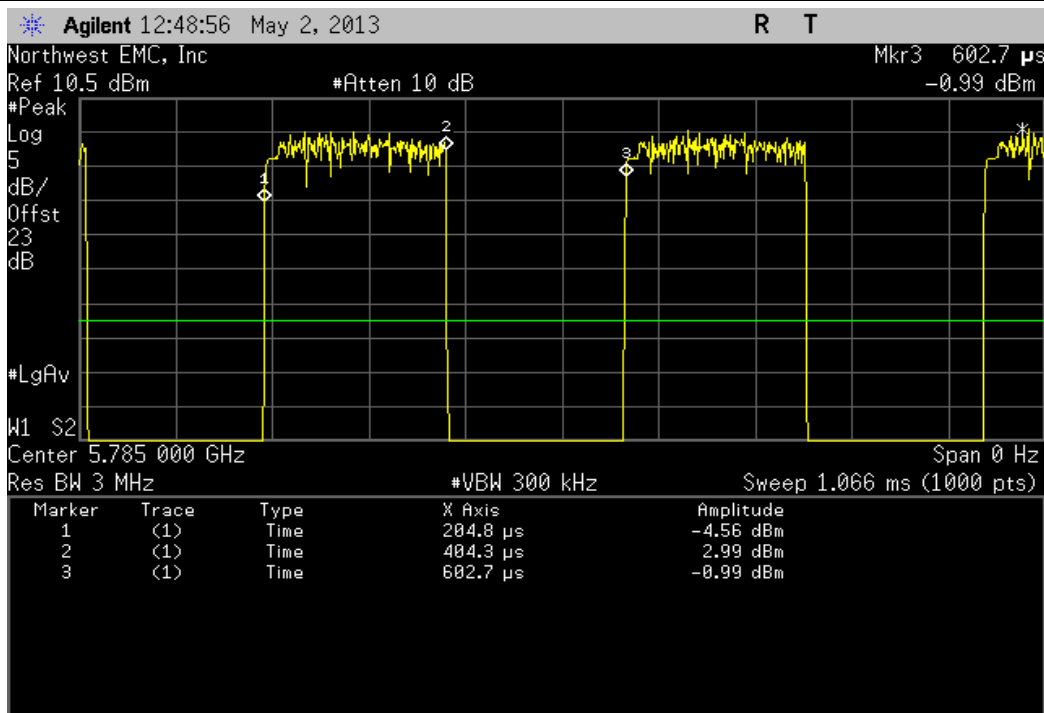
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
199.432 uS	404.267 uS	1	49.3	N/A	N/A	



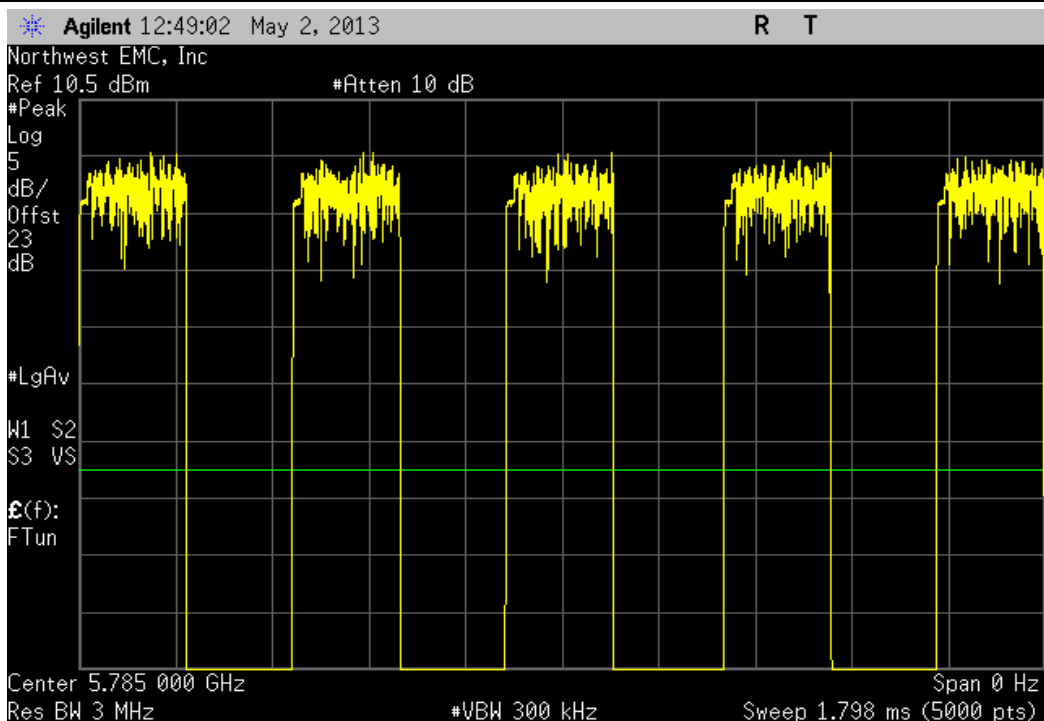
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
N/A	N/A	5	N/A	N/A	N/A	



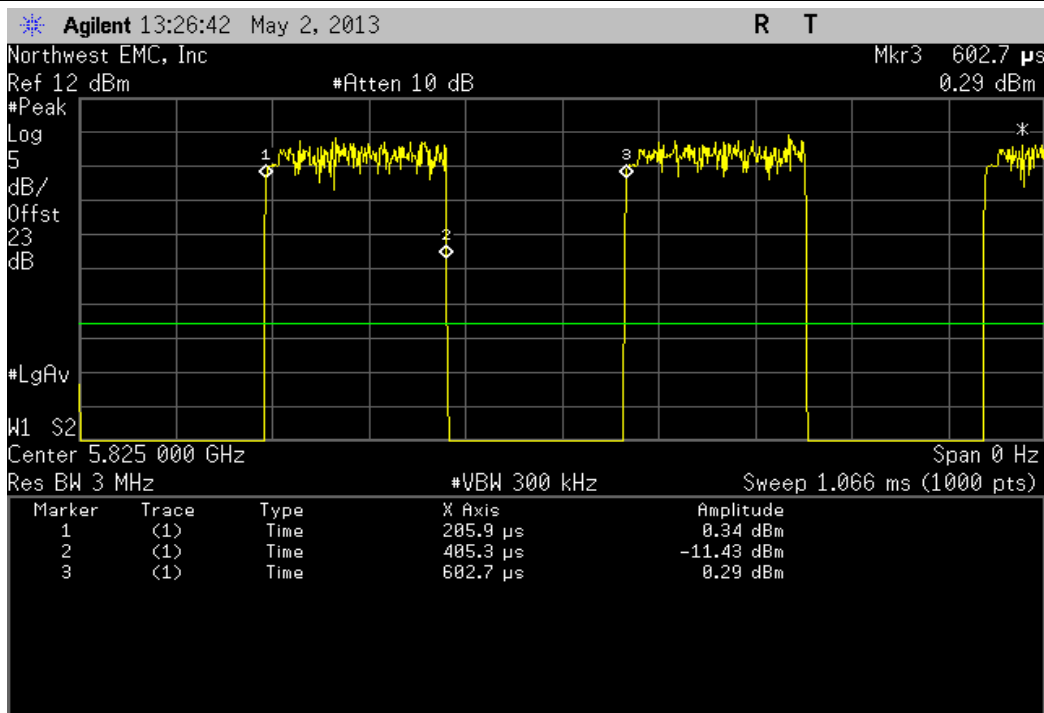
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
199.484 uS	397.901 uS	1	50.1	N/A	N/A	



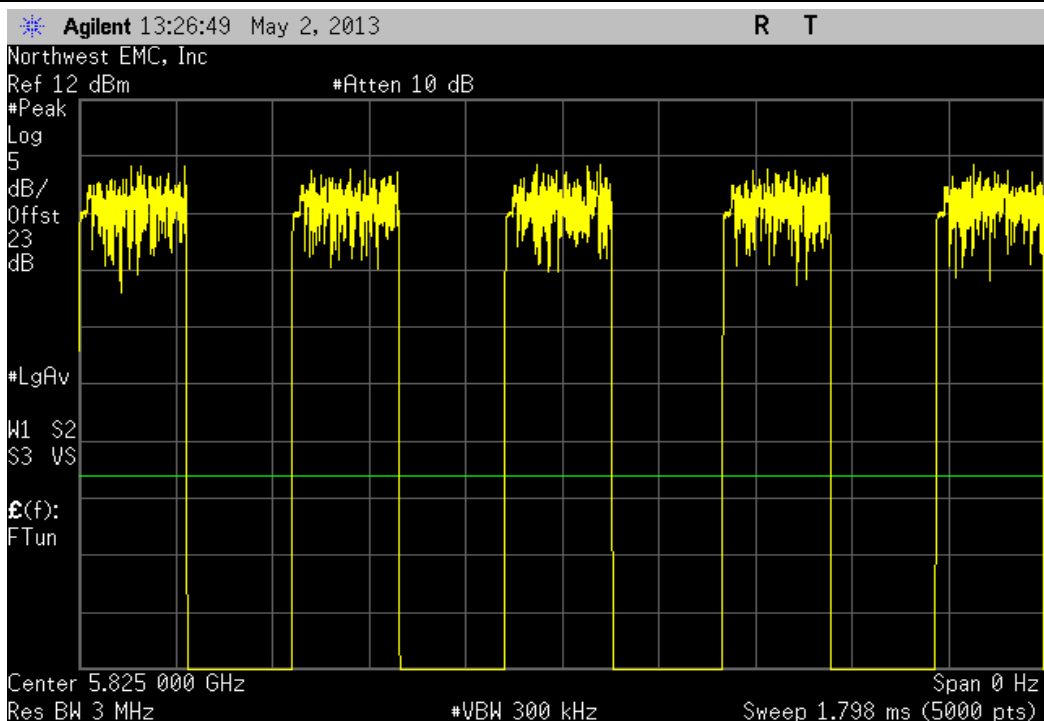
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
N/A	N/A	5	N/A	N/A	N/A	



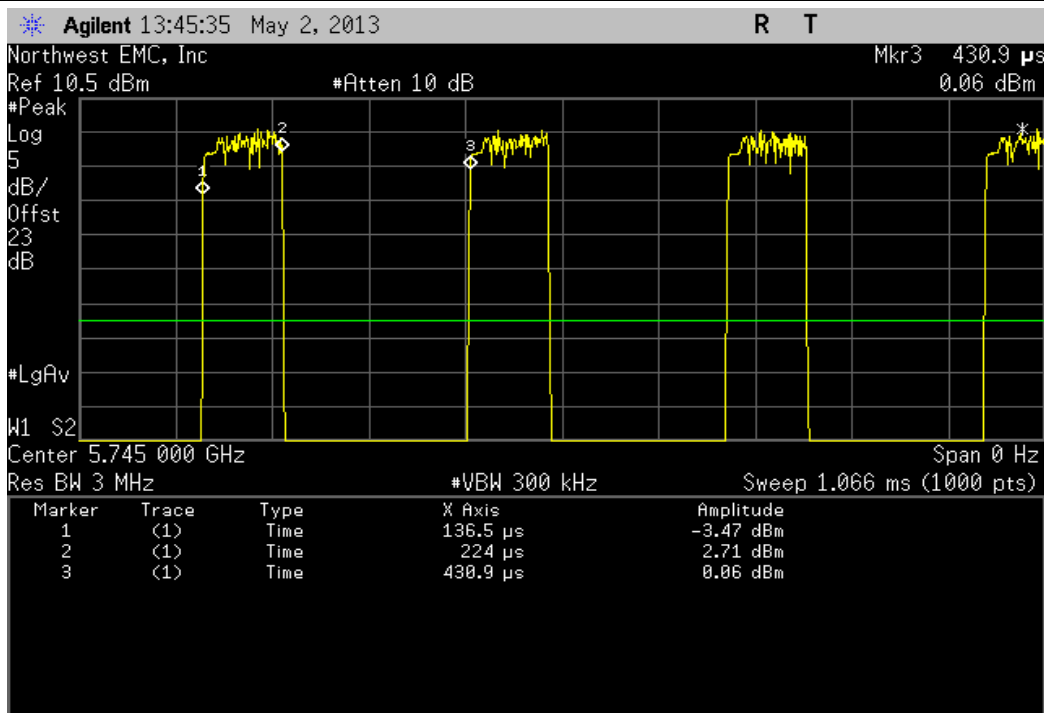
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
199.449 uS	396.8 uS	1	50.3	N/A	N/A	



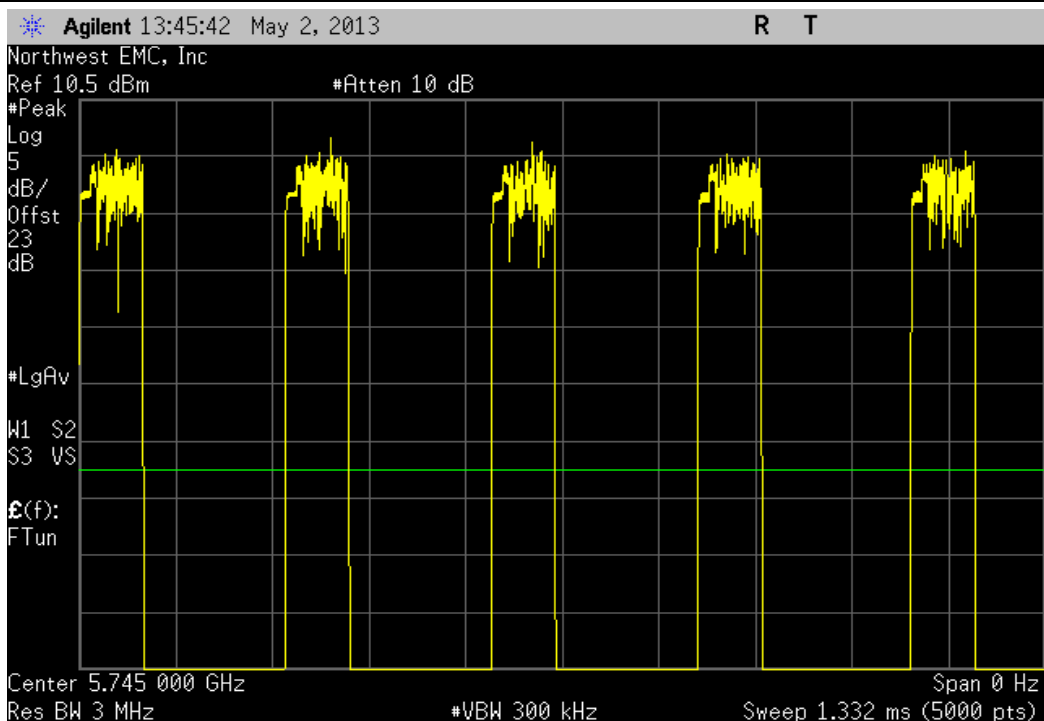
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
N/A	N/A	5	N/A	N/A	N/A	



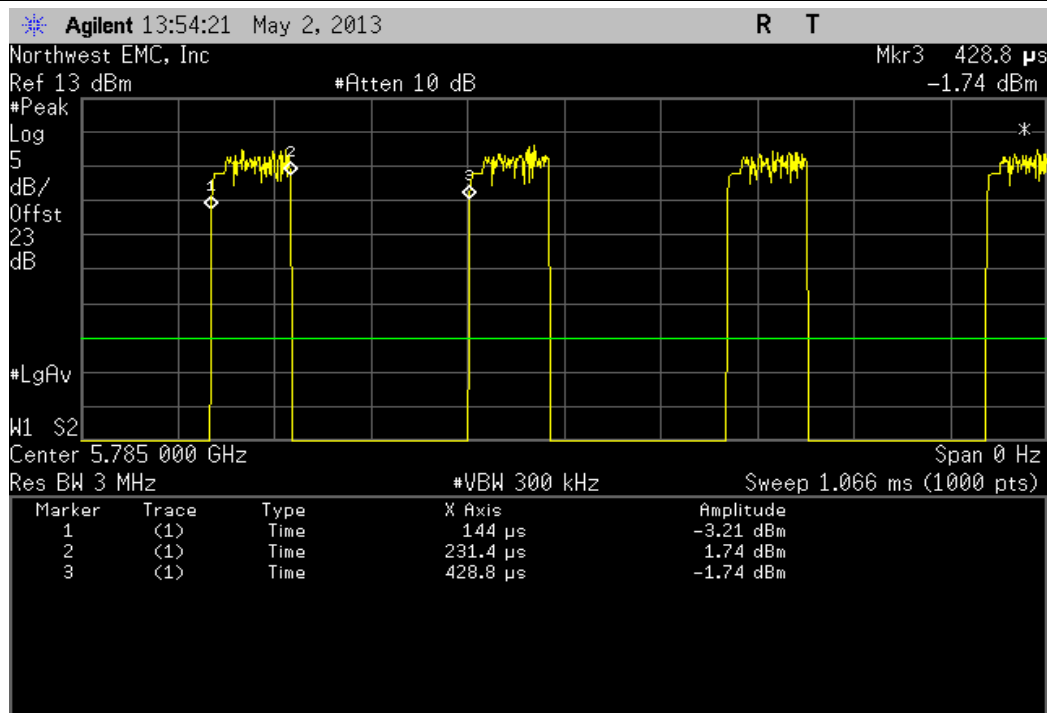
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
87.484 uS	294.4 uS	1	29.7	N/A	N/A	



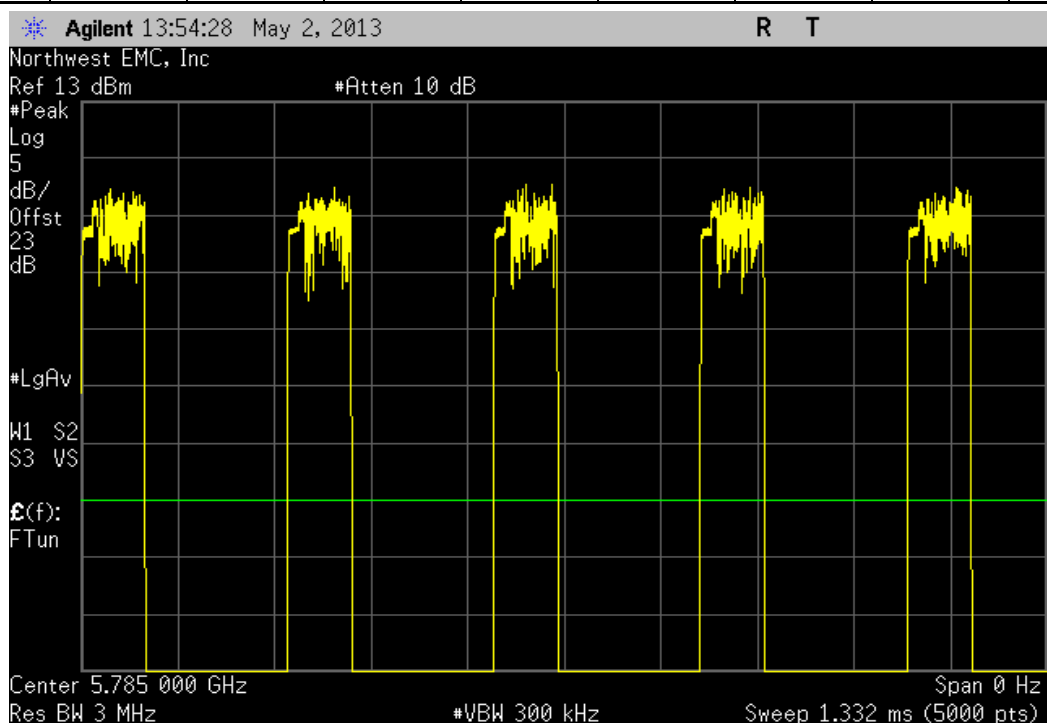
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
N/A	N/A	5	N/A	N/A	N/A	



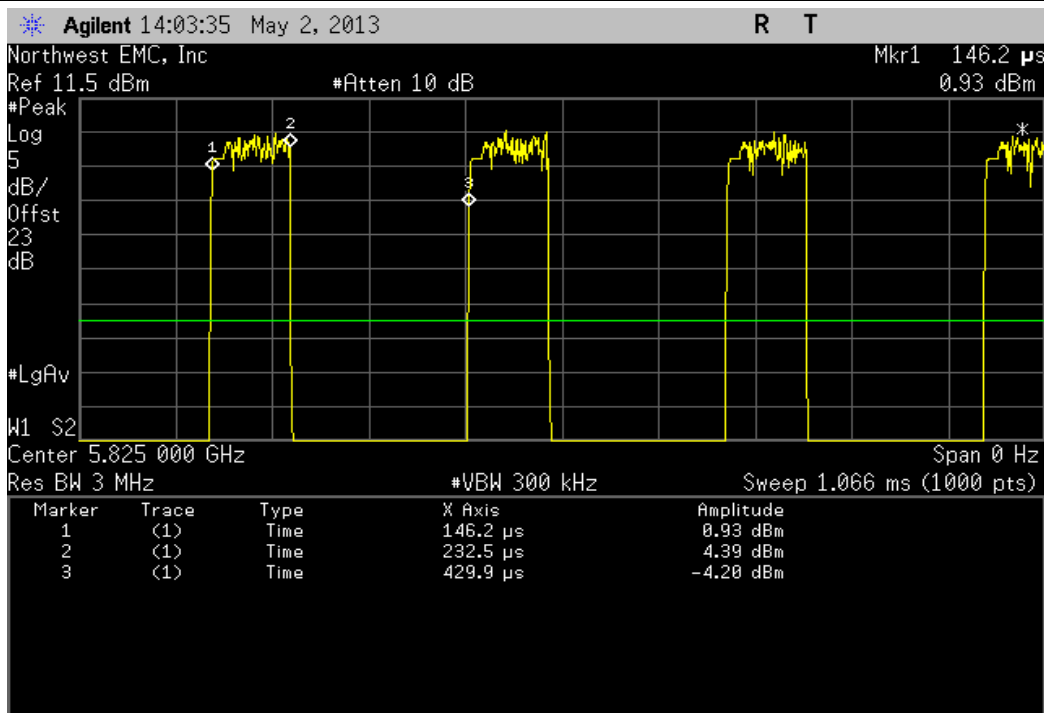
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	87.432 uS	284.8 uS	1	30.7	N/A	N/A



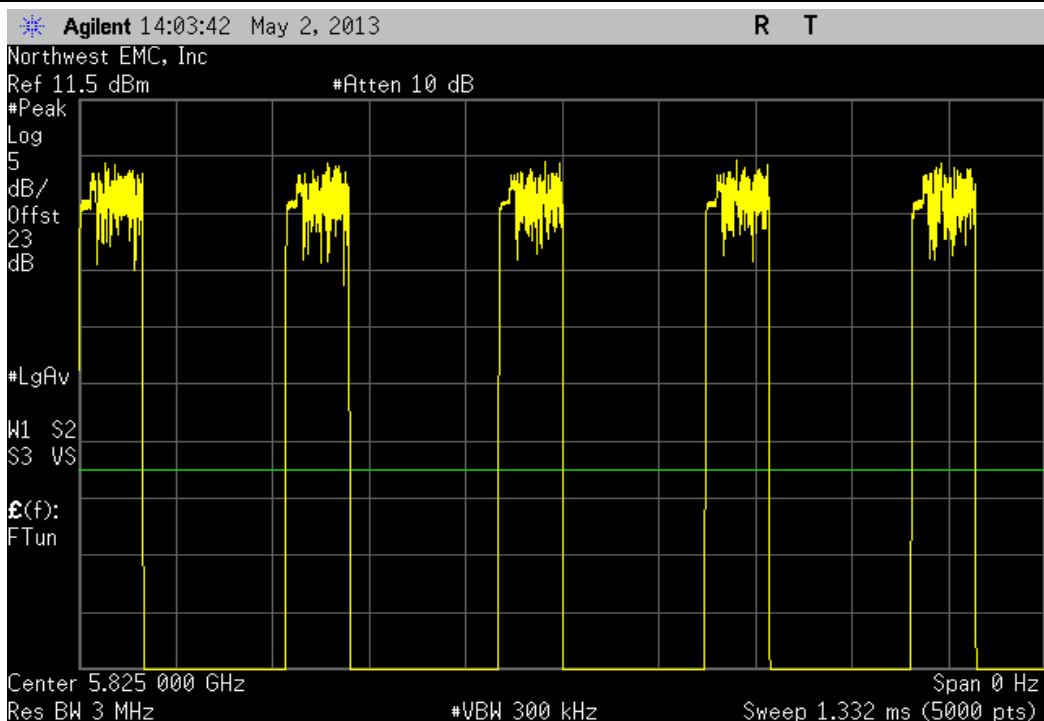
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
86.366 μ s	283.716 μ s	1	30.4	N/A	N/A	



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
N/A	N/A	5	N/A	N/A	N/A	



Occupied Bandwidth

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/25/2013	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	3/5/2013	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24

TEST DESCRIPTION


The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 26 dB (99.9%) emission bandwidth (EBW) was also measured at the same time.

The EUT was set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.



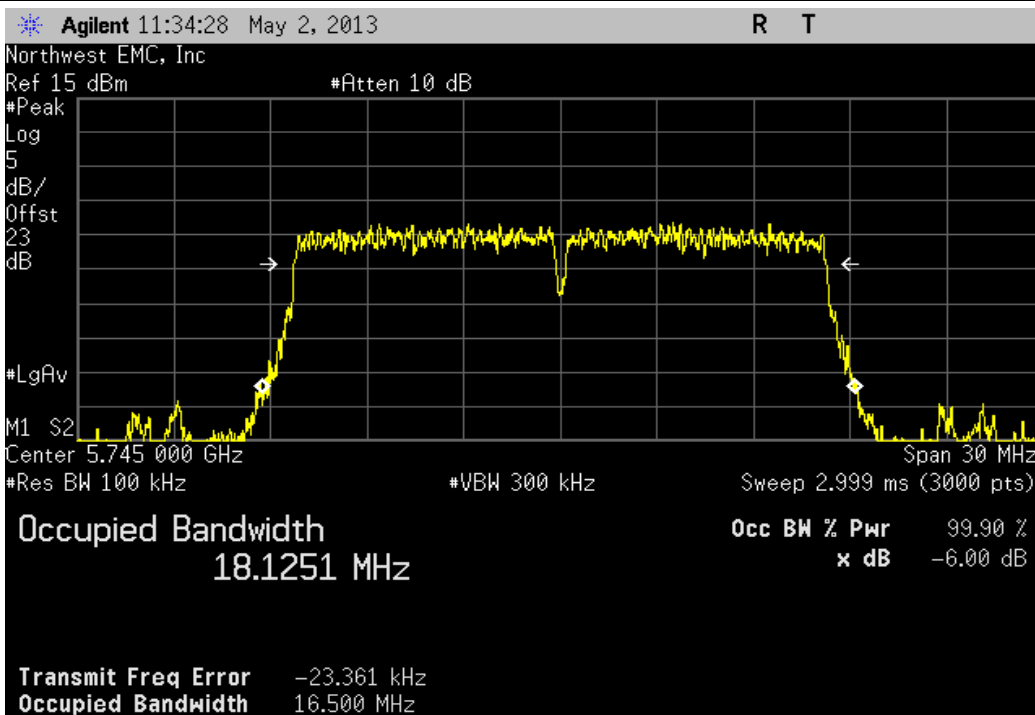
Occupied Bandwidth

XMit 2013.02.28
PsaTx 2013.01.10

EUT: Model 444-2225 (Athena UFL)		Work Order: FOCU0140	
Serial Number: 02EA4D000027		Date: 05/03/13	
Customer: Summit Semiconductor		Temperature: 24°C	
Attendees: None		Humidity: 30%	
Project: None		Barometric Pres.: 1023	
Tested by: Brandon Hobbs		Power: 3.3V DC	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2013		ANSI C63.10:2009	
COMMENTS			
All testing was completed on the highest output power antenna port A2.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Value	Limit
5725 MHz - 5850 MHz Band			Result
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz		16.5 MHz	> 500 kHz
Mid Channel 157, 5785 MHz		16.55 MHz	> 500 kHz
High Channel 165, 5825 MHz		16.557 MHz	> 500 kHz
802.11(a) 18 Mbps			
Low Channel 149, 5745 MHz		16.32 MHz	> 500 kHz
Mid Channel 157, 5785 MHz		16.272 MHz	> 500 kHz
High Channel 165, 5825 MHz		16.011 MHz	> 500 kHz

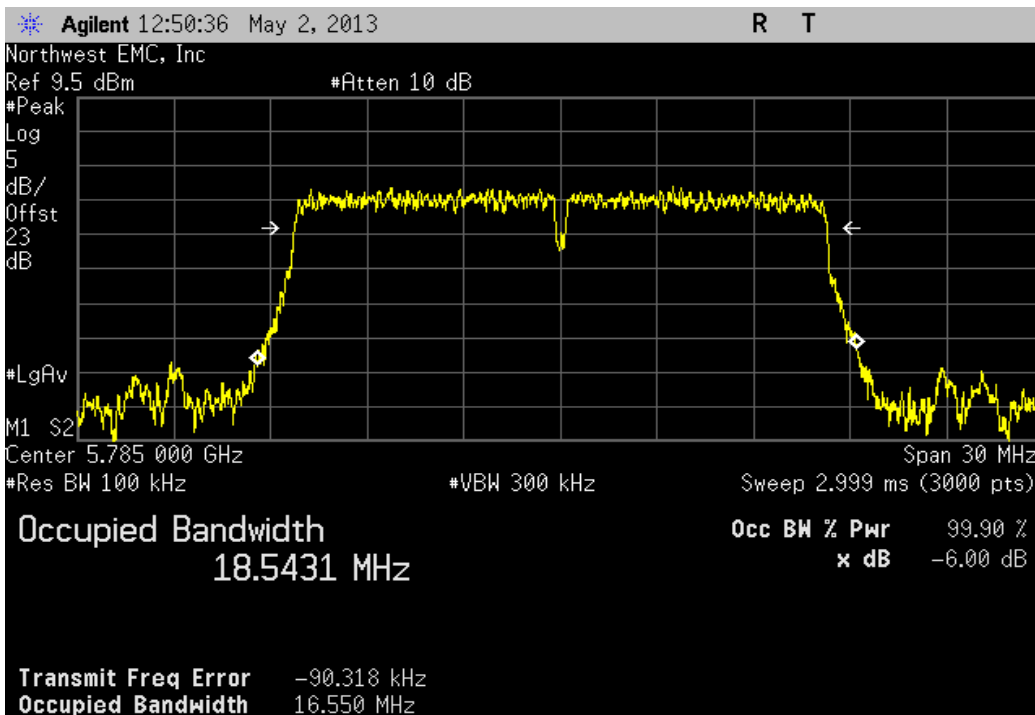
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

Value	Limit	Result
16.5 MHz	> 500 kHz	Pass



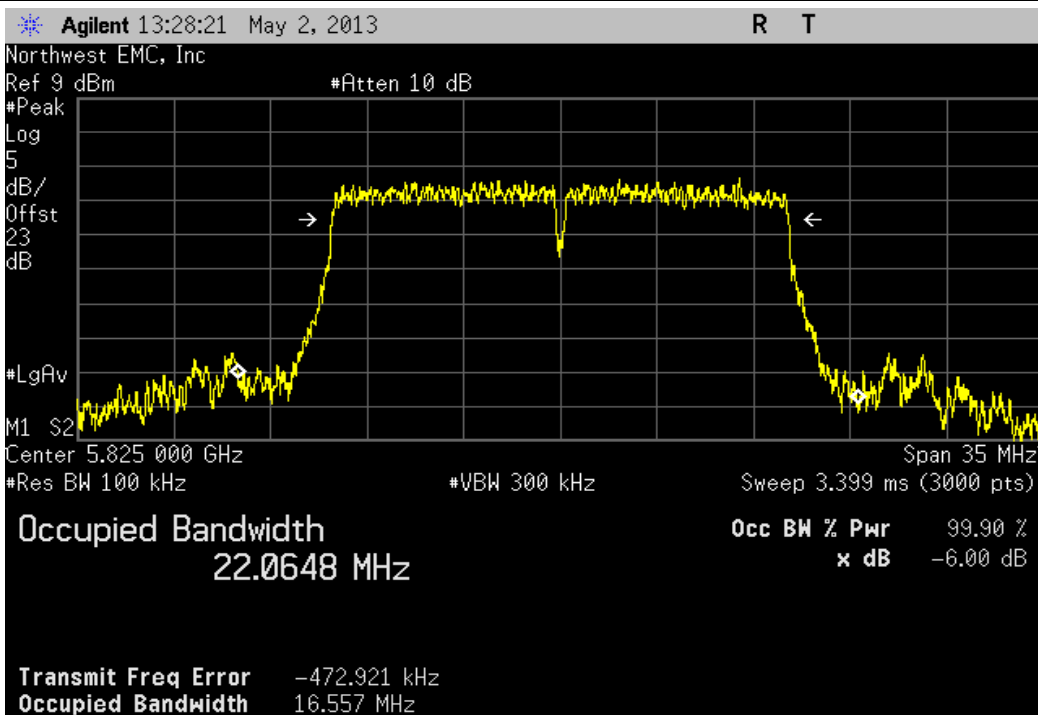
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz

Value	Limit	Result
16.55 MHz	> 500 kHz	Pass



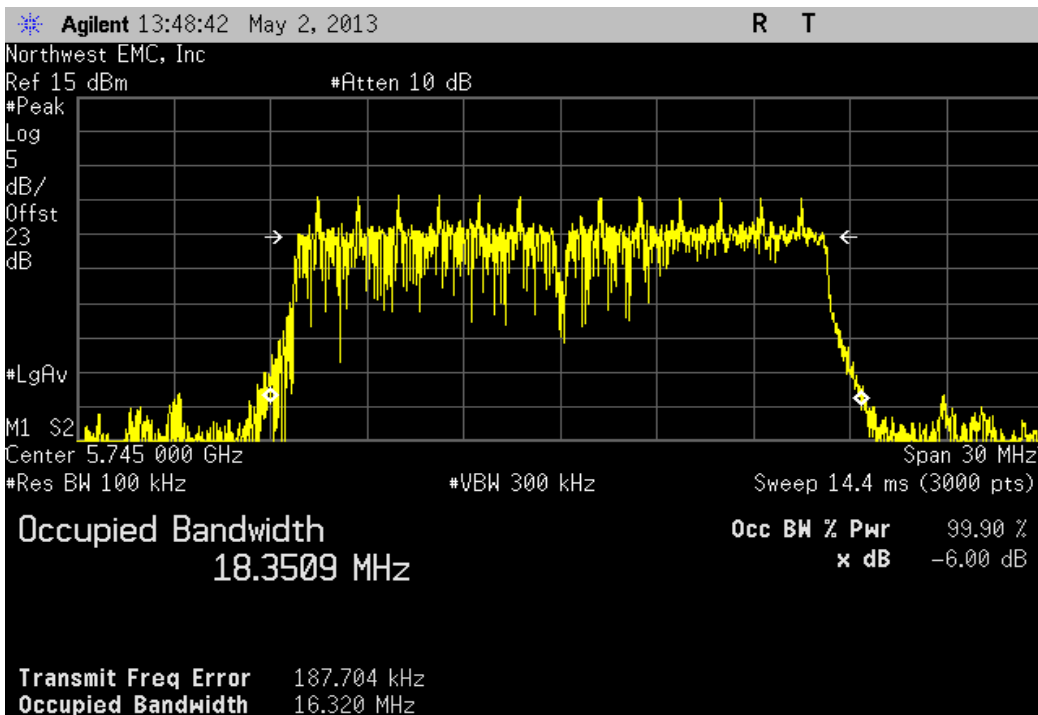
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz

Value	Limit	Result
16.557 MHz	> 500 kHz	Pass



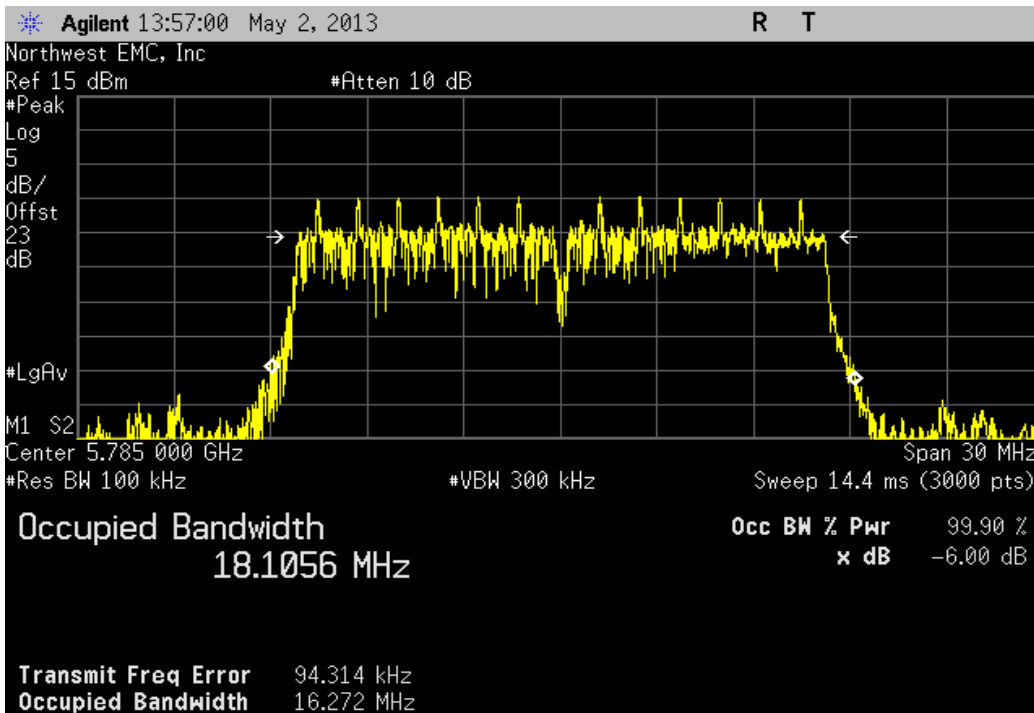
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz

Value	Limit	Result
16.32 MHz	> 500 kHz	Pass



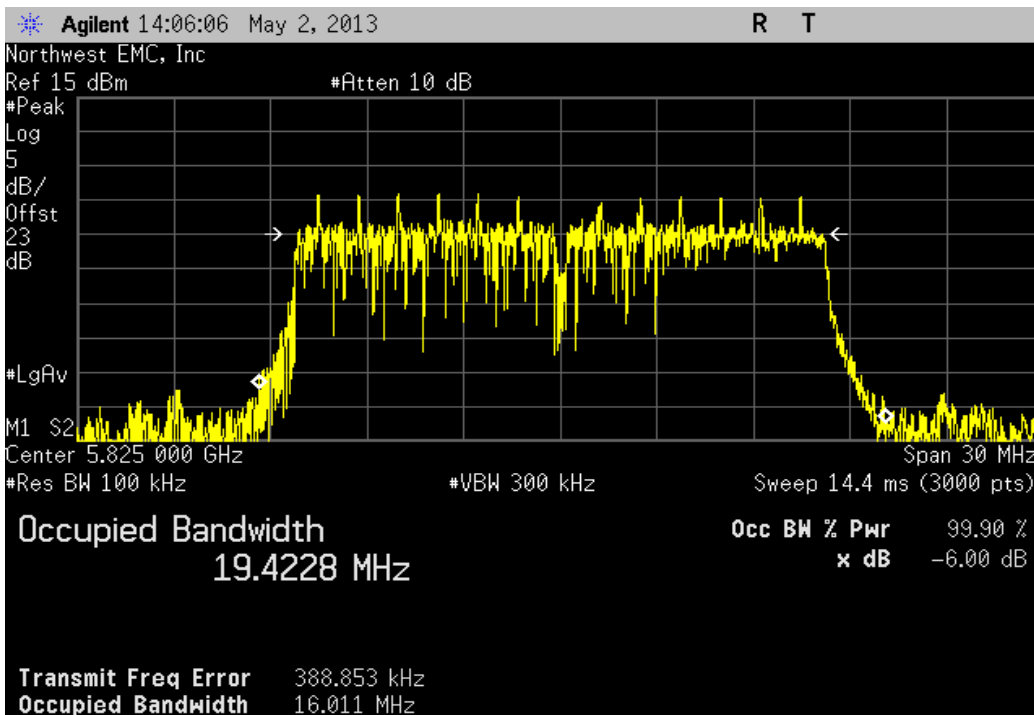
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				16.272 MHz	> 500 kHz	Pass



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.011 MHz	> 500 kHz	Pass



Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/25/2013	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	3/5/2013	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.


Method Option 1 found in KDB 558074 DTS D01 Measurement Section 9.1.1 was used because the RBW on the analyzer was greater than the Emission Bandwidth of the radio.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.



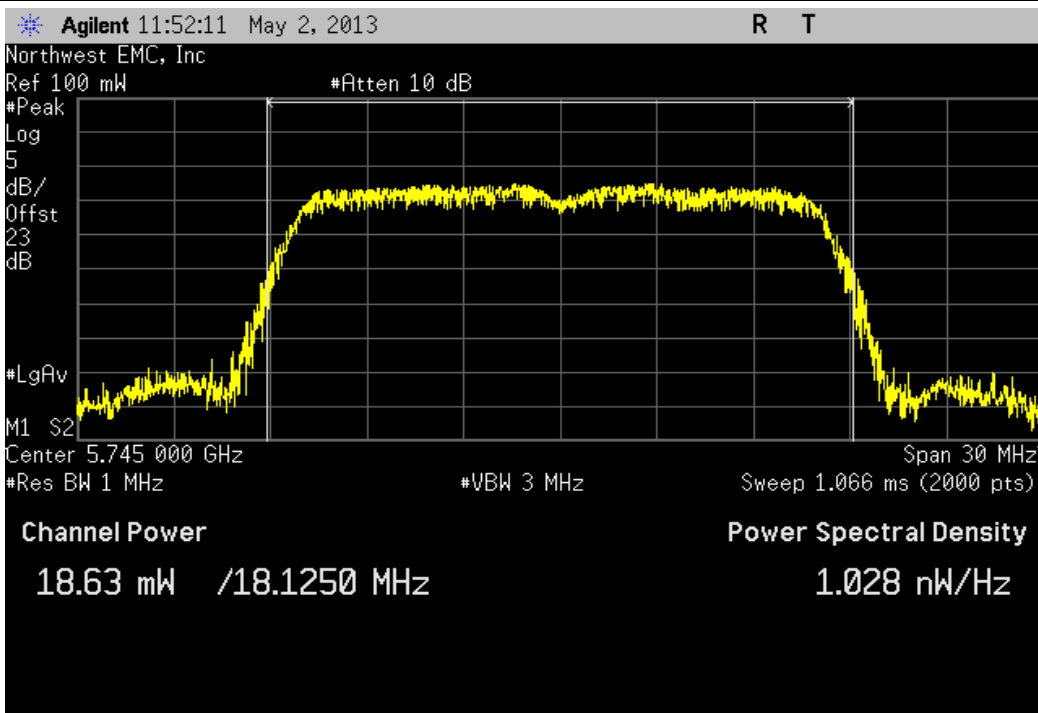
Output Power

XMit 2013.02.28
PsaTx 2013.01.10

EUT: Model 444-2225 (Athena UFL)		Work Order: FOCU0140	
Serial Number: 02EA4D000027		Date: 05/03/13	
Customer: Summit Semiconductor		Temperature: 24°C	
Attendees: None		Humidity: 30%	
Project: None		Barometric Pres.: 1023	
Tested by: Brandon Hobbs		Power: 3.3V DC	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2013		ANSI C63.10:2009	
COMMENTS			
All testing was completed on the highest output power antenna port A2.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Value	Limit
5725 MHz - 5850 MHz Band			Result
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz		18.63 mW	< 1 W
Mid Channel 157, 5785 MHz		17.202 mW	< 1 W
High Channel 165, 5825 MHz		18.946 mW	< 1 W
802.11(a) 18 Mbps			
Low Channel 149, 5745 MHz		19.569 mW	< 1 W
Mid Channel 157, 5785 MHz		18.223 mW	< 1 W
High Channel 165, 5825 MHz		20.137 mW	< 1 W

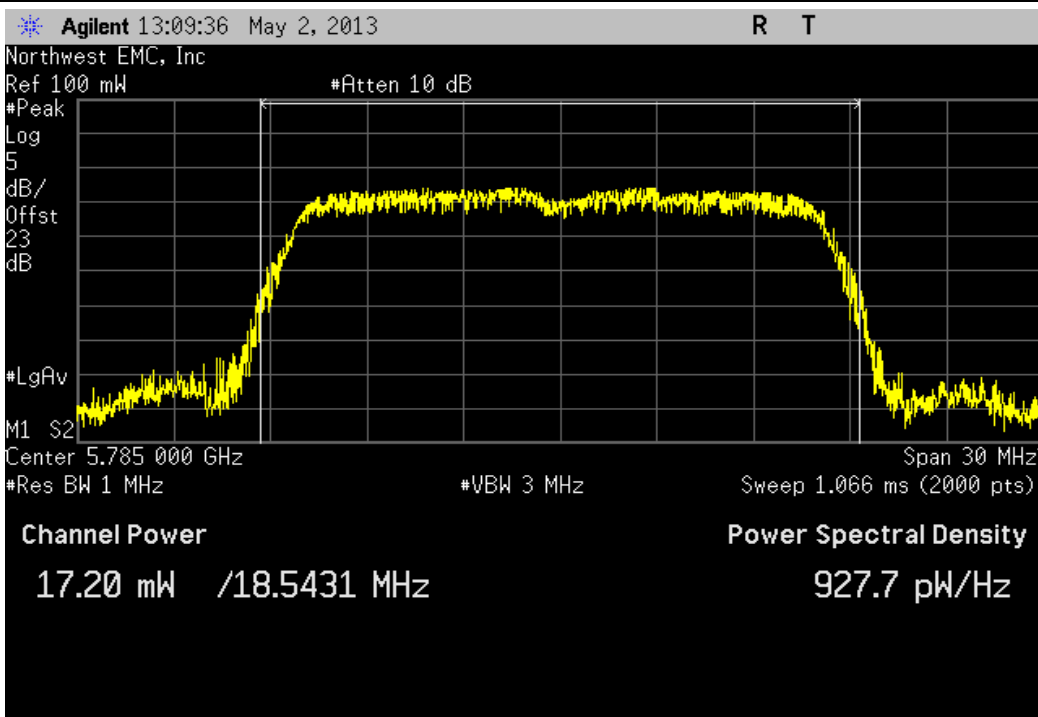
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				18.63 mW	< 1 W	Pass



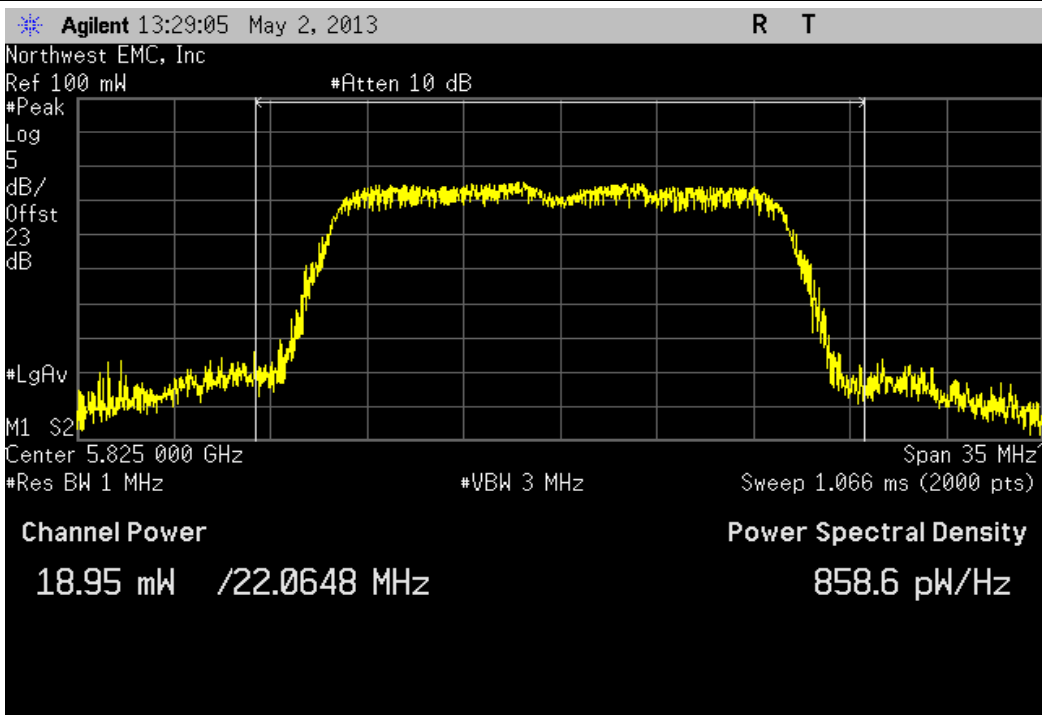
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				17.202 mW	< 1 W	Pass



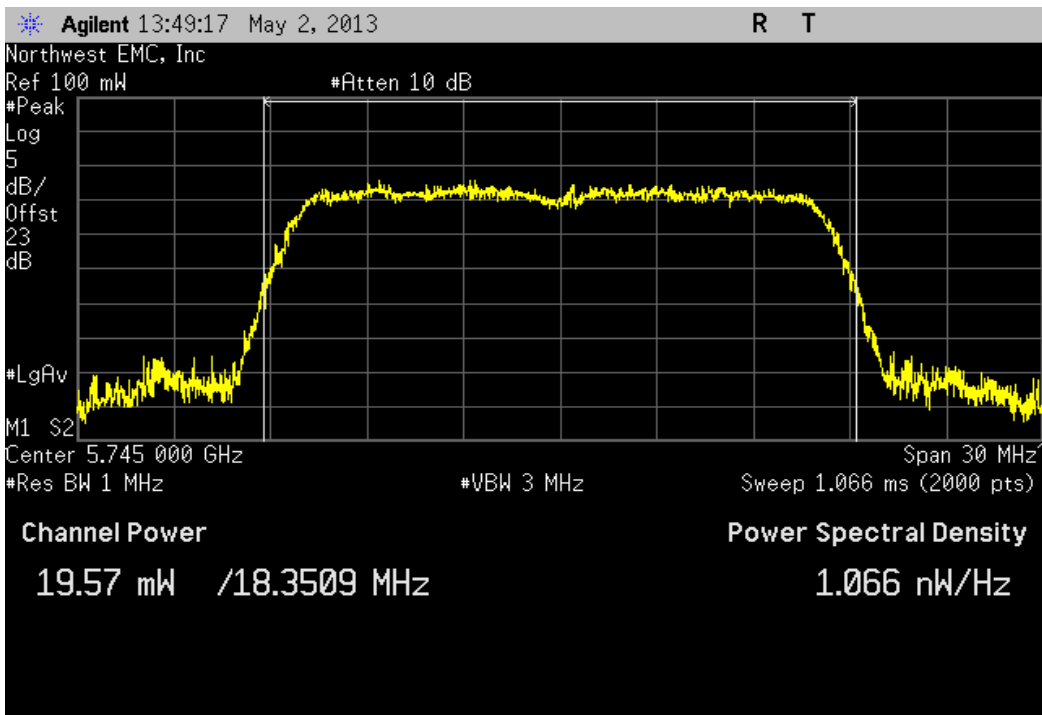
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz

Value	Limit	Result
18.946 mW	< 1 W	Pass



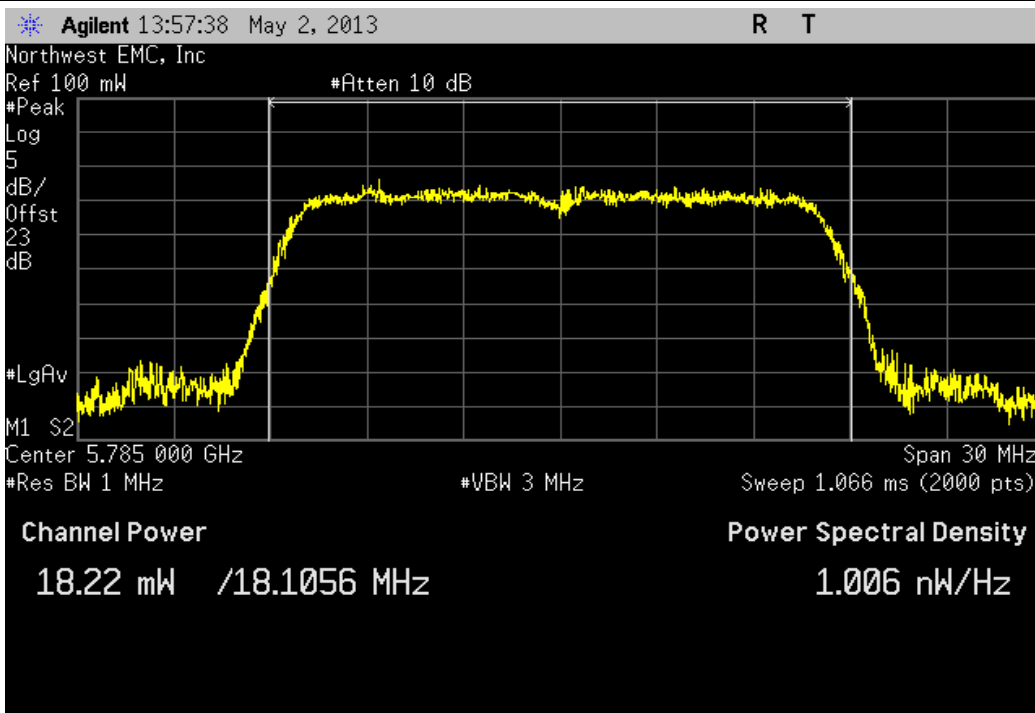
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz

Value	Limit	Result
19.569 mW	< 1 W	Pass



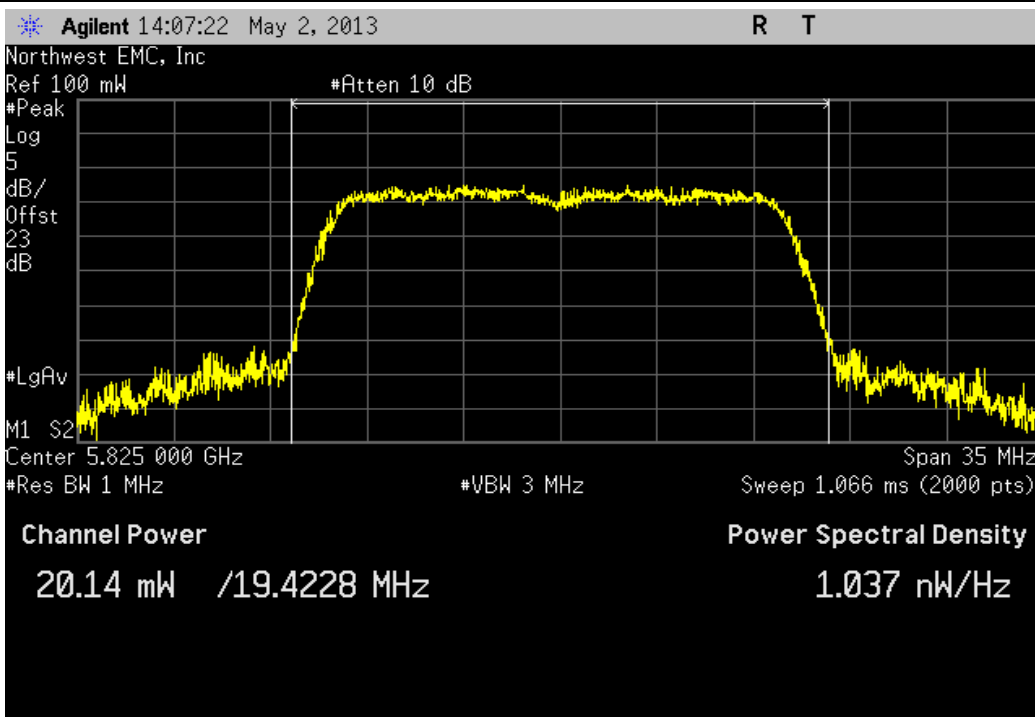
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz

Value	Limit	Result
18.223 mW	< 1 W	Pass



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz

Value	Limit	Result
20.137 mW	< 1 W	Pass



Band Edge Compliance

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/25/2013	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	3/5/2013	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24

TEST DESCRIPTION


The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.



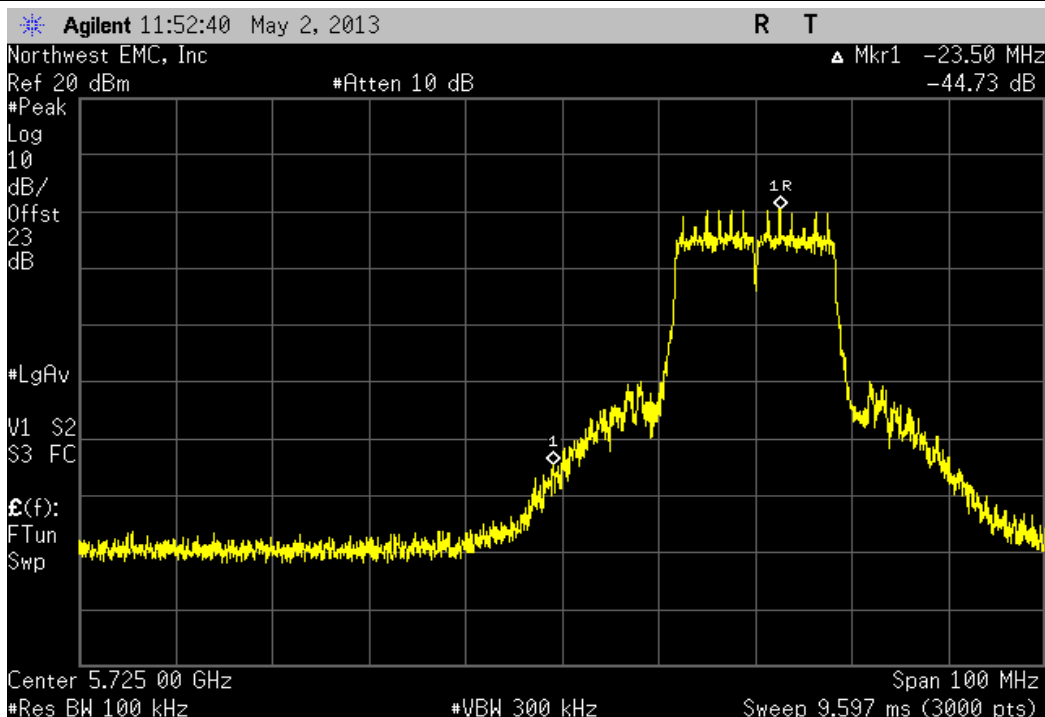
Band Edge Compliance

XMit 2013.02.28
PsaTx 2013.01.10

EUT: Model 444-2225 (Athena UFL)		Work Order: FOCU0140	
Serial Number: 02EA4D000027		Date: 05/03/13	
Customer: Summit Semiconductor		Temperature: 24°C	
Attendees: None		Humidity: 30%	
Project: None		Barometric Pres.: 1023	
Tested by: Brandon Hobbs		Power: 3.3V DC	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2013		ANSI C63.10:2009	
COMMENTS			
All testing was completed on the highest output power antenna port A2.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Value	Limit
5725 MHz - 5850 MHz Band			Result
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz		-44.73 dBc	≤ -20 dBc
High Channel 165, 5825 MHz		-50.56 dBc	≤ -20 dBc
802.11(a) 18 Mbps			
Low Channel 149, 5745 MHz		-44.14 dBc	≤ -20 dBc
High Channel 165, 5825 MHz		-50.43 dBc	≤ -20 dBc

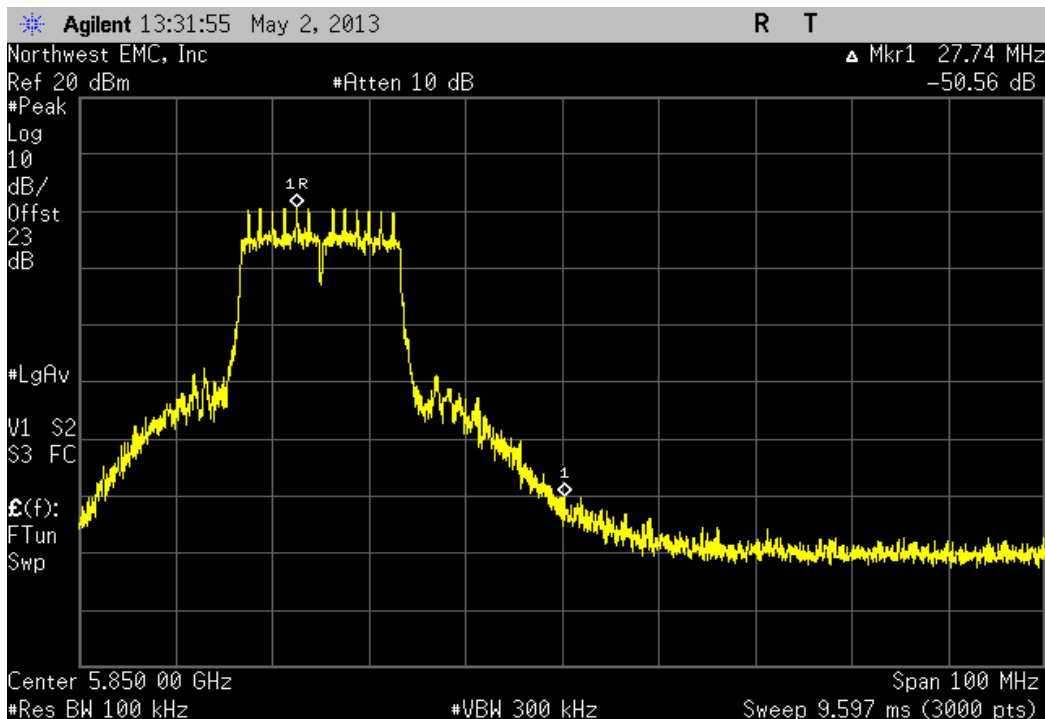
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

Value	Limit	Result
-44.73 dBc	≤ -20 dBc	Pass



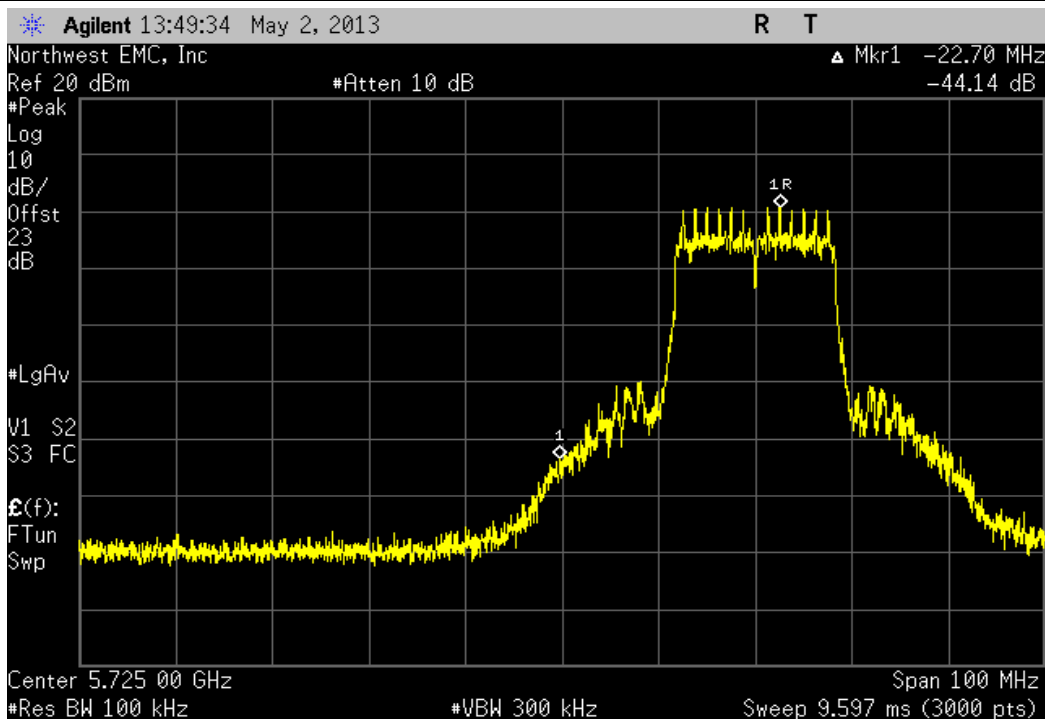
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz

Value	Limit	Result
-50.56 dBc	≤ -20 dBc	Pass



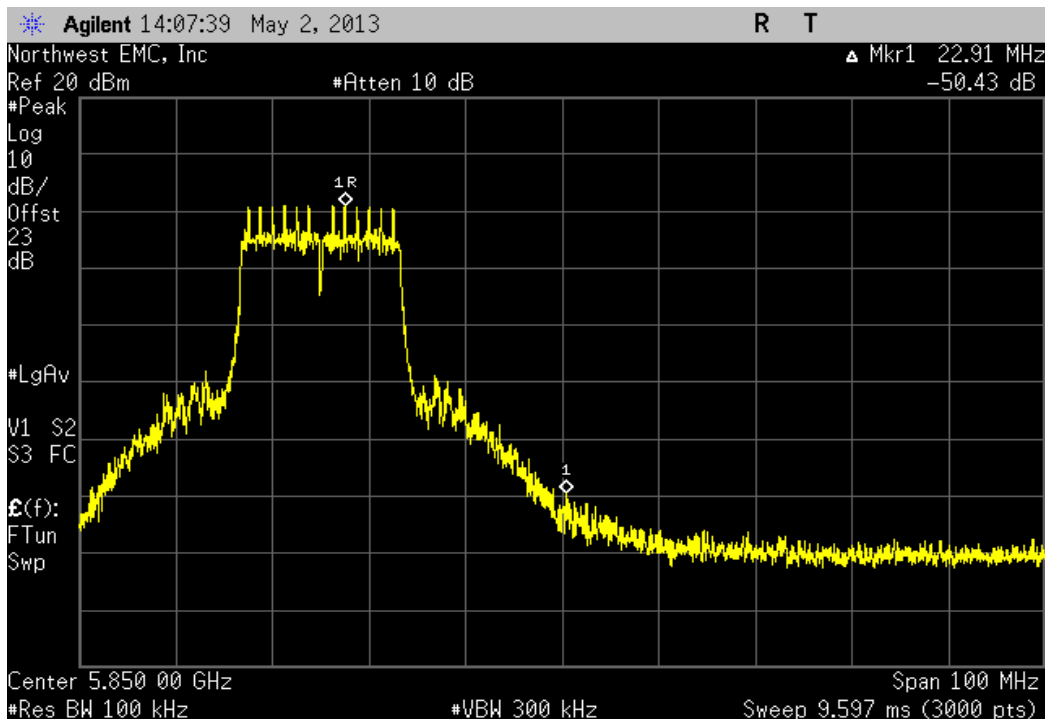
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz

Value	Limit	Result
-44.14 dBc	≤ -20 dBc	Pass



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz

Value	Limit	Result
-50.43 dBc	≤ -20 dBc	Pass



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/25/2013	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	3/5/2013	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24


TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

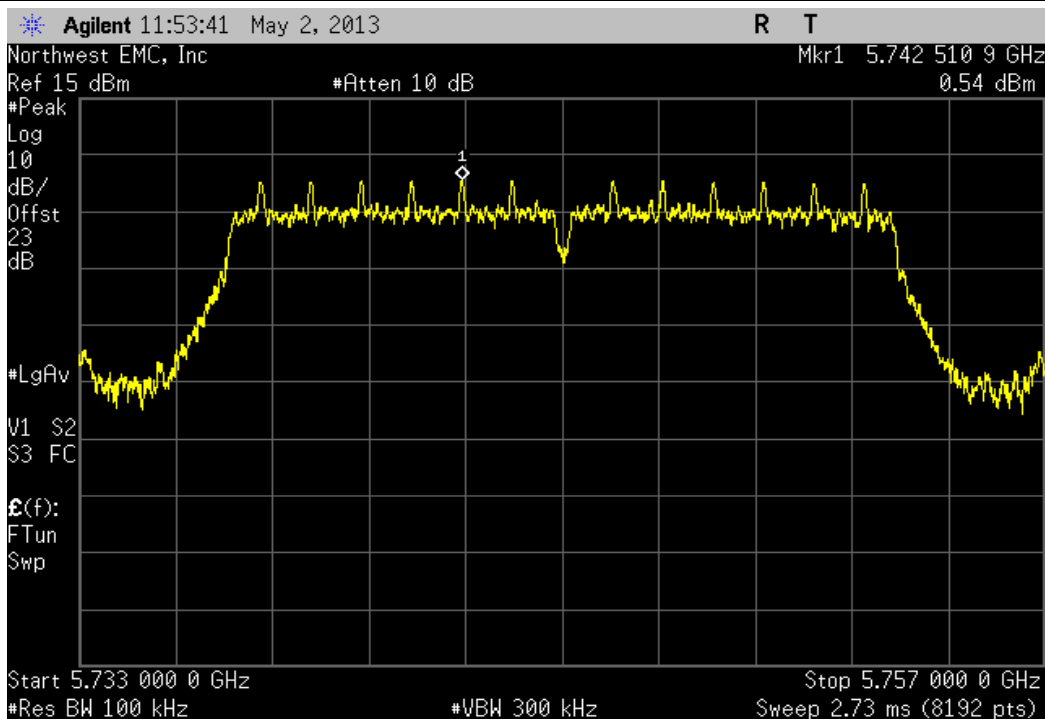


Spurious Conducted Emissions

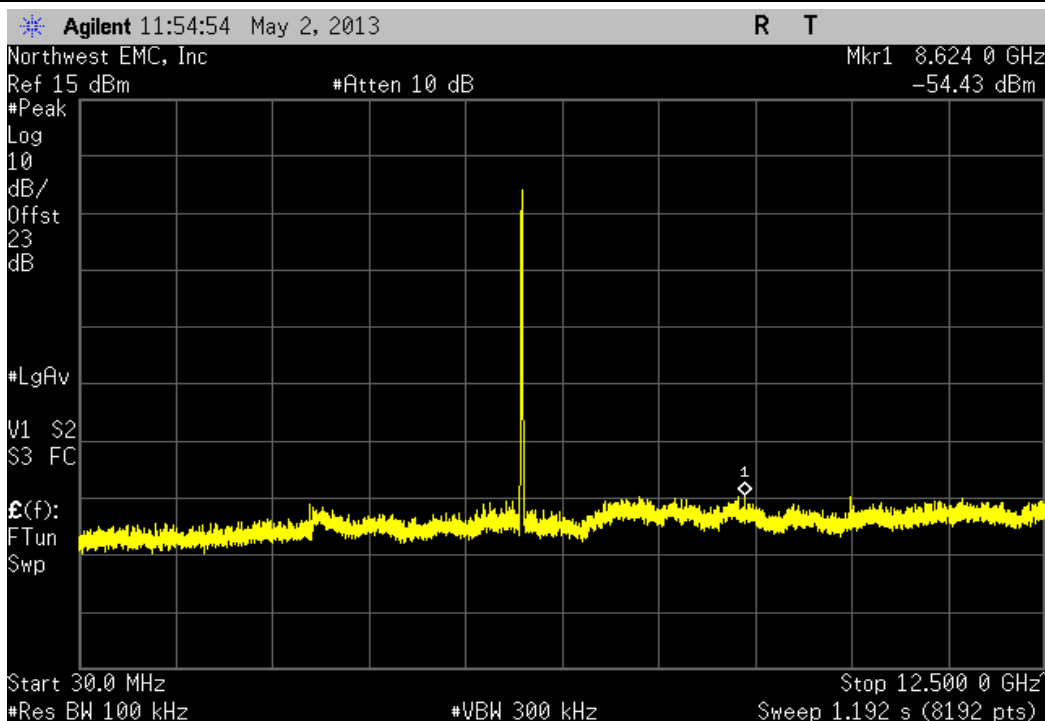
XMit 2013.02.28
PsaTx 2013.01.10

EUT: Model 444-2225 (Athena UFL)		Work Order: FOCU0140			
Serial Number: 02EA4D000027		Date: 05/03/13			
Customer: Summit Semiconductor		Temperature: 24°C			
Attendees: None		Humidity: 30%			
Project: None		Barometric Pres.: 1023			
Tested by: Brandon Hobbs		Power: 3.3V DC			
		Job Site: EV06			
TEST SPECIFICATIONS		Test Method			
FCC 15.247:2013		ANSI C63.10:2009			
COMMENTS					
All testing was completed on the highest output power antenna port A2.					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	5	Signature 			
		Frequency Range	Value	Limit	Result
5725 MHz - 5850 MHz Band					
802.11(a) 6 Mbps					
Low Channel 149, 5745 MHz		Fundamental	N/A	N/A	N/A
Low Channel 149, 5745 MHz		30 MHz - 12.5 GHz	-54.97 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 MHz		12.5 GHz - 25 GHz	-48.14 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 MHz		25 GHz - 32 GHz	-46.38 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 MHz		32 GHz - 40 GHz	-36.95 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		Fundamental	N/A	N/A	N/A
Mid Channel 157, 5785 MHz		30 MHz - 12.5 GHz	-53.97 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		12.5 GHz - 25 GHz	-46.69 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		25 GHz - 32 GHz	-45.81 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		32 GHz - 40 GHz	-36.53 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		Fundamental	N/A	N/A	N/A
High Channel 165, 5825 MHz		30 MHz - 12.5 GHz	-55.21 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		12.5 GHz - 25 GHz	-48.01 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		25 GHz - 32 GHz	-46.02 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		32 GHz - 40 GHz	-37.54 dBc	≤ -20 dBc	Pass
802.11(a) 18 Mbps					
Low Channel 149, 5745 MHz		Fundamental	N/A	N/A	N/A
Low Channel 149, 5745 MHz		30 MHz - 12.5 GHz	-54.8 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 MHz		12.5 GHz - 25 GHz	-48.52 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 MHz		25 GHz - 32 GHz	-46.5 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 MHz		32 GHz - 40 GHz	-37.23 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		Fundamental	N/A	N/A	N/A
Mid Channel 157, 5785 MHz		30 MHz - 12.5 GHz	-54.62 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		12.5 GHz - 25 GHz	-47.9 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		25 GHz - 32 GHz	-46.12 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MHz		32 GHz - 40 GHz	-37.2 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		Fundamental	N/A	N/A	N/A
High Channel 165, 5825 MHz		30 MHz - 12.5 GHz	-54.71 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		12.5 GHz - 25 GHz	-48.65 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		25 GHz - 32 GHz	-46.55 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz		32 GHz - 40 GHz	-36.86 dBc	≤ -20 dBc	Pass

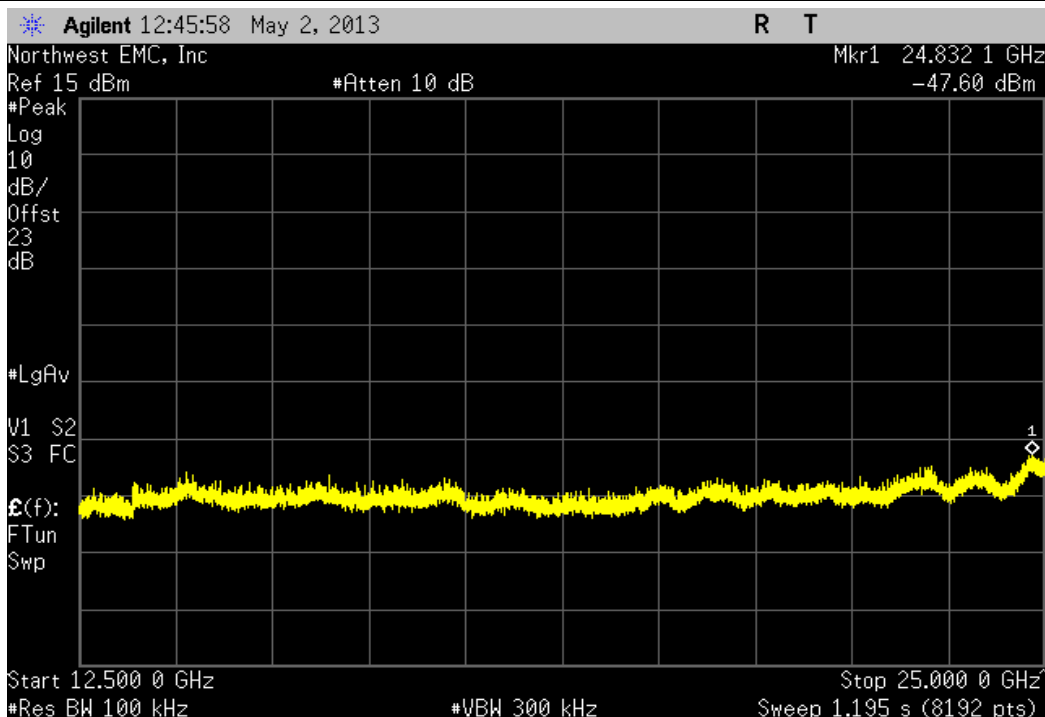
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		Value	Limit	Result
Fundamental		N/A	N/A	N/A



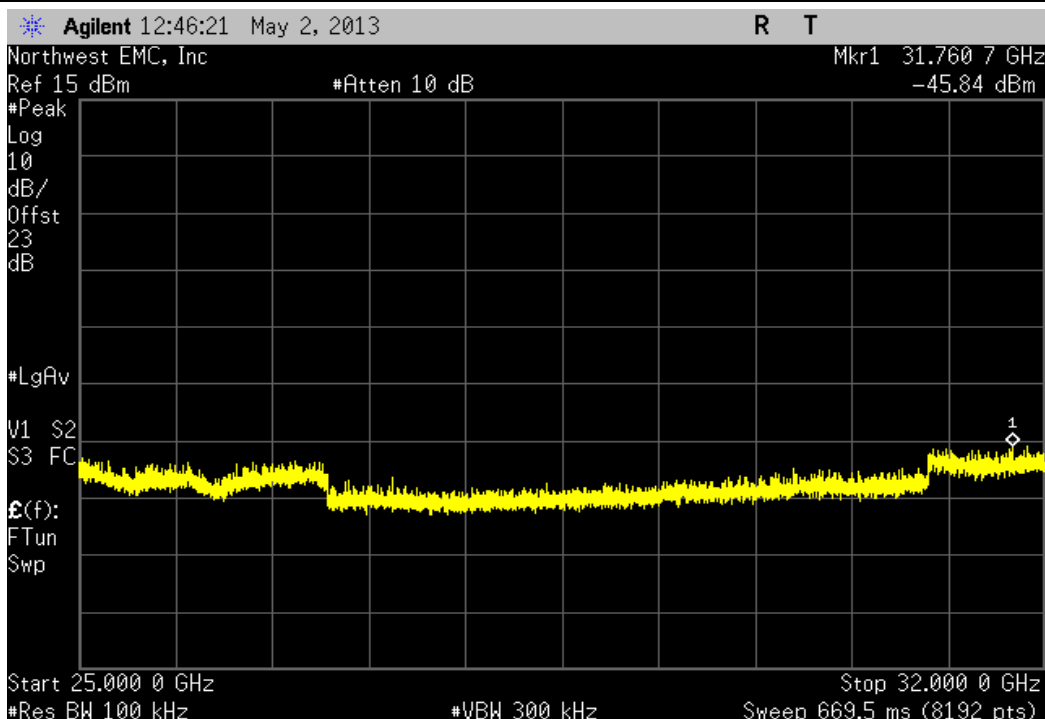
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-54.97 dBc	≤ -20 dBc	Pass



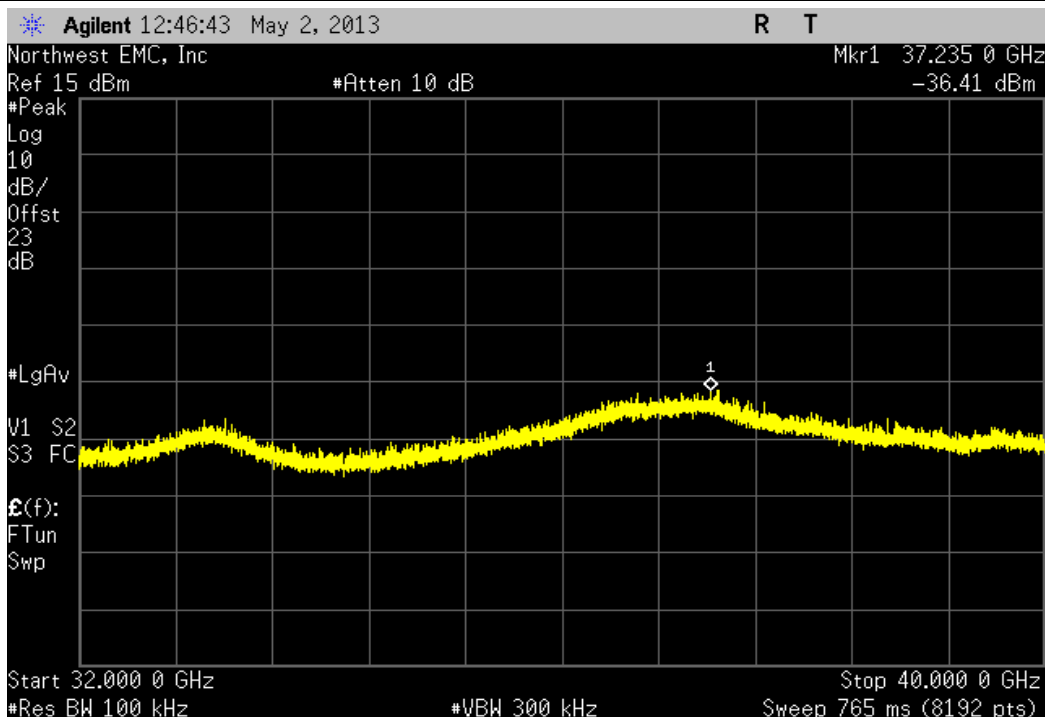
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-48.14 dBc	≤ -20 dBc	Pass	



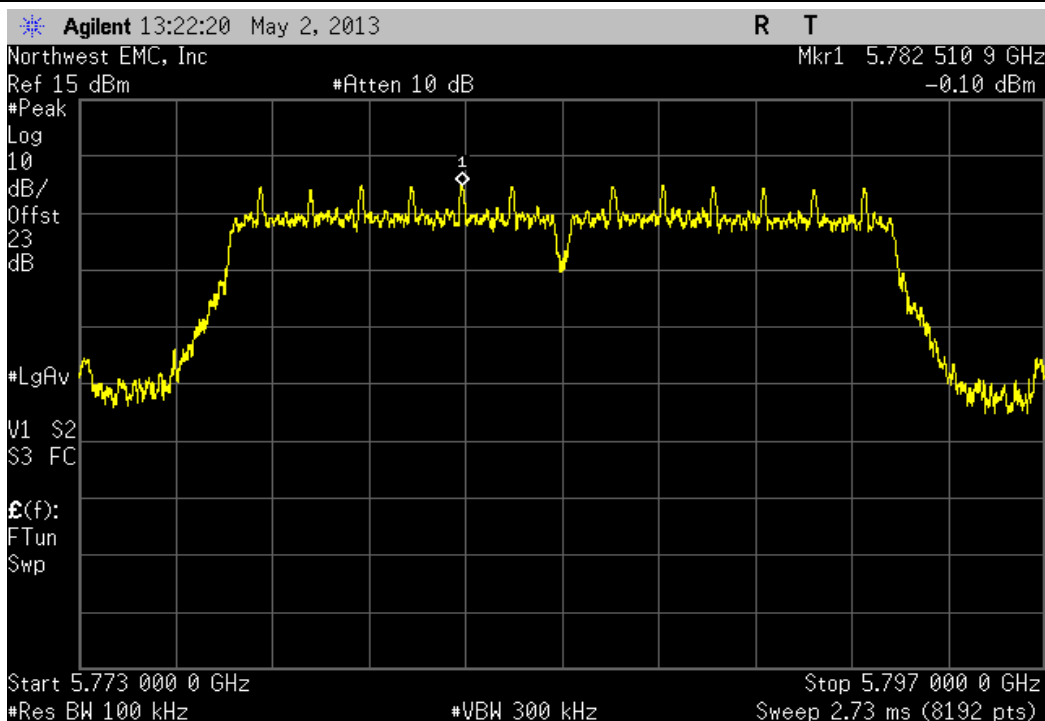
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-46.38 dBc	≤ -20 dBc	Pass	



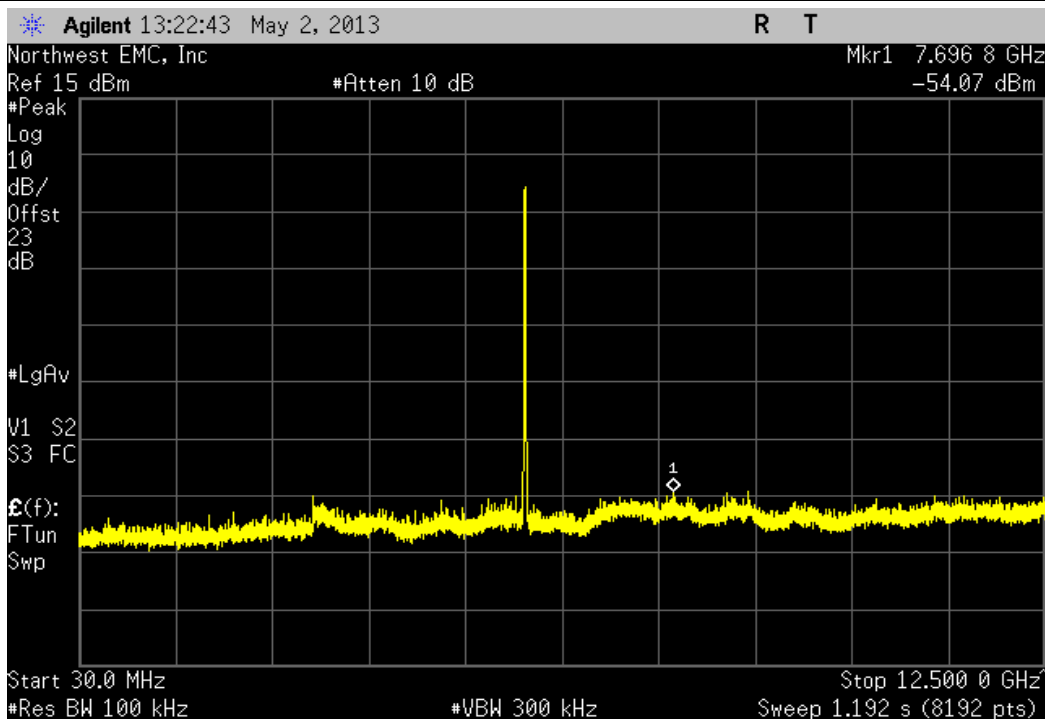
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-36.95 dBc	≤ -20 dBc	Pass	



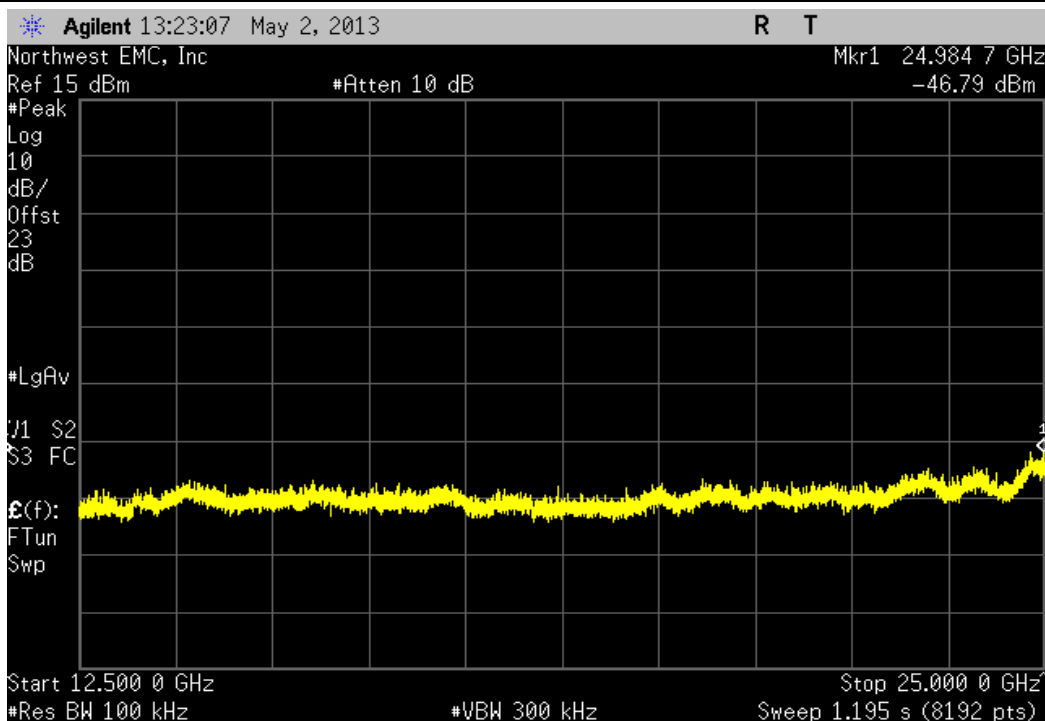
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
Fundamental	N/A	N/A	N/A	



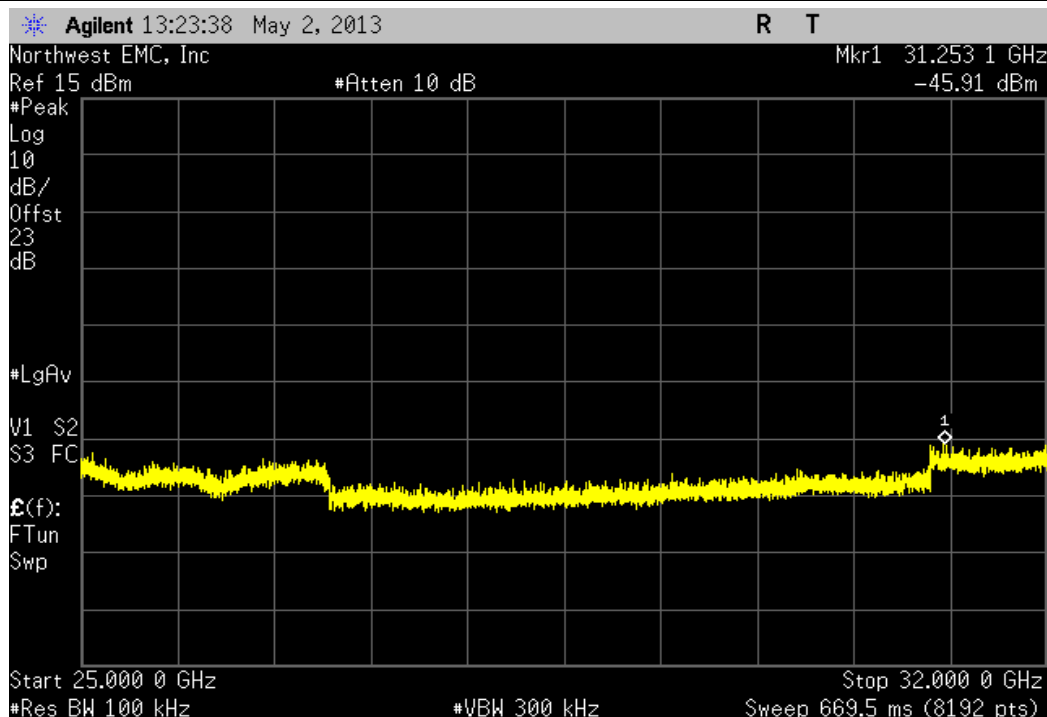
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-53.97 dBc	≤ -20 dBc	Pass	



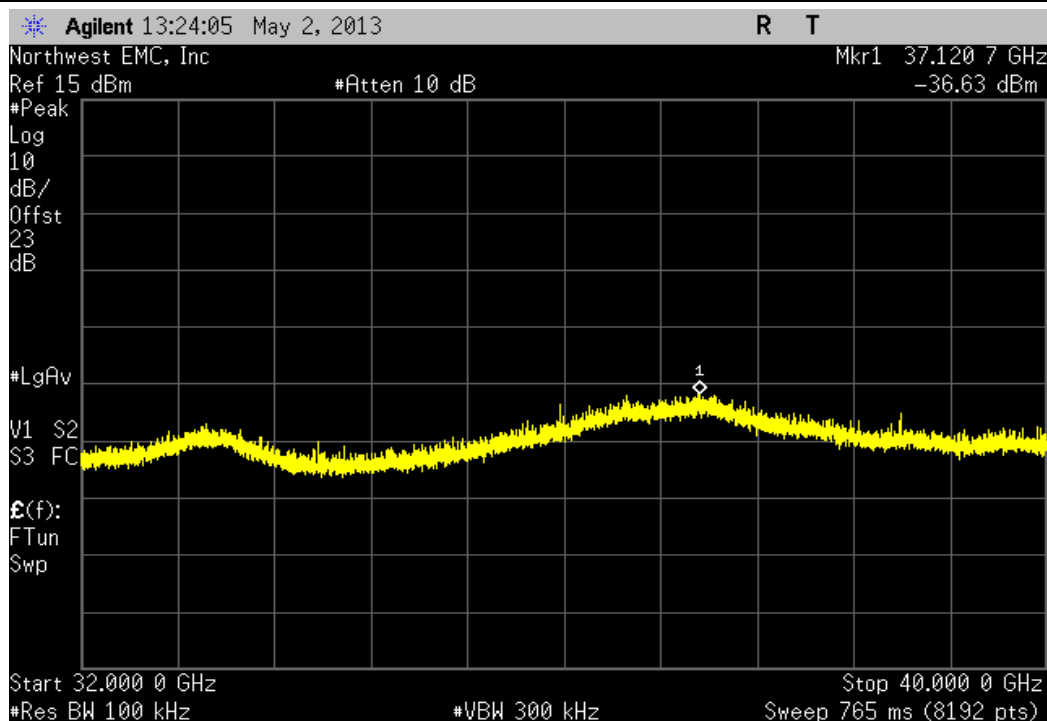
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-46.69 dBc	≤ -20 dBc	Pass	



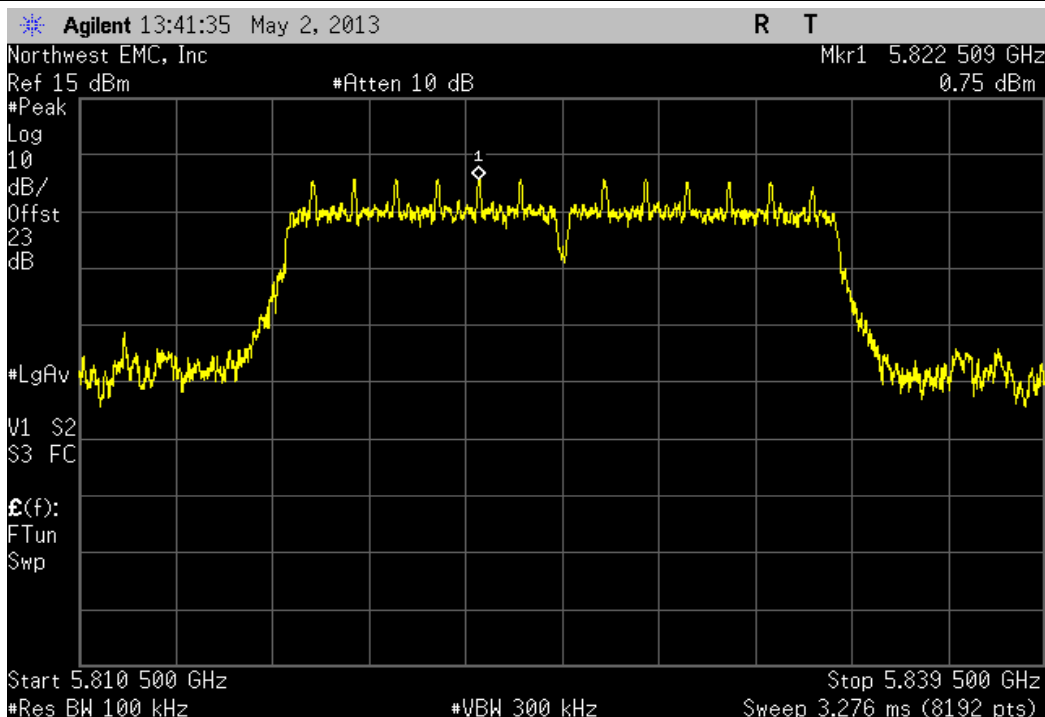
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-45.81 dBc	≤ -20 dBc	Pass	



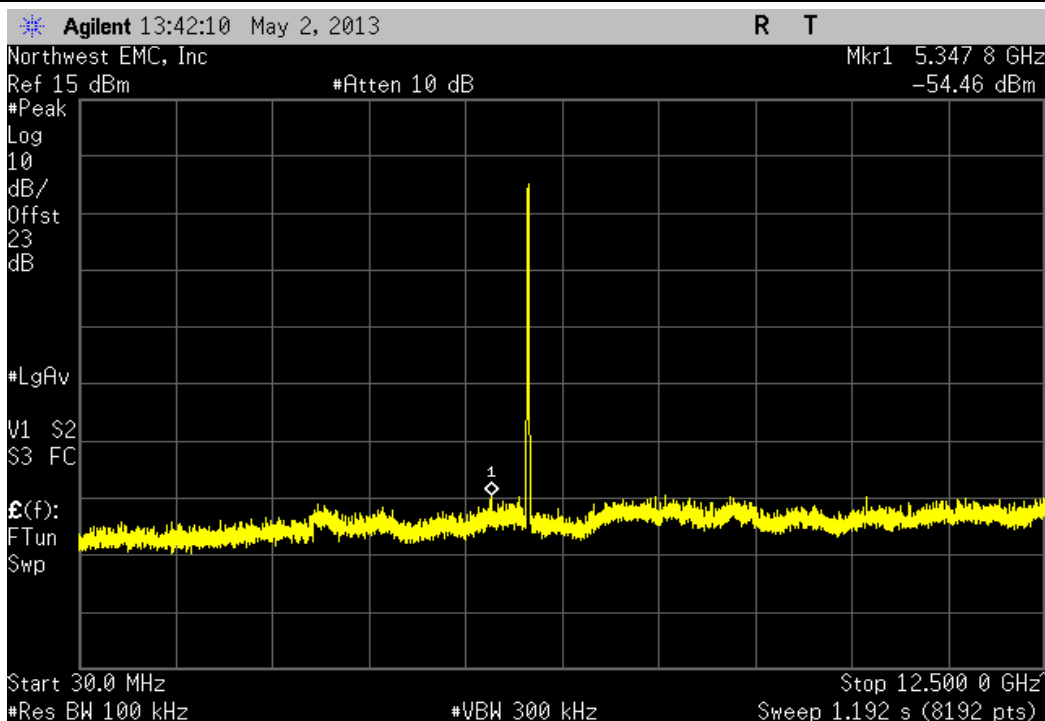
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-36.53 dBc	≤ -20 dBc	Pass	



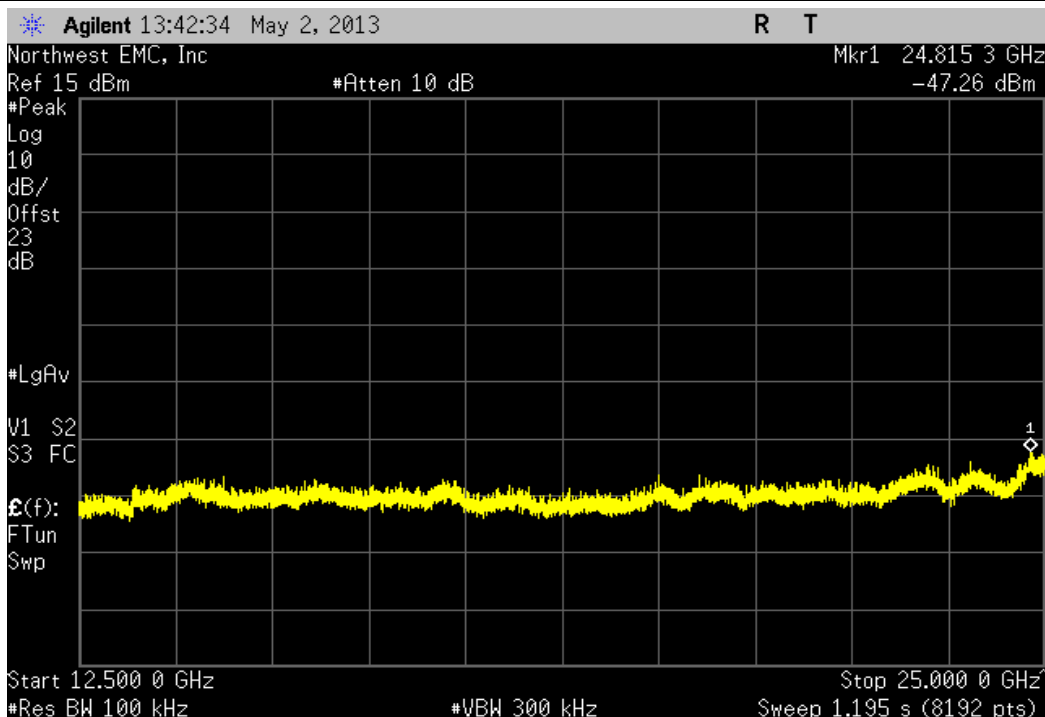
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		Value	Limit	Result
Fundamental		N/A	N/A	N/A



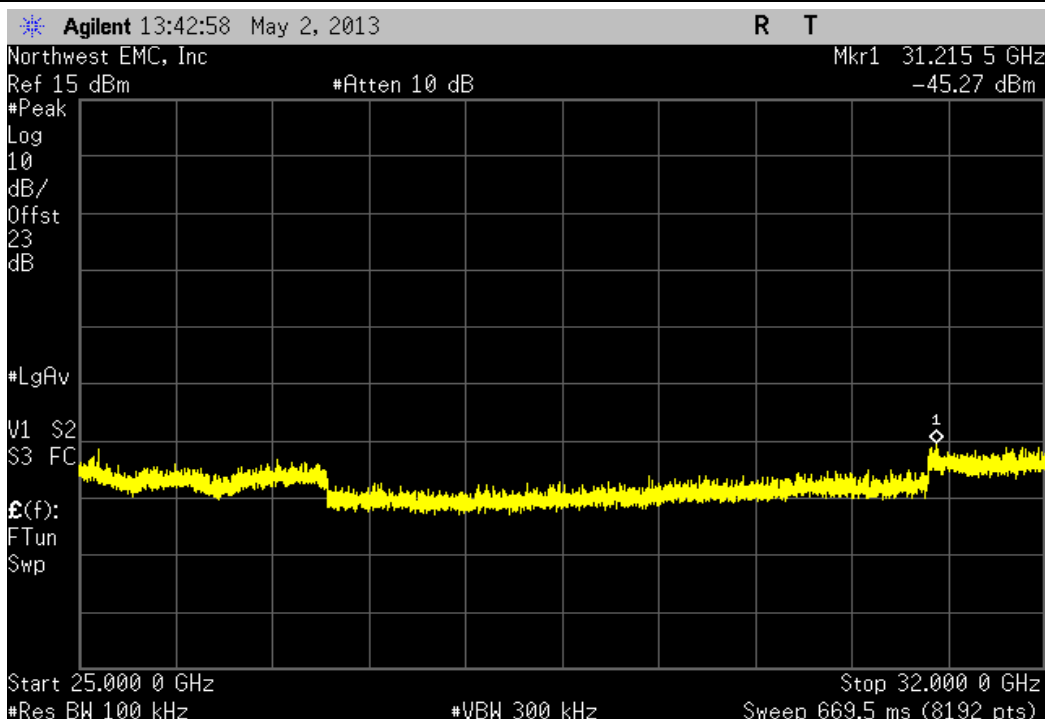
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-55.21 dBc	≤ -20 dBc	Pass



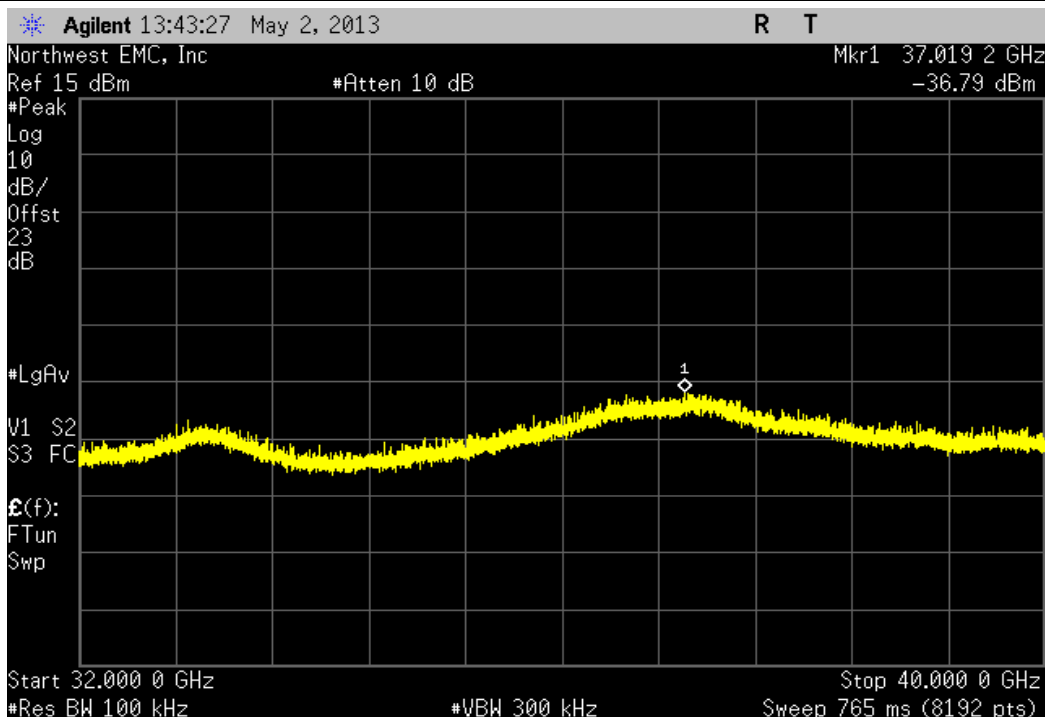
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-48.01 dBc	≤ -20 dBc	Pass	



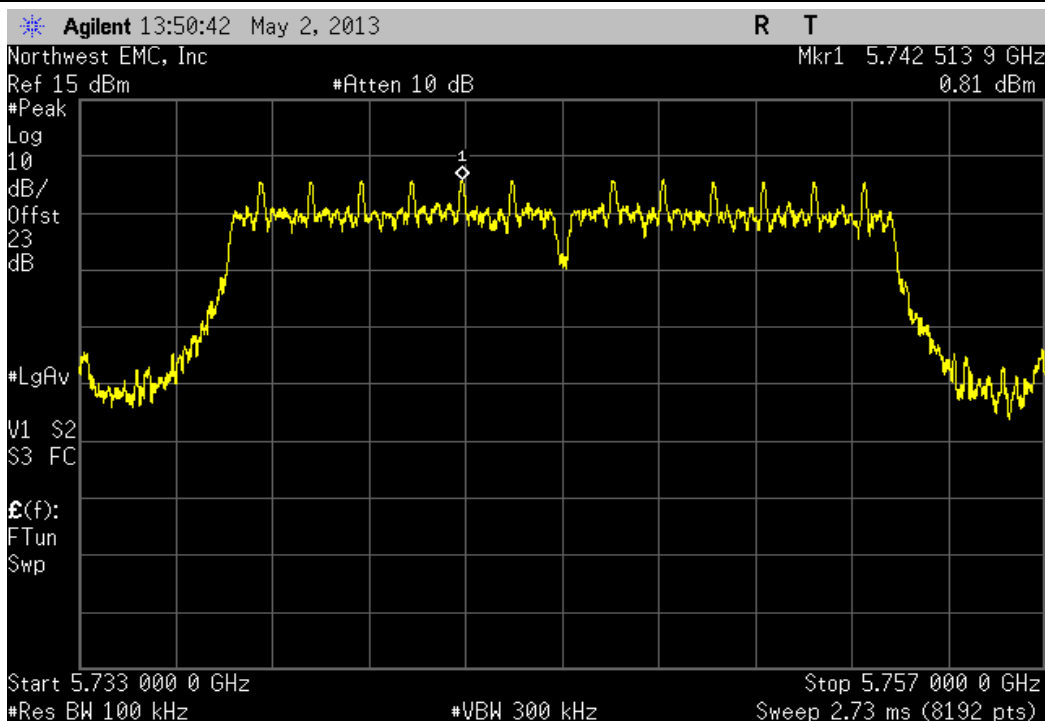
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-46.02 dBc	≤ -20 dBc	Pass	



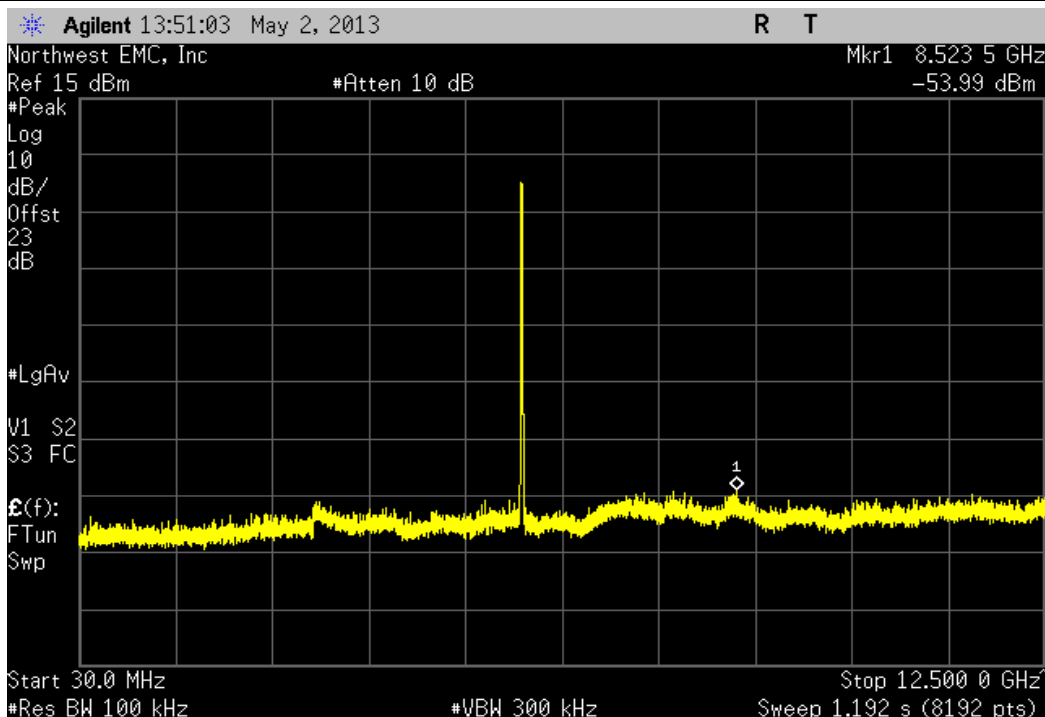
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-37.54 dBc	≤ -20 dBc	Pass	



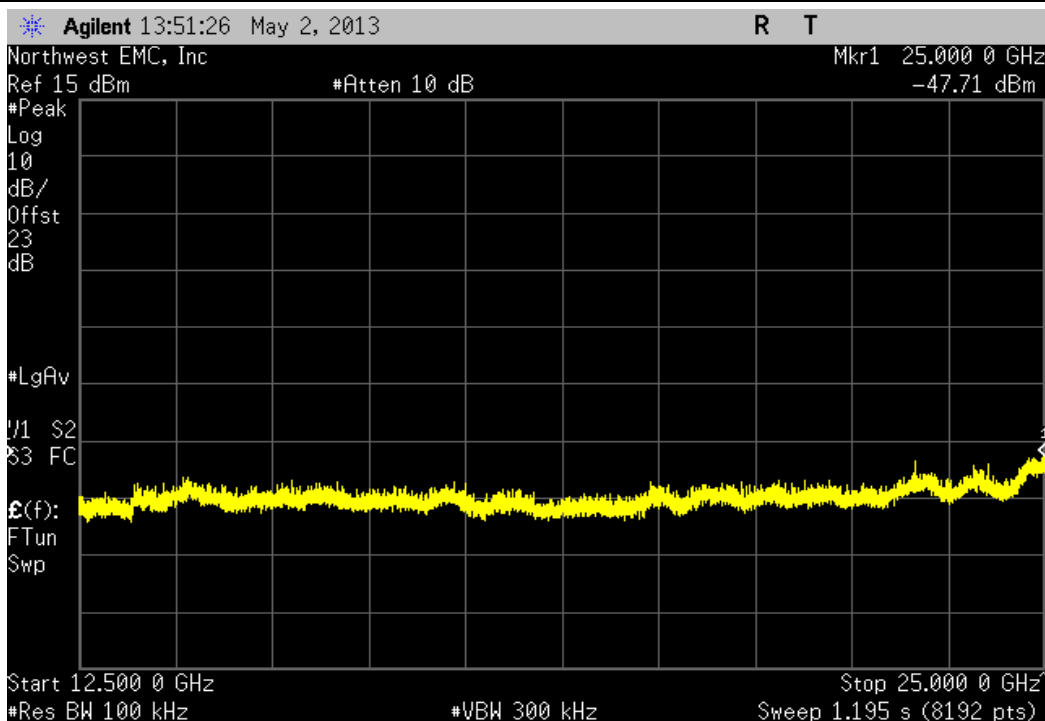
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
Fundamental	N/A	N/A	N/A	



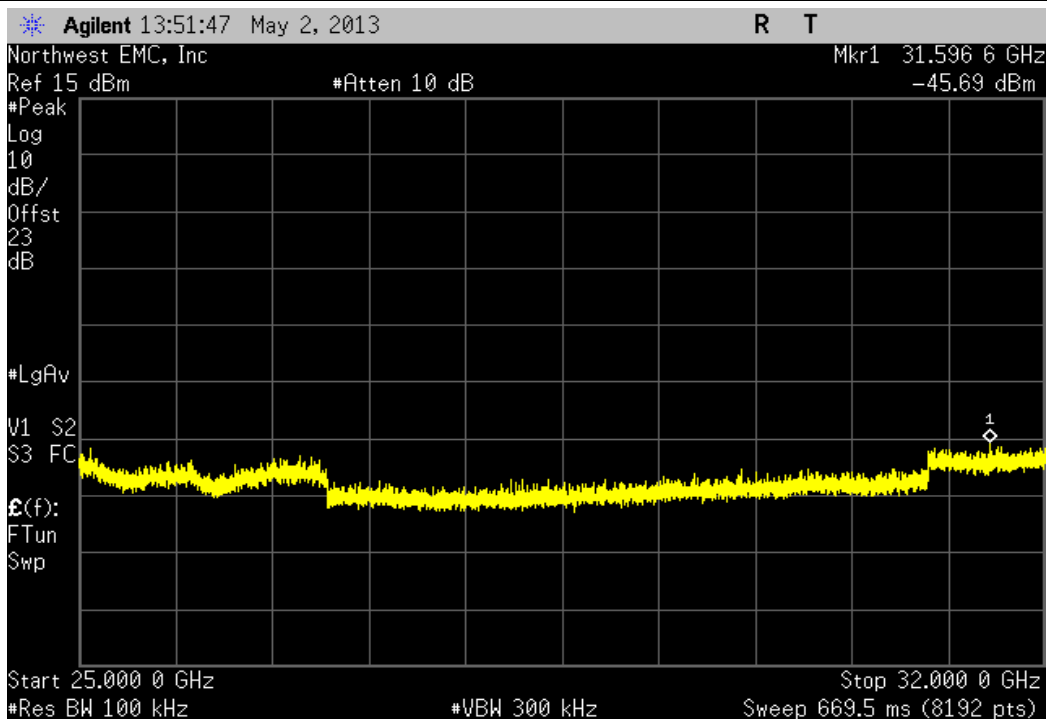
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-54.8 dBc	≤ -20 dBc	Pass	



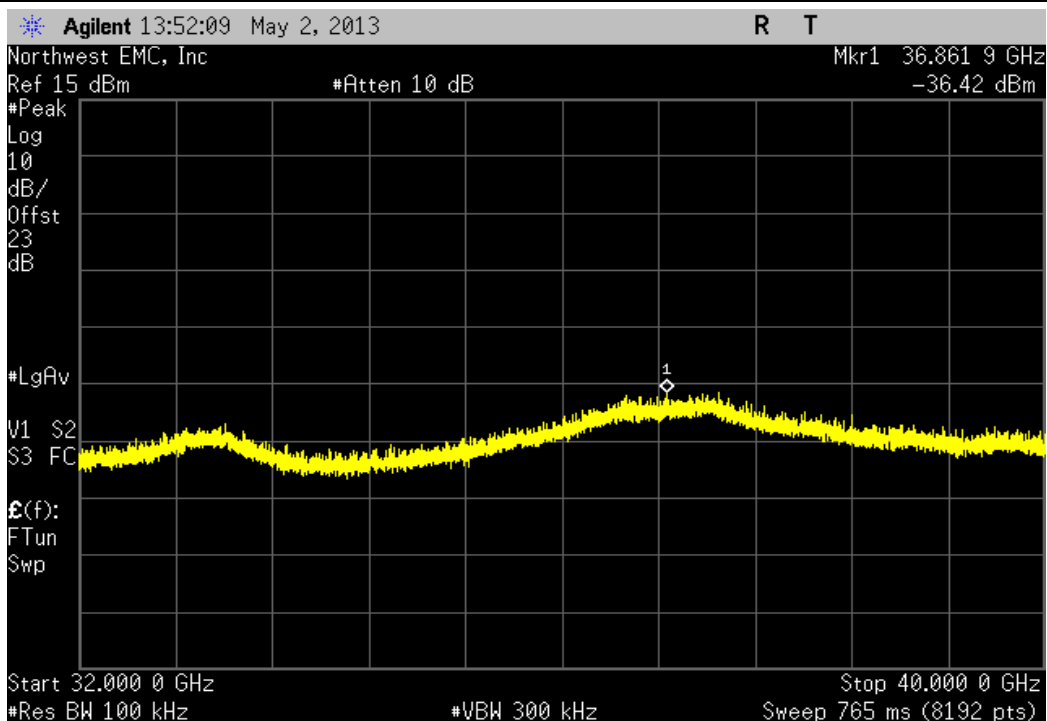
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-48.52 dBc	≤ -20 dBc	Pass	



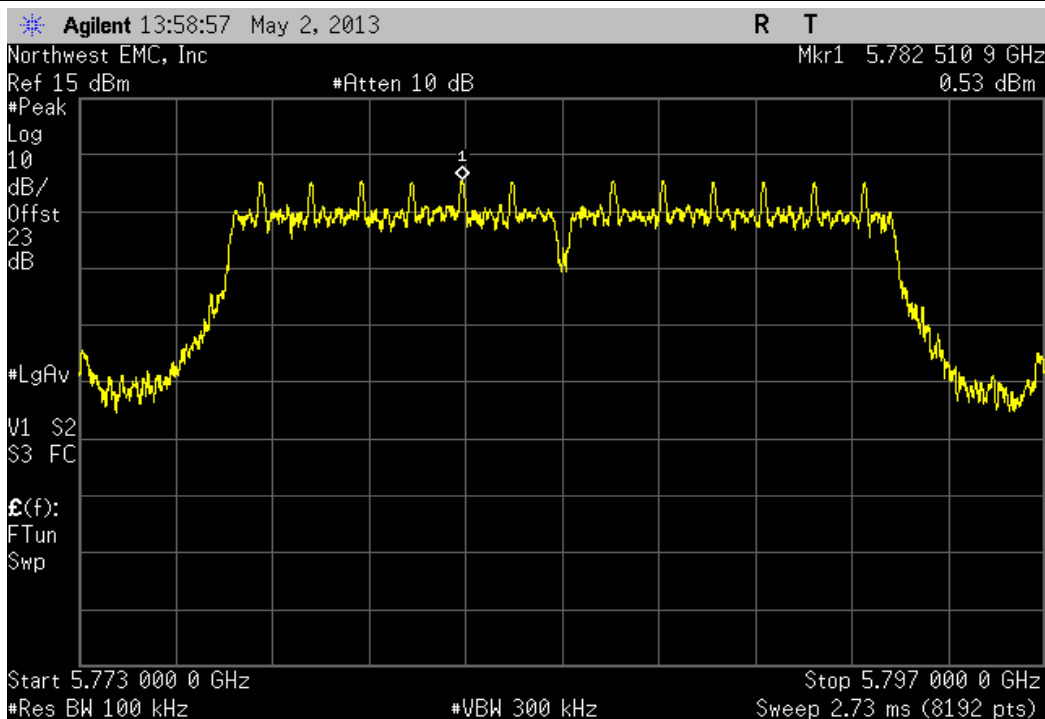
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-46.5 dBc	≤ -20 dBc	Pass	



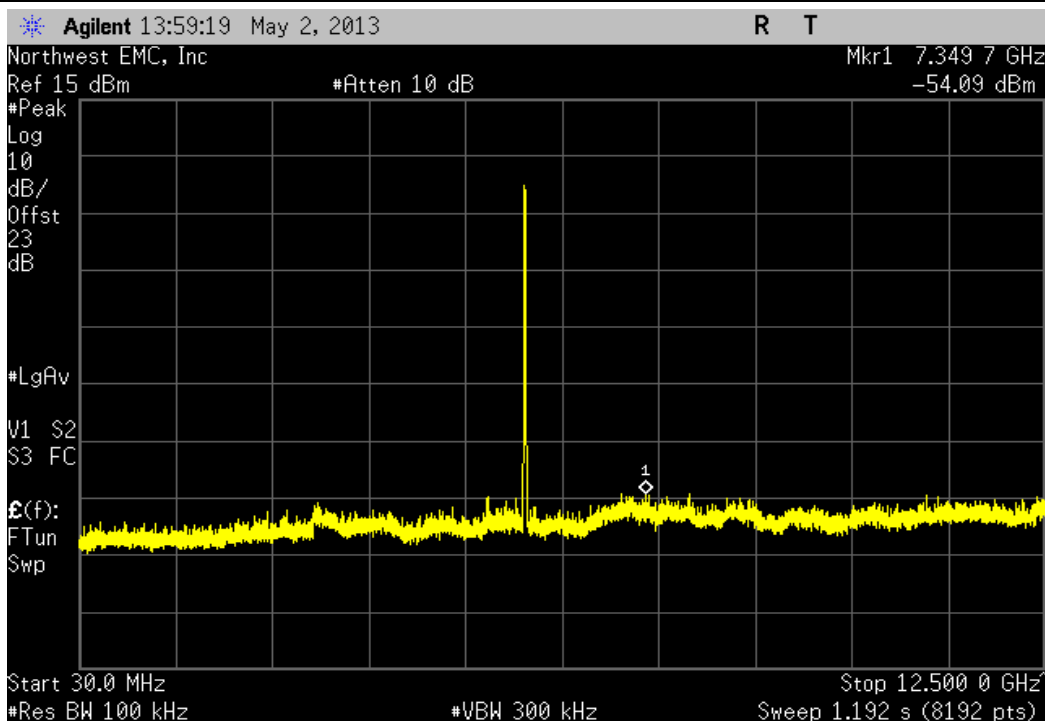
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-37.23 dBc	≤ -20 dBc	Pass	



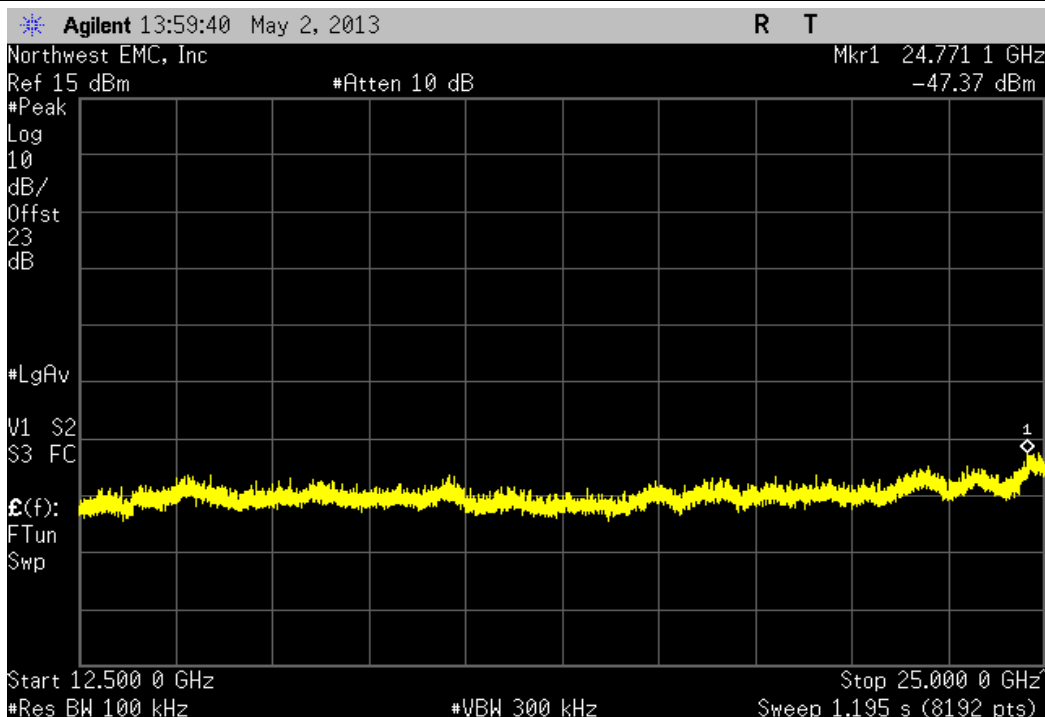
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		Value	Limit	Result
Fundamental		N/A	N/A	N/A



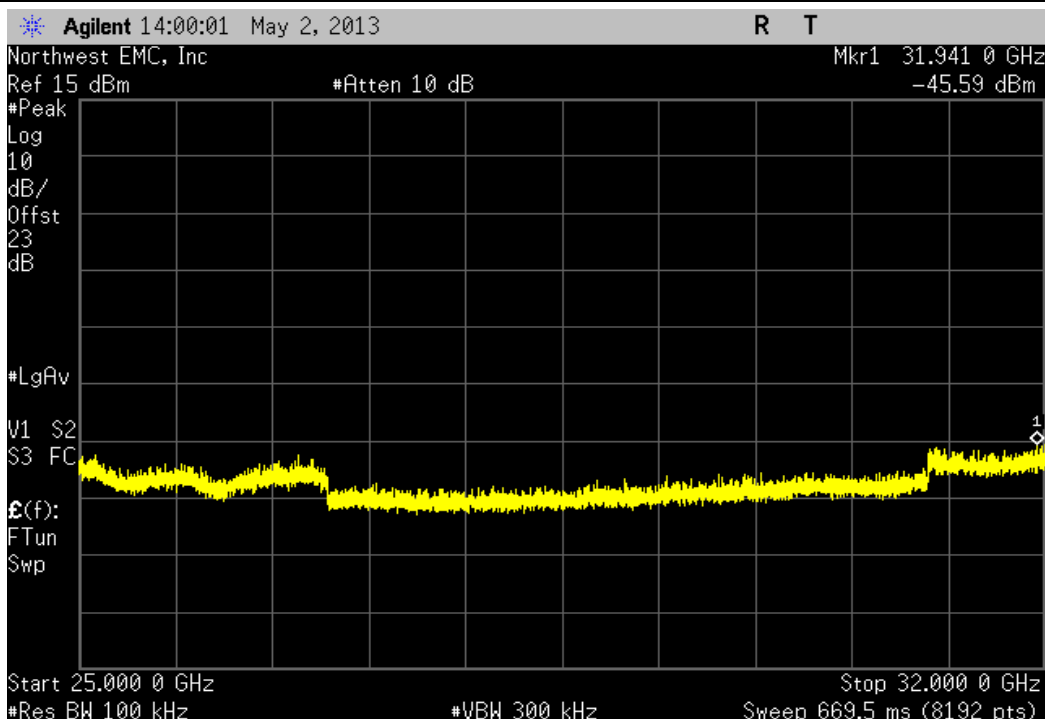
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-54.62 dBc	≤ -20 dBc	Pass



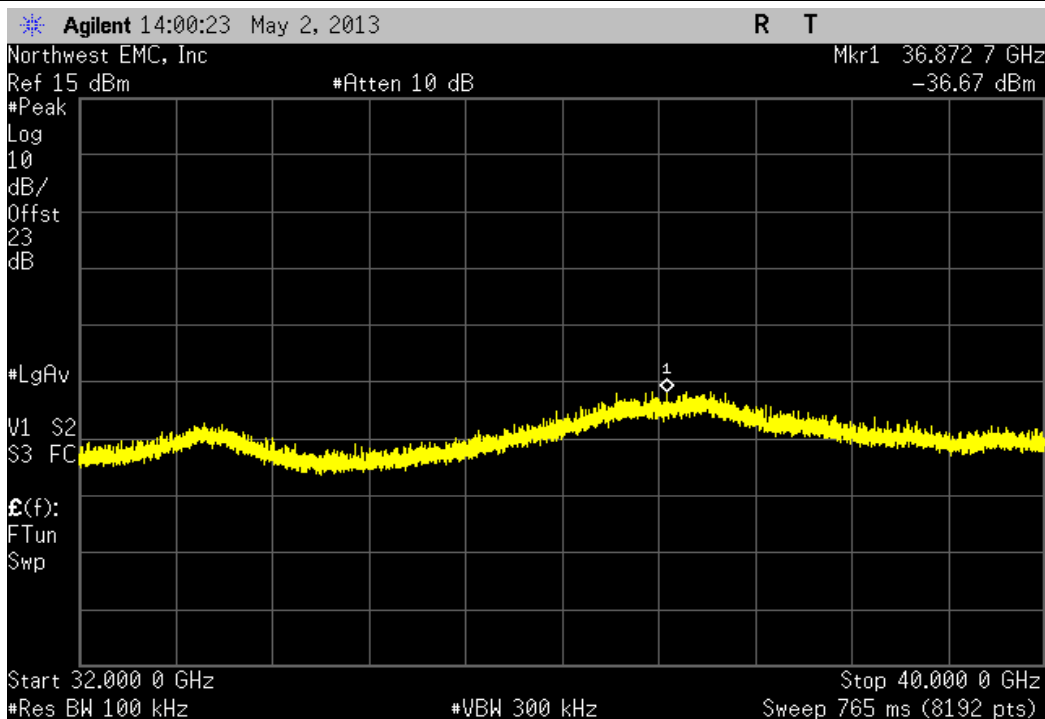
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-47.9 dBc	≤ -20 dBc	Pass	



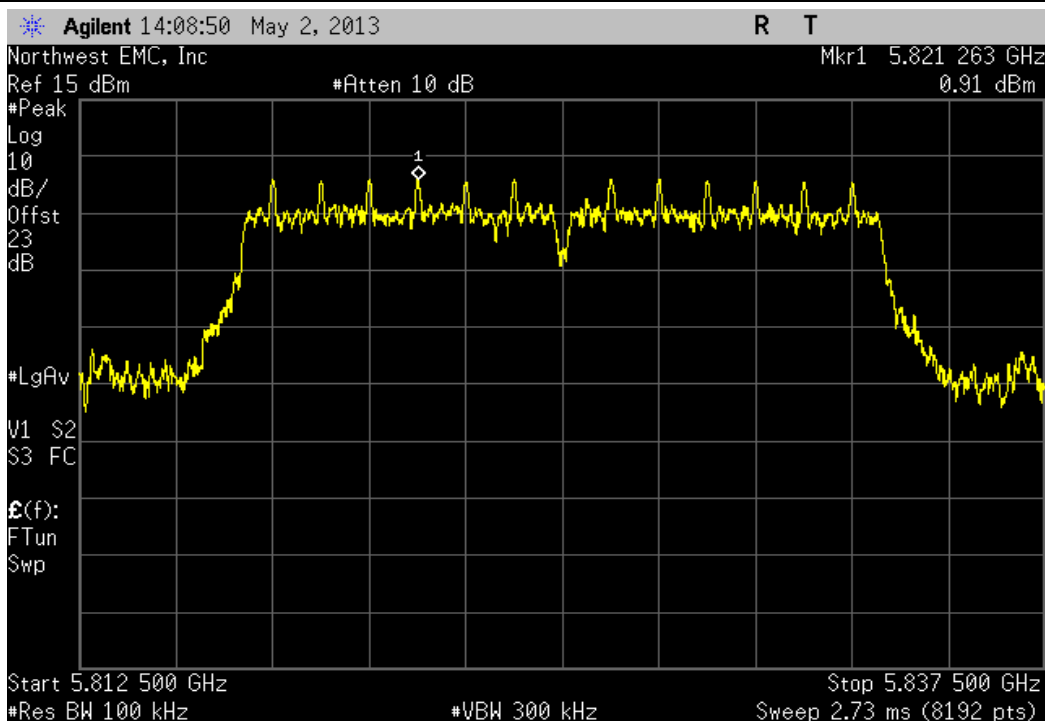
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-46.12 dBc	≤ -20 dBc	Pass	



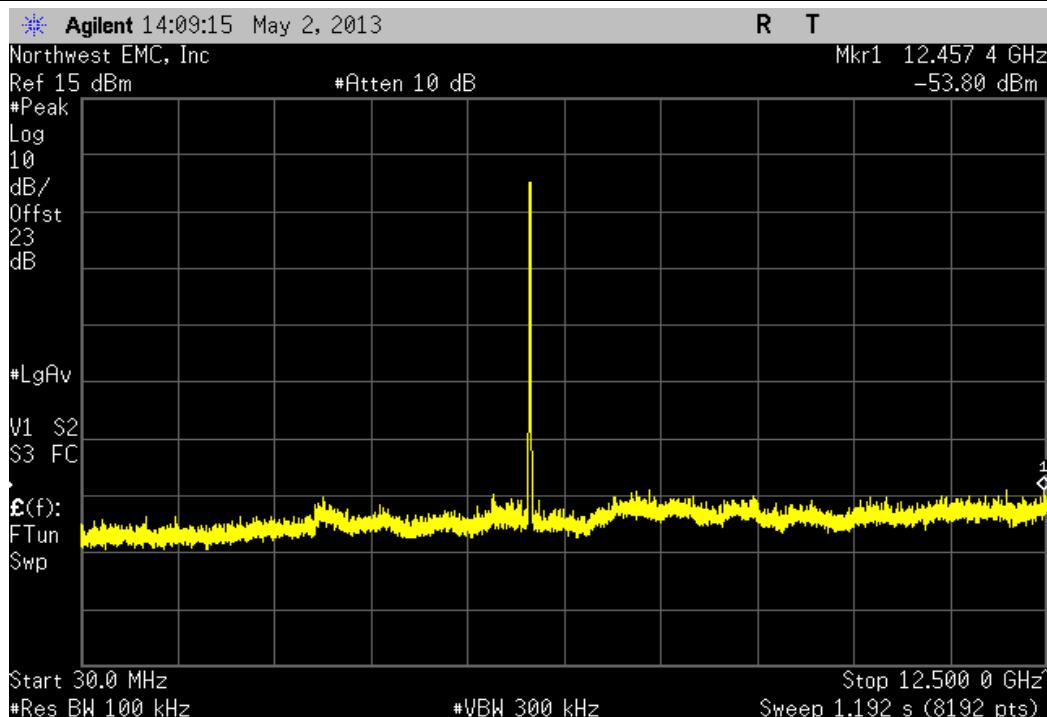
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-37.2 dBc	≤ -20 dBc	Pass	



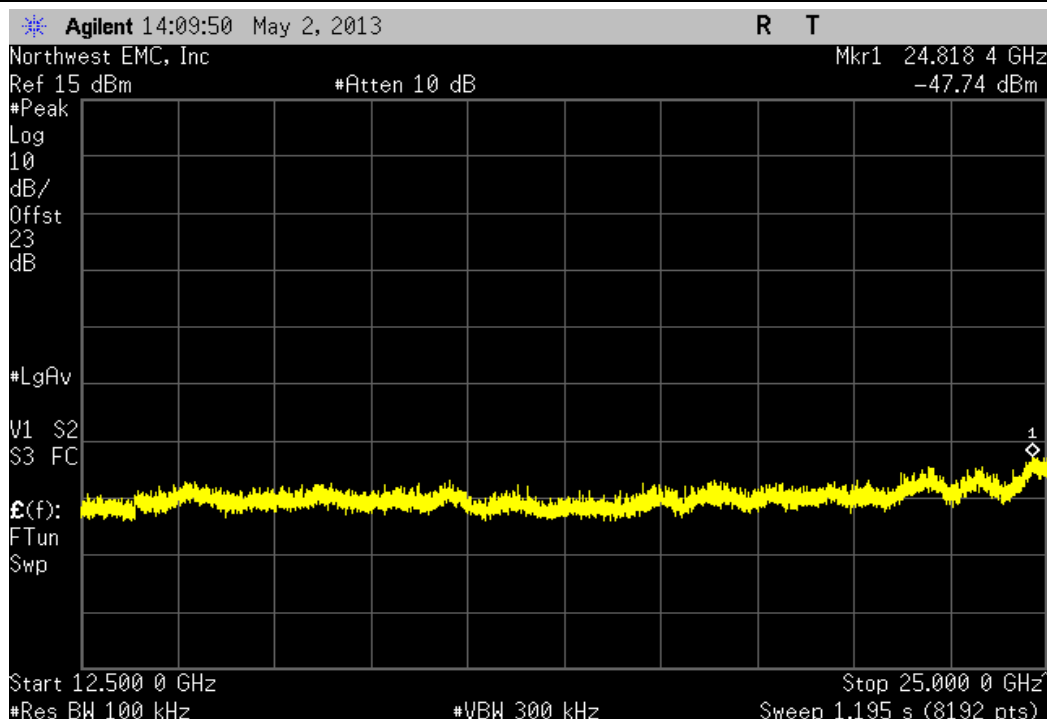
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
Fundamental	N/A	N/A	N/A	



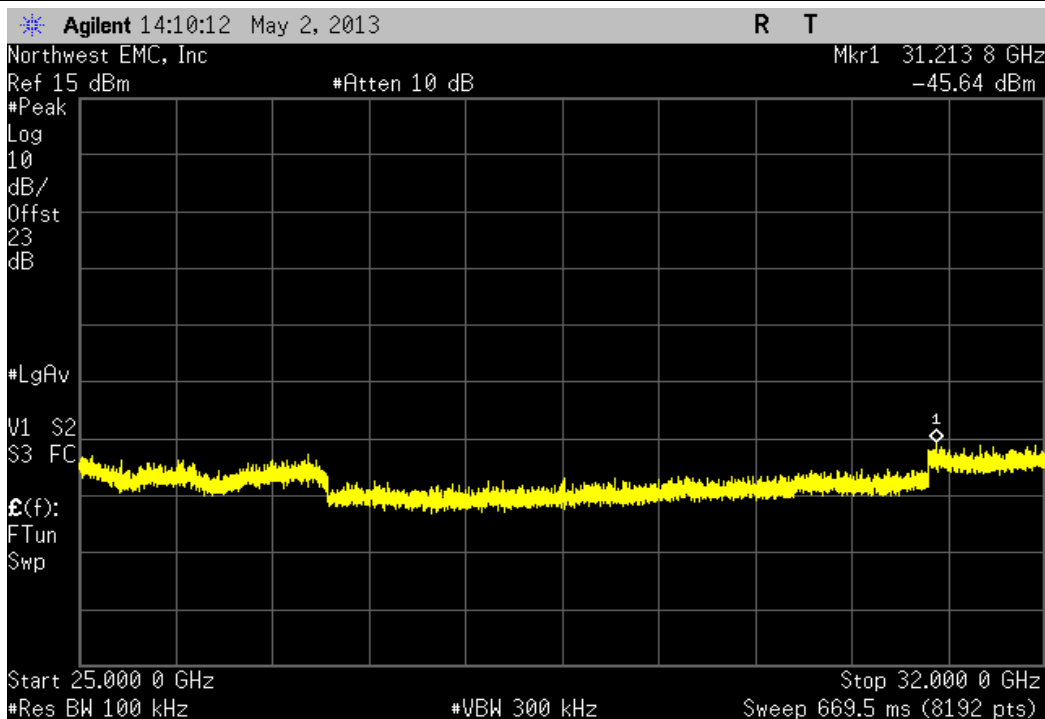
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-54.71 dBc	≤ -20 dBc	Pass	



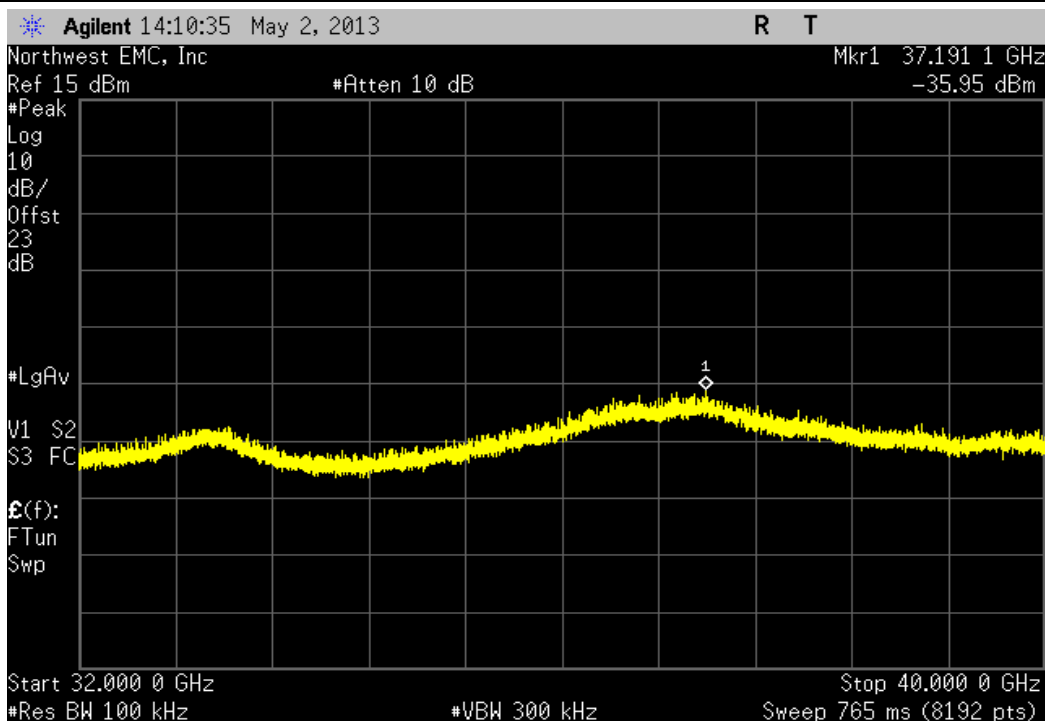
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-48.65 dBc	≤ -20 dBc	Pass	



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-46.55 dBc	≤ -20 dBc	Pass	



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-36.86 dBc	≤ -20 dBc	Pass	



Power Spectral Density

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/25/2013	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	3/5/2013	12
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24

TEST DESCRIPTION

The maximum power spectral density measurements were measured with the EUT set to the required transmit frequencies in each band. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the lowest, middle, and maximum data rate for each modulation type available.

Per the procedure outlined in FCC KDB 558074 D01 DTS Measurement Section 5.3.1, the spectrum analyzer was used as follows:

- RBW = 100 kHz
- VBW = 300 kHz
- Detector = Peak (to match method used for power measurement)
- Trace = Max hold


The observed power level is then scaled to an equivalent value in 3 kHz by adding a Bandwidth Correction Factor (BWCF) where:

$$BWCF = 10 \cdot \log(3 \text{ kHz} / 100 \text{ kHz}) = -15.2 \text{ dB}$$

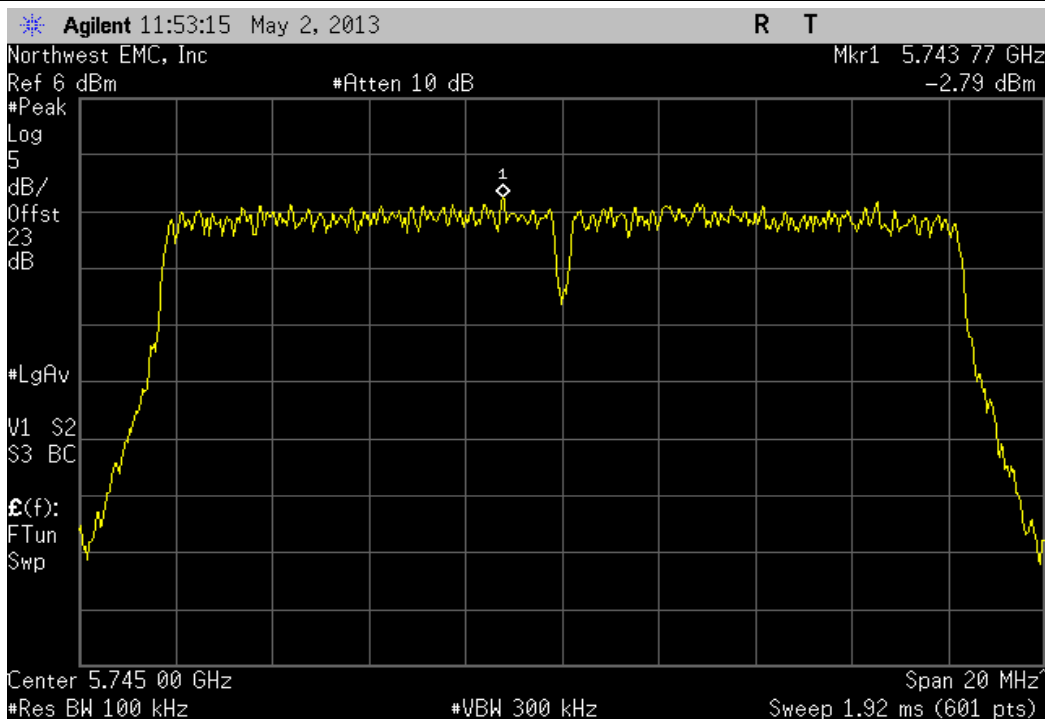


Power Spectral Density

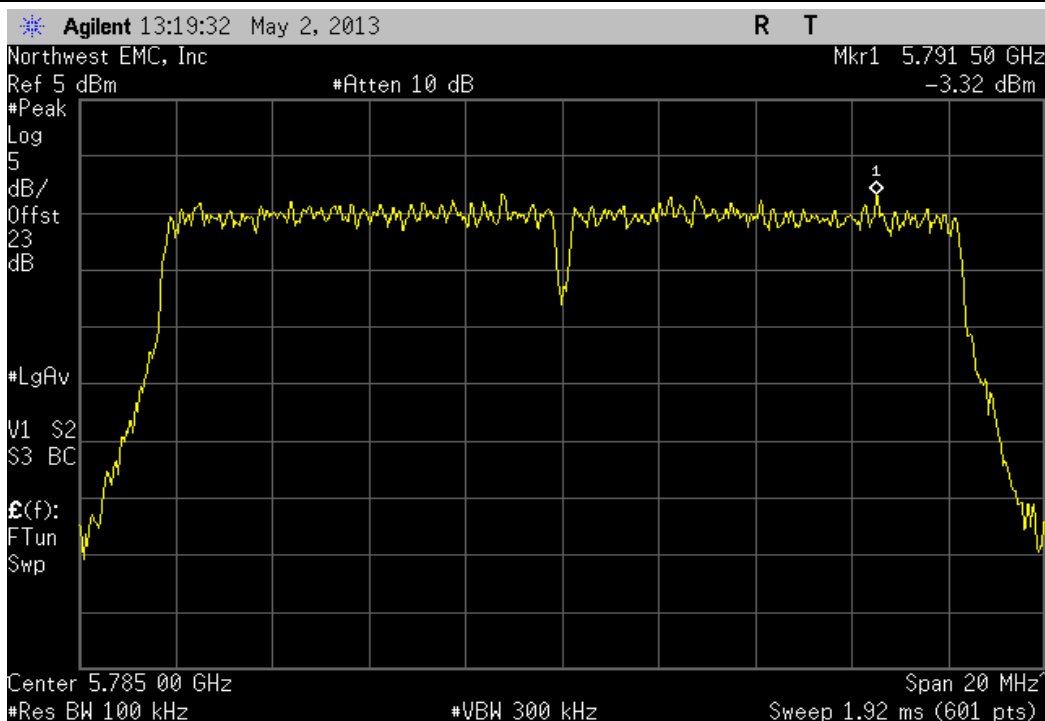
XMit 2013.02.28
PsaTx 2013.01.10

EUT: Model 444-2225 (Athena UFL)		Work Order: FOCU0140				
Serial Number: 02EA4D000027		Date: 05/03/13				
Customer: Summit Semiconductor		Temperature: 24°C				
Attendees: None		Humidity: 30%				
Project: None		Barometric Pres.: 1023				
Tested by: Brandon Hobbs		Power: 3.3V DC				
Job Site: EV06						
TEST SPECIFICATIONS		Test Method				
FCC 15.247:2013		ANSI C63.10:2009				
COMMENTS						
All testing was completed on the highest output power antenna port A2.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	5	Signature 				
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
5725 MHz - 5850 MHz Band						
802.11(a) 6 Mbps						
	Low Channel 149, 5745 MHz	-2.792	-15.2	-17.992	8	Pass
	Mid Channel 157, 5785 MHz	-3.323	-15.2	-18.523	8	Pass
	High Channel 165, 5825 MHz	-2.468	-15.2	-17.668	8	Pass
802.11(a) 18 Mbps						
	Low Channel 149, 5745 MHz	0.767	-15.2	-14.433	8	Pass
	Mid Channel 157, 5785 MHz	0.439	-15.2	-14.761	8	Pass
	High Channel 165, 5825 MHz	0.639	-15.2	-14.561	8	Pass

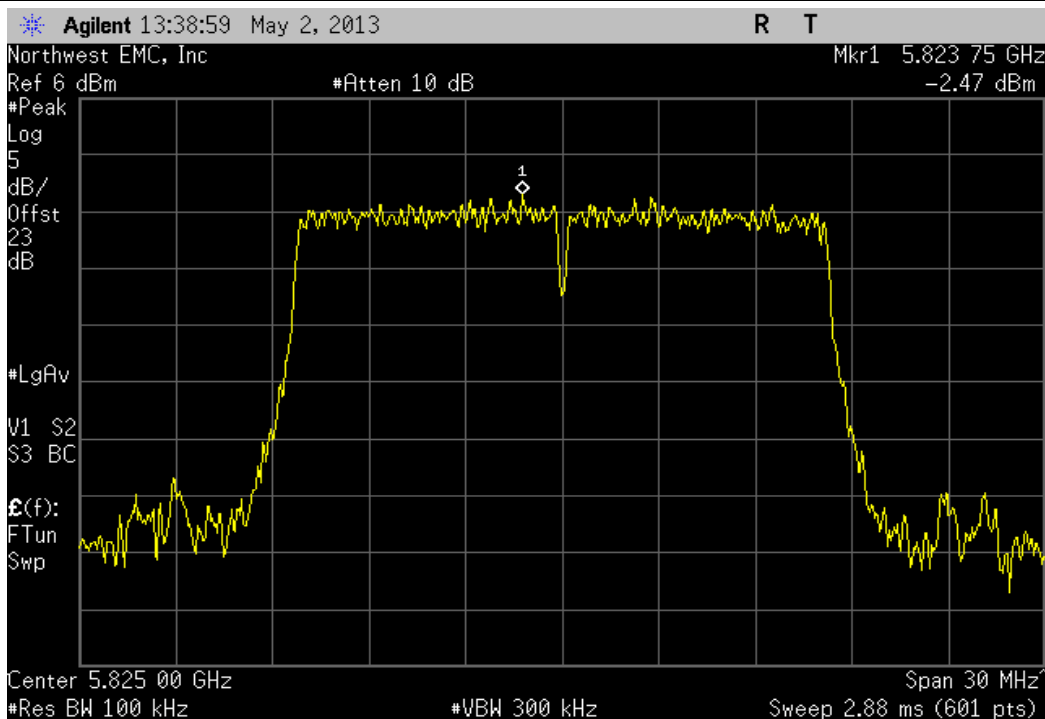
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz						
	Value	dBm/100kHz	Value	Limit		
		To dBm/3kHz	dBm/3kHz	dBm/3kHz	Result	
	-2.792	-15.2	-17.992	8	Pass	



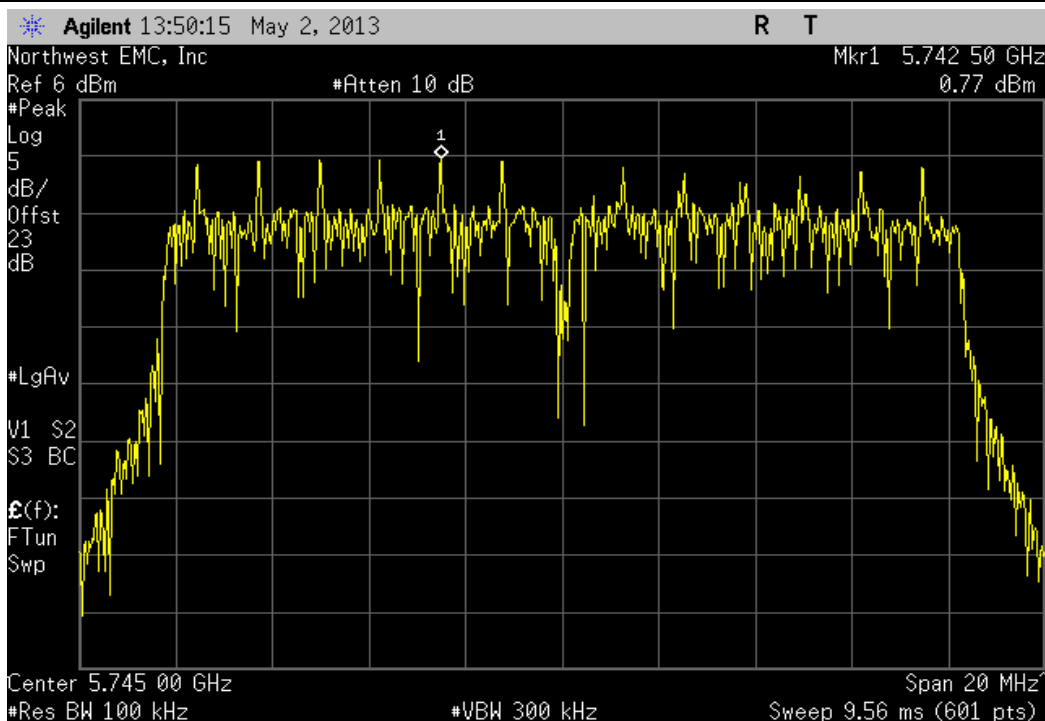
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz						
	Value	dBm/100kHz	Value	Limit		
		To dBm/3kHz	dBm/3kHz	dBm/3kHz	Result	
	-3.323	-15.2	-18.523	8	Pass	



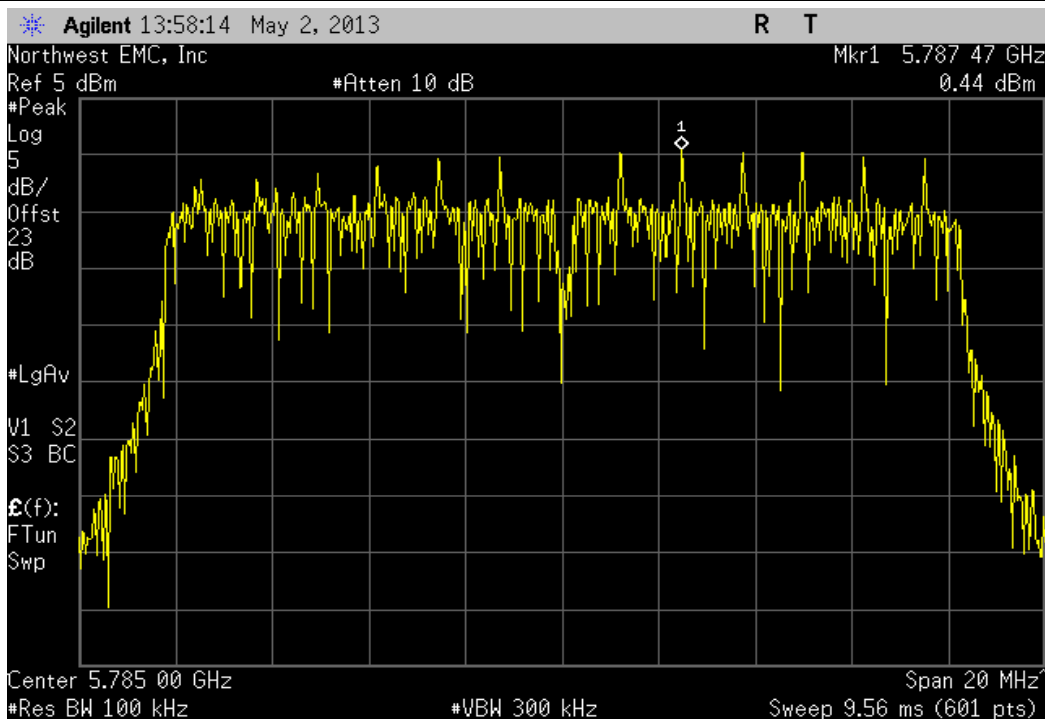
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz						
	Value	dBm/100kHz	Value	Limit		
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	Result	
	-2.468	-15.2	-17.668	8	Pass	



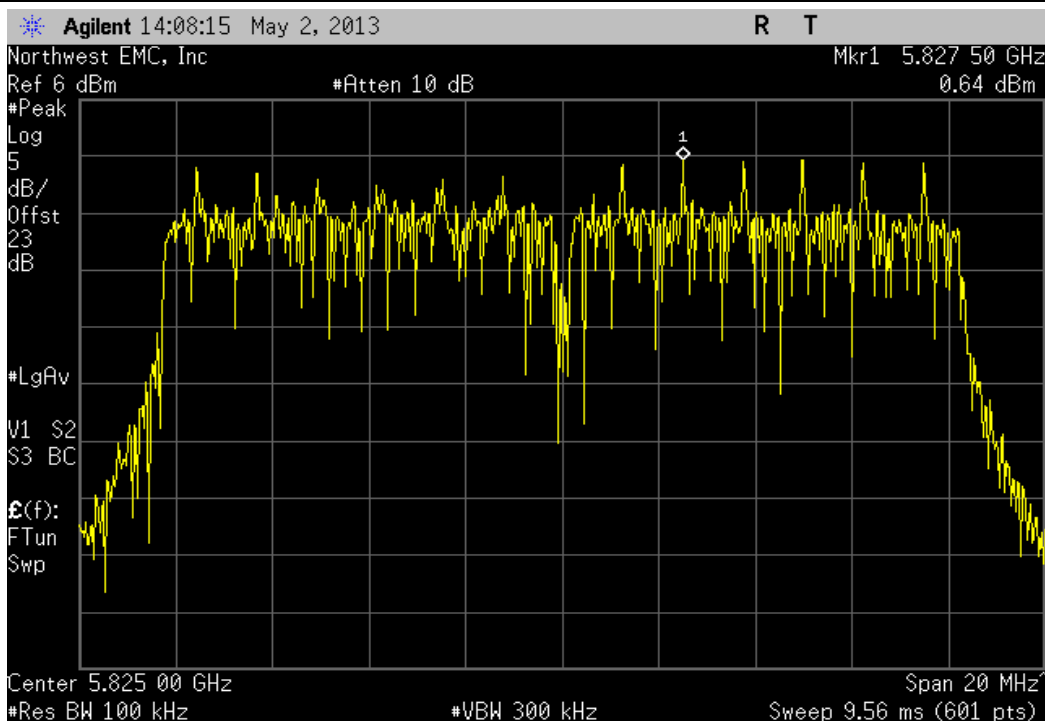
5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Low Channel 149, 5745 MHz						
	Value	dBm/100kHz	Value	Limit		
	dBm/100kHz	To dBm/3kHz	dBm/3kHz	dBm/3kHz	Result	
	0.767	-15.2	-14.433	8	Pass	



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, Mid Channel 157, 5785 MHz						
	Value	dBm/100kHz	Value	Limit		
		To dBm/3kHz	dBm/3kHz	dBm/3kHz	Result	
	0.439	-15.2	-14.761	8	Pass	



5725 MHz - 5850 MHz Band, 802.11(a) 18 Mbps, High Channel 165, 5825 MHz						
	Value	dBm/100kHz	Value	Limit		
		To dBm/3kHz	dBm/3kHz	dBm/3kHz	Result	
	0.639	-15.2	-14.561	8	Pass	



Spurious Radiated Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting 802.11a, 50% Duty Cycle

POWER SETTINGS INVESTIGATED

3.3V DC

CONFIGURATIONS INVESTIGATED

FOCU0141 - 2

FOCU0141 - 7

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40000 MHz
-----------------	--------	----------------	-----------

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT


Description	Manufacturer	Model	ID	Last Cal.	Interval
High Pass Filter	Micro-Tronics	HPM50112	HGA	10/4/2012	24 mo
5.725-5.875 Notch Filter	Micro-Tronics	BRC50705	HGJ	3/21/2012	24 mo
5.47-5.725 Notch Filter	Micro-Tronics	BRC50704	HGI	10/4/2012	24 mo
5.25 GHz Notch Filter	K&L Microwave	8N50-5250/X200-0/0	HFK	3/21/2012	24 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	9/11/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/11/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/27/2013	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/27/2013	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/27/2013	12 mo
Antenna, Horn	ETS	3160-07	AHU	NCR	0 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	6/27/2012	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2011	36 mo
EV01 Cables	N/A	Bilog Cables	EVA	6/26/2012	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/26/2012	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

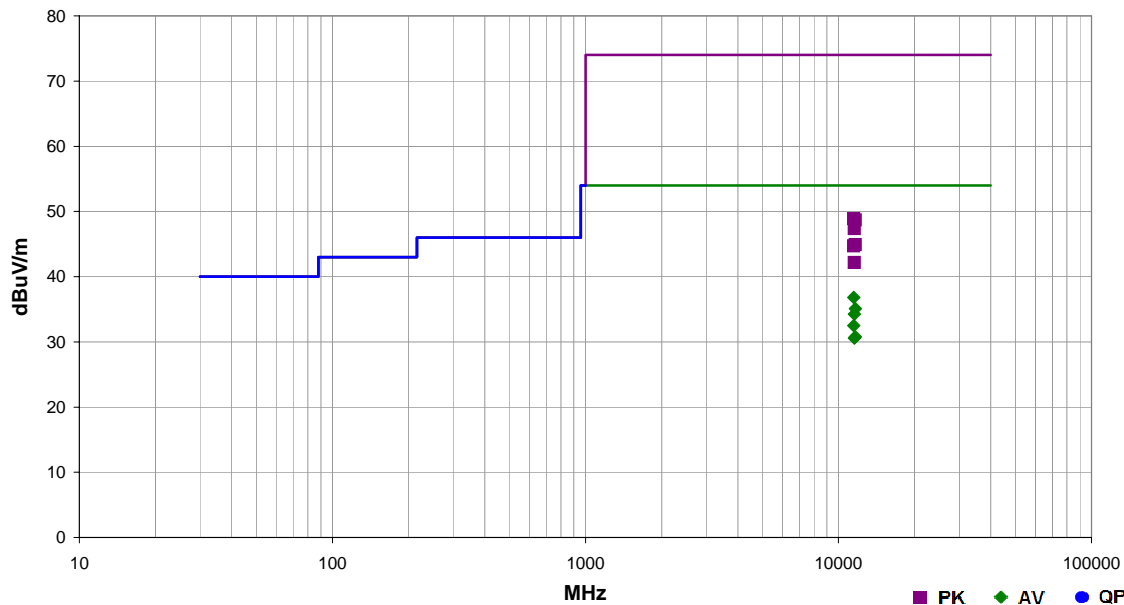
TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Work Order:	FOCU0140	Date:	05/09/13	
Project:	None	Temperature:	24 °C	
Job Site:	EV01	Humidity:	39% RH	
Serial Number:	02EA4D000027	Barometric Pres.:	1022 mbar	
EUT:		Model 444-2225 (Athena UFL)		
Configuration:	2			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	3.3V DC			
Operating Mode:	Transmitting 802.11a, 50% Duty Cycle			
Deviations:	None			
Comments:	Please reference the data comments for EUT frequency, orientation and channel			

Test Specifications	Test Method
FCC 15.247:2013	ANSI C63.10:2009

Run #	31	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
-------	----	-------------------	---	-------------------	------	---------	------

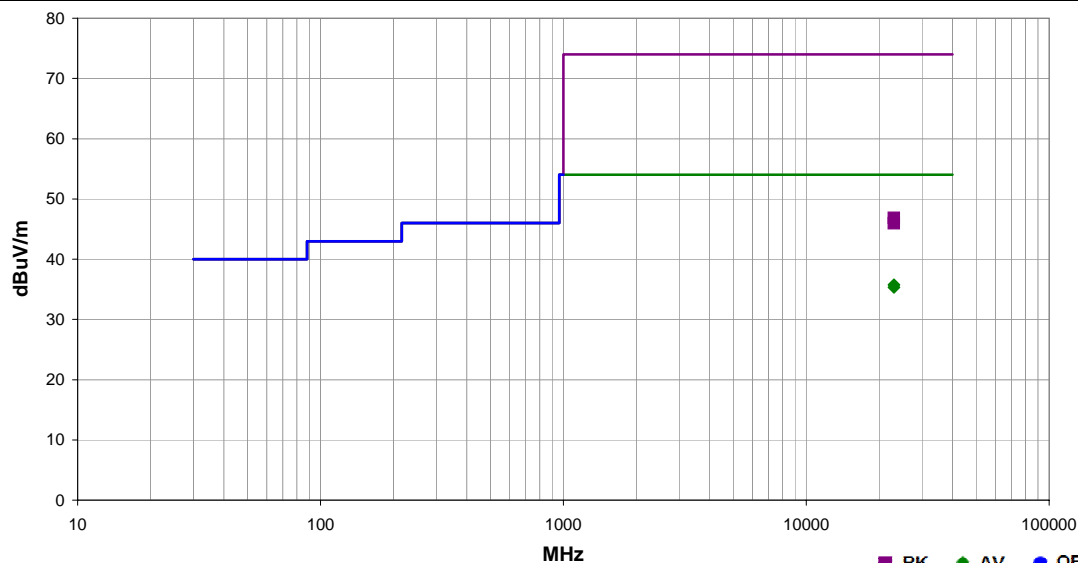


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
11488.690	44.4	-7.6	1.1	203.0	3.0	0.0	Vert	AV	0.0	36.8	54.0	-17.2	Ch.30 (5745 MHz) 6Mbps, EUT Vert
11648.600	41.7	-6.6	1.2	182.0	3.0	0.0	Vert	AV	0.0	35.1	54.0	-18.9	Ch.34 (5825 MHz) 6Mbps, EUT Vert
11568.600	41.4	-7.1	1.4	184.0	3.0	0.0	Vert	AV	0.0	34.3	54.0	-19.7	Ch.32 (5785 MHz) 6Mbps, EUT Vert
11488.510	40.1	-7.6	1.0	226.0	3.0	0.0	Horz	AV	0.0	32.5	54.0	-21.5	Ch.30 (5745 MHz) 6Mbps, EUT Vert
11650.030	37.4	-6.6	1.0	164.0	3.0	0.0	Horz	AV	0.0	30.8	54.0	-23.2	Ch.34 (5825 MHz) 6Mbps, EUT Vert
11568.800	37.7	-7.1	1.0	150.0	3.0	0.0	Horz	AV	0.0	30.6	54.0	-23.4	Ch.32 (5785 MHz) 6Mbps, EUT Vert
11488.010	56.5	-7.6	1.1	203.0	3.0	0.0	Vert	PK	0.0	48.9	74.0	-25.1	Ch.30 (5745 MHz) 6Mbps, EUT Vert
11648.030	55.3	-6.6	1.2	182.0	3.0	0.0	Vert	PK	0.0	48.7	74.0	-25.3	Ch.34 (5825 MHz) 6Mbps, EUT Vert
11568.010	54.5	-7.1	1.4	184.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Ch.32 (5785 MHz) 6Mbps, EUT Vert
11650.050	51.5	-6.6	1.0	164.0	3.0	0.0	Horz	PK	0.0	44.9	74.0	-29.1	Ch.34 (5825 MHz) 6Mbps, EUT Vert
11490.400	52.3	-7.6	1.0	226.0	3.0	0.0	Horz	PK	0.0	44.7	74.0	-29.3	Ch.30 (5745 MHz) 6Mbps, EUT Vert
11568.400	49.3	-7.1	1.0	150.0	3.0	0.0	Horz	PK	0.0	42.2	74.0	-31.8	Ch.32 (5785 MHz) 6Mbps, EUT Vert

Work Order:	FOCU0140	Date:	05/09/13	<i>Pauling in Peleng</i>
Project:	None	Temperature:	22.3 °C	
Job Site:	EV01	Humidity:	40.8% RH	
Serial Number:	02EA4D000003	Barometric Pres.:	1018 mbar	
EUT:	Model 444-2225 (Athena UFL)			
Configuration:	7			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	3.3V DC			
Operating Mode:	Transmitting 802.11a, 50% Duty Cycle			
Deviations:	None			
Comments:	See comments below for channel, frequency, data rate and EUT orientation.			

Test Specifications	Test Method
FCC 15.247:2013	ANSI C63.10:2009

Run #	81	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
-------	----	-------------------	---	-------------------	------	---------	------



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
22979.430	38.4	-2.7	1.0	240.0	3.0	0.0	Vert	AV	0.0	35.7	54.0	-18.3	Ch.30 (5745 MHz), 6 Mbps, EUT Vertical
22981.170	38.0	-2.7	1.0	211.0	3.0	0.0	Horz	AV	0.0	35.3	54.0	-18.7	Ch.30 (5745 MHz), 6 Mbps, EUT Vertical
22979.690	49.5	-2.7	1.0	240.0	3.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2	Ch.30 (5745 MHz), 6 Mbps, EUT Vertical
22978.810	48.6	-2.7	1.0	211.0	3.0	0.0	Horz	PK	0.0	45.9	74.0	-28.1	Ch.30 (5745 MHz), 6 Mbps, EUT Vertical

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting 802.11a, 50% Duty Cycle, Ch. 34, 5825 MHz

Transmitting 802.11a, 50% Duty Cycle, Ch. 32, 5785 MHz

Transmitting 802.11a, 50% Duty Cycle, Ch. 30, 5745 MHz

POWER SETTINGS INVESTIGATED

3.3 VDC Nominal

CONFIGURATIONS INVESTIGATED

FOCU0140 - 7

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
DC Power Supply	Topward	TPS-2000	TPD	NCR	0 mo
LISN	Solar	9252-50-R-24-BNC	LIN	3/11/2013	12 mo
Receiver	Rohde & Schwarz	ESCI	ARH	1/24/2013	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HHD	2/1/2012	24 mo
Attenuator	Coaxicom	66702 2910-20	RBR	4/25/2013	12 mo
EV07 Cables	N/A	Conducted Cables	EVG	4/25/2013	12 mo

MEASUREMENT BANDWIDTHS


Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

TEST DESCRIPTION

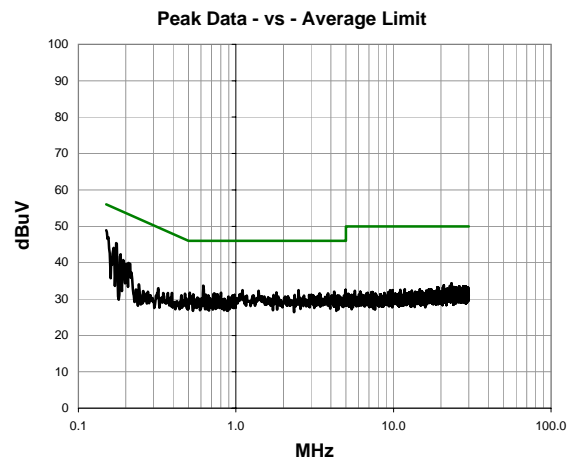
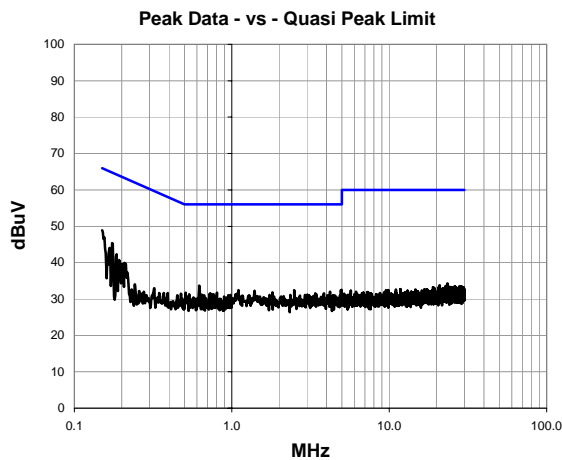
The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10-2009.

AC Powerline Conducted Emissions

Work Order:	FOCU0140	Date:	05/16/13	
Project:	None	Temperature:	23.7 °C	
Job Site:	EV07	Humidity:	40.3% RH	
Serial Number:	02EA4D000003	Barometric Pres.:	1014 mbar	
EUT:		Model 444-2225 (Athena UFL)		
Configuration:		7		
Customer:		Summit Semiconductor		
Attendees:		None		
EUT Power:		3.3 VDC Nominal		
Operating Mode:		Transmitting 802.11a, 50% Duty Cycle, Ch. 30, 5745 MHz		
Deviations:		None		
Comments:		Power supply was plugged into 110VAC/60Hz		

Test Specifications	Test Method
FCC 15.207:2013	ANSI C63.10:2009

Run #	23	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
-------	----	-------	---------	-------------------	----	---------	------




Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	28.5	20.4	48.9	66.0	-17.1
0.174	25.1	20.3	45.4	64.8	-19.4
0.167	23.7	20.3	44.0	65.1	-21.1
0.186	22.0	20.3	42.3	64.2	-21.9
0.621	13.4	20.3	33.7	56.0	-22.3
0.193	20.4	20.3	40.7	63.9	-23.2
0.208	19.6	20.3	39.9	63.3	-23.4
4.968	11.9	20.7	32.6	56.0	-23.4
2.496	12.0	20.5	32.5	56.0	-23.5
1.104	12.1	20.3	32.4	56.0	-23.6
1.392	11.9	20.4	32.3	56.0	-23.7
0.201	19.3	20.3	39.6	63.6	-23.9
4.208	11.4	20.7	32.1	56.0	-23.9
1.808	11.4	20.4	31.8	56.0	-24.2
0.509	11.5	20.3	31.8	56.0	-24.2
0.804	11.4	20.3	31.7	56.0	-24.3
0.730	11.3	20.3	31.6	56.0	-24.4
3.400	11.0	20.6	31.6	56.0	-24.4
3.848	10.9	20.6	31.5	56.0	-24.5
0.721	11.1	20.3	31.4	56.0	-24.6

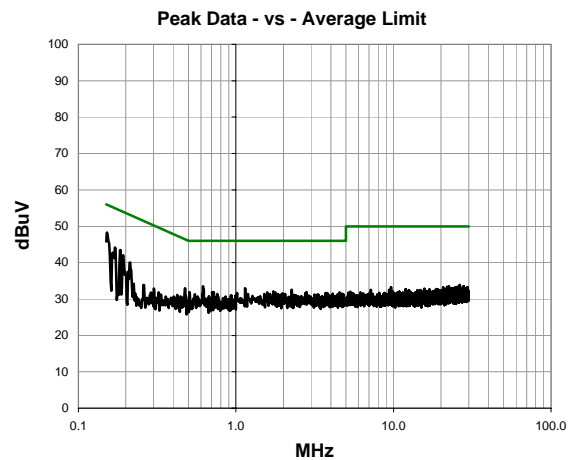
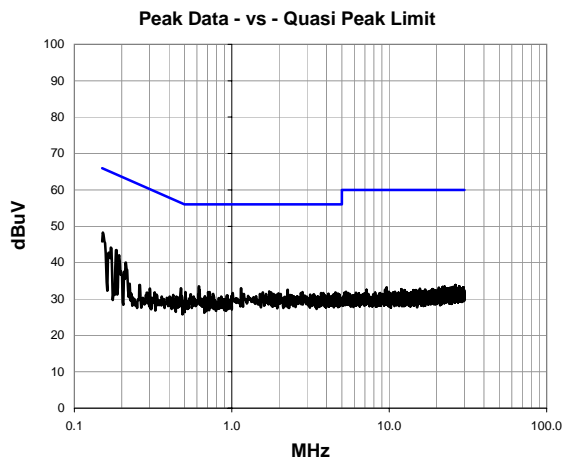
Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	28.5	20.4	48.9	56.0	-7.1
0.174	25.1	20.3	45.4	54.8	-9.4
0.167	23.7	20.3	44.0	55.1	-11.1
0.186	22.0	20.3	42.3	54.2	-11.9
0.621	13.4	20.3	33.7	46.0	-12.3
0.193	20.4	20.3	40.7	53.9	-13.2
0.208	19.6	20.3	39.9	53.3	-13.4
4.968	11.9	20.7	32.6	46.0	-13.4
2.496	12.0	20.5	32.5	46.0	-13.5
1.104	12.1	20.3	32.4	46.0	-13.6
1.392	11.9	20.4	32.3	46.0	-13.7
0.201	19.3	20.3	39.6	53.6	-13.9
4.208	11.4	20.7	32.1	46.0	-13.9
1.808	11.4	20.4	31.8	46.0	-14.2
0.509	11.5	20.3	31.8	46.0	-14.2
0.804	11.4	20.3	31.7	46.0	-14.3
0.730	11.3	20.3	31.6	46.0	-14.4
3.400	11.0	20.6	31.6	46.0	-14.4
3.848	10.9	20.6	31.5	46.0	-14.5
0.721	11.1	20.3	31.4	46.0	-14.6

Work Order:	FOCU0140	Date:	05/16/13	
Project:	None	Temperature:	23.7 °C	
Job Site:	EV07	Humidity:	40.3% RH	
Serial Number:	02EA4D000003	Barometric Pres.:	1014 mbar	
EUT:	Model 444-2225 (Athena UFL)			Tested by: Brandon Hobbs
Configuration:	7			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	3.3 VDC Nominal			
Operating Mode:	Transmitting 802.11a, 50% Duty Cycle, Ch. 30, 5745 MHz			
Deviations:	None			
Comments:	Power supply was plugged into 110VAC/60Hz			

Test Specifications	Test Method
FCC 15.207:2013	ANSI C63.10:2009

Run #	24	Line:	High Line	Ext. Attenuation:	20	Results	Pass
-------	----	-------	-----------	-------------------	----	---------	------




Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.152	27.9	20.4	48.3	65.9	-17.6
0.186	23.1	20.3	43.4	64.2	-20.8
0.170	23.8	20.3	44.1	64.9	-20.8
0.193	21.7	20.3	42.0	63.9	-21.9
0.618	13.2	20.3	33.5	56.0	-22.5
1.144	12.6	20.4	33.0	56.0	-23.0
0.211	19.7	20.3	40.0	63.2	-23.1
2.264	12.1	20.5	32.6	56.0	-23.4
0.475	12.7	20.3	33.0	56.4	-23.5
1.728	11.7	20.4	32.1	56.0	-23.9
0.507	11.7	20.3	32.0	56.0	-24.0
0.725	11.6	20.3	31.9	56.0	-24.1
0.708	11.6	20.3	31.9	56.0	-24.1
2.808	11.4	20.5	31.9	56.0	-24.1
4.552	11.2	20.7	31.9	56.0	-24.1
1.576	11.4	20.4	31.8	56.0	-24.2
2.752	11.2	20.5	31.7	56.0	-24.3
1.016	11.3	20.3	31.6	56.0	-24.4
3.808	11.0	20.6	31.6	56.0	-24.4
3.696	11.0	20.6	31.6	56.0	-24.4

Peak Data - vs - Average Limit

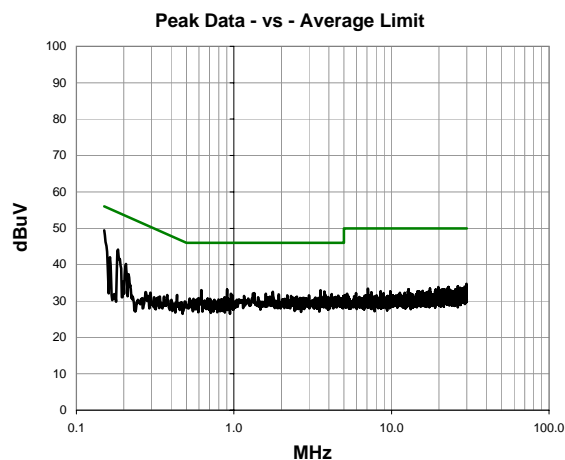
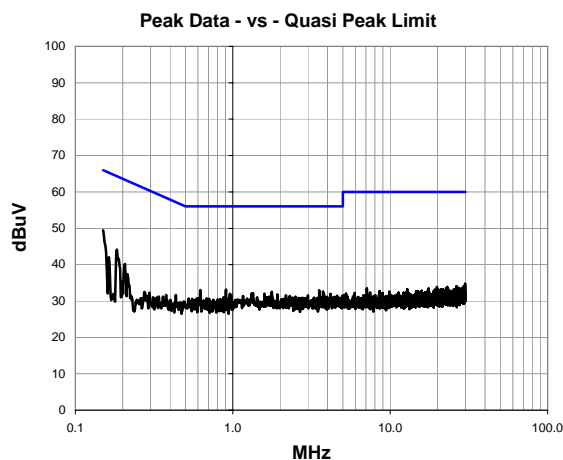
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.152	27.9	20.4	48.3	55.9	-7.6
0.186	23.1	20.3	43.4	54.2	-10.8
0.170	23.8	20.3	44.1	54.9	-10.8
0.193	21.7	20.3	42.0	53.9	-11.9
0.618	13.2	20.3	33.5	46.0	-12.5
1.144	12.6	20.4	33.0	46.0	-13.0
0.211	19.7	20.3	40.0	53.2	-13.1
2.264	12.1	20.5	32.6	46.0	-13.4
0.475	12.7	20.3	33.0	46.4	-13.5
1.728	11.7	20.4	32.1	46.0	-13.9
0.507	11.7	20.3	32.0	46.0	-14.0
0.725	11.6	20.3	31.9	46.0	-14.1
0.708	11.6	20.3	31.9	46.0	-14.1
2.808	11.4	20.5	31.9	46.0	-14.1
4.552	11.2	20.7	31.9	46.0	-14.1
1.576	11.4	20.4	31.8	46.0	-14.2
2.752	11.2	20.5	31.7	46.0	-14.3
1.016	11.3	20.3	31.6	46.0	-14.4
3.808	11.0	20.6	31.6	46.0	-14.4
3.696	11.0	20.6	31.6	46.0	-14.4

AC Powerline Conducted Emissions

Work Order:	FOCU0140	Date:	05/16/13	
Project:	None	Temperature:	23.7 °C	
Job Site:	EV07	Humidity:	40.3% RH	
Serial Number:	02EA4D000003	Barometric Pres.:	1014 mbar	
EUT:		Model 444-2225 (Athena UFL)		
Configuration:	7			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	3.3 VDC Nominal			
Operating Mode:	Transmitting 802.11a, 50% Duty Cycle, Ch. 32, 5785 MHz			
Deviations:	None			
Comments:	Power supply was plugged into 110VAC/60Hz			

Test Specifications	Test Method
FCC 15.207:2013	ANSI C63.10:2009

Run #	25	Line:	High Line	Ext. Attenuation:	20	Results	Pass
-------	----	-------	-----------	-------------------	----	---------	------




Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	29.0	20.4	49.4	66.0	-16.6
0.184	23.8	20.3	44.1	64.3	-20.2
0.905	12.8	20.3	33.1	56.0	-22.9
3.544	12.4	20.6	33.0	56.0	-23.0
0.623	12.7	20.3	33.0	56.0	-23.0
0.206	19.9	20.3	40.2	63.4	-23.1
0.164	21.7	20.3	42.0	65.3	-23.2
3.744	12.0	20.6	32.6	56.0	-23.4
1.768	12.1	20.4	32.5	56.0	-23.5
1.344	11.8	20.4	32.2	56.0	-23.8
0.959	11.7	20.3	32.0	56.0	-24.0
1.592	11.6	20.4	32.0	56.0	-24.0
4.168	11.3	20.7	32.0	56.0	-24.0
1.920	11.4	20.4	31.8	56.0	-24.2
3.800	11.1	20.6	31.7	56.0	-24.3
3.000	11.1	20.5	31.6	56.0	-24.4
2.176	11.1	20.4	31.5	56.0	-24.5
4.592	10.8	20.7	31.5	56.0	-24.5
2.304	10.9	20.5	31.4	56.0	-24.6
2.504	10.8	20.5	31.3	56.0	-24.7

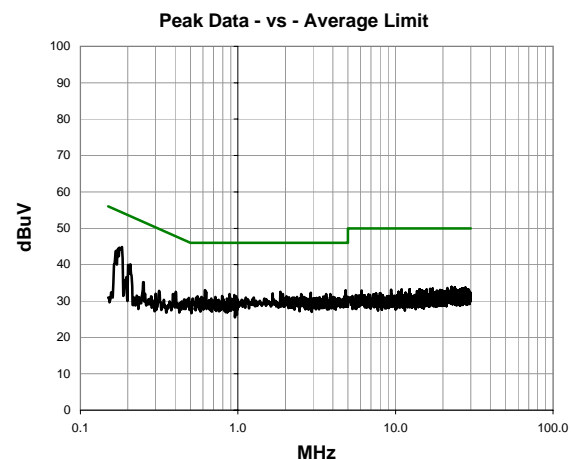
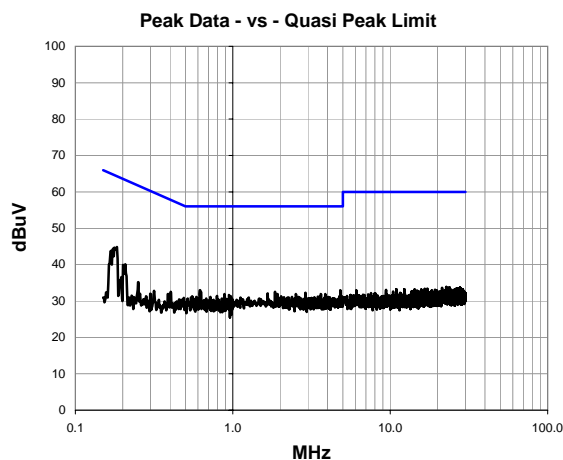
Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	29.0	20.4	49.4	56.0	-6.6
0.184	23.8	20.3	44.1	54.3	-10.2
0.905	12.8	20.3	33.1	46.0	-12.9
3.544	12.4	20.6	33.0	46.0	-13.0
0.623	12.7	20.3	33.0	46.0	-13.0
0.206	19.9	20.3	40.2	53.4	-13.1
0.164	21.7	20.3	42.0	55.3	-13.2
3.744	12.0	20.6	32.6	46.0	-13.4
1.768	12.1	20.4	32.5	46.0	-13.5
1.344	11.8	20.4	32.2	46.0	-13.8
0.959	11.7	20.3	32.0	46.0	-14.0
1.592	11.6	20.4	32.0	46.0	-14.0
4.168	11.3	20.7	32.0	46.0	-14.0
1.920	11.4	20.4	31.8	46.0	-14.2
3.800	11.1	20.6	31.7	46.0	-14.3
3.000	11.1	20.5	31.6	46.0	-14.4
2.176	11.1	20.4	31.5	46.0	-14.5
4.592	10.8	20.7	31.5	46.0	-14.5
2.304	10.9	20.5	31.4	46.0	-14.6
2.504	10.8	20.5	31.3	46.0	-14.7

Work Order:	FOCU0140	Date:	05/16/13	
Project:	None	Temperature:	23.7 °C	
Job Site:	EV07	Humidity:	40.3% RH	
Serial Number:	02EA4D000003	Barometric Pres.:	1014 mbar	
EUT:	Model 444-2225 (Athena UFL)			Tested by: Brandon Hobbs
Configuration:	7			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	3.3 VDC Nominal			
Operating Mode:	Transmitting 802.11a, 50% Duty Cycle, Ch. 32, 5785 MHz			
Deviations:	None			
Comments:	Power supply was plugged into 110VAC/60Hz			

Test Specifications	Test Method
FCC 15.207:2013	ANSI C63.10:2009

Run #	26	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
-------	----	-------	---------	-------------------	----	---------	------



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.184	24.5	20.3	44.8	64.3	-19.5
0.169	23.5	20.3	43.8	65.0	-21.2
0.619	12.7	20.3	33.0	56.0	-23.0
4.824	12.3	20.7	33.0	56.0	-23.0
0.208	19.8	20.3	40.1	63.3	-23.2
1.856	12.1	20.4	32.5	56.0	-23.5
2.896	11.8	20.5	32.3	56.0	-23.7
1.664	11.7	20.4	32.1	56.0	-23.9
2.520	11.5	20.5	32.0	56.0	-24.0
3.864	11.3	20.6	31.9	56.0	-24.1
0.886	11.6	20.3	31.9	56.0	-24.1
3.624	11.3	20.6	31.9	56.0	-24.1
1.928	11.5	20.4	31.9	56.0	-24.1
0.947	11.3	20.3	31.6	56.0	-24.4
0.794	11.1	20.3	31.4	56.0	-24.6
0.974	11.0	20.3	31.3	56.0	-24.7
0.553	11.0	20.3	31.3	56.0	-24.7
3.480	10.6	20.6	31.2	56.0	-24.8
0.587	10.9	20.3	31.2	56.0	-24.8
2.376	10.7	20.5	31.2	56.0	-24.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.184	24.5	20.3	44.8	54.3	-9.5
0.169	23.5	20.3	43.8	55.0	-11.2
0.619	12.7	20.3	33.0	46.0	-13.0
4.824	12.3	20.7	33.0	46.0	-13.0
0.208	19.8	20.3	40.1	53.3	-13.2
1.856	12.1	20.4	32.5	46.0	-13.5
2.896	11.8	20.5	32.3	46.0	-13.7
1.664	11.7	20.4	32.1	46.0	-13.9
2.520	11.5	20.5	32.0	46.0	-14.0
3.864	11.3	20.6	31.9	46.0	-14.1
0.886	11.6	20.3	31.9	46.0	-14.1
3.624	11.3	20.6	31.9	46.0	-14.1
1.928	11.5	20.4	31.9	46.0	-14.1
0.947	11.3	20.3	31.6	46.0	-14.4
0.794	11.1	20.3	31.4	46.0	-14.6
0.974	11.0	20.3	31.3	46.0	-14.7
0.553	11.0	20.3	31.3	46.0	-14.7
3.480	10.6	20.6	31.2	46.0	-14.8
0.587	10.9	20.3	31.2	46.0	-14.8
2.376	10.7	20.5	31.2	46.0	-14.8



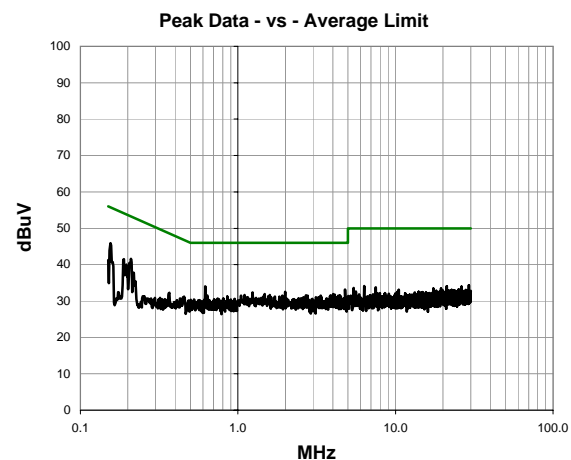
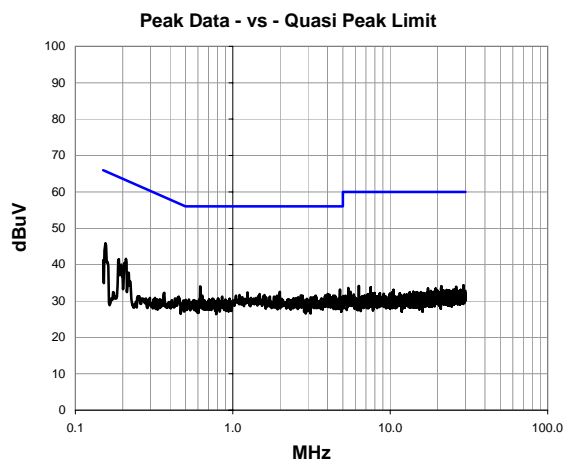
AC Powerline Conducted Emissions

PSA-ESCI 2012.12.14
PSA-ESCI Version 2013.2.20

Work Order:	FOCU0140	Date:	05/16/13	
Project:	None	Temperature:	23.7 °C	
Job Site:	EV07	Humidity:	40.3% RH	
Serial Number:	02EA4D000003	Barometric Pres.:	1014 mbar	
EUT:	Model 444-2225 (Athena UFL)			Tested by: Brandon Hobbs
Configuration:	7			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	3.3 VDC Nominal			
Operating Mode:	Transmitting 802.11a, 50% Duty Cycle, Ch. 34, 5825 MHz			
Deviations:	None			
Comments:	Power supply was plugged into 110VAC/60Hz			

Test Specifications	Test Method
FCC 15.207:2013	ANSI C63.10:2009

Run #	27	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
-------	----	-------	---------	-------------------	----	---------	------




Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.155	25.5	20.4	45.9	65.7	-19.8
0.210	21.3	20.3	41.6	63.2	-21.6
0.621	13.8	20.3	34.1	56.0	-21.9
0.189	21.2	20.3	41.5	64.1	-22.6
4.792	12.5	20.7	33.2	56.0	-22.8
1.992	12.1	20.4	32.5	56.0	-23.5
1.240	12.0	20.4	32.4	56.0	-23.6
4.016	11.3	20.6	31.9	56.0	-24.1
1.480	11.5	20.4	31.9	56.0	-24.1
4.112	11.1	20.7	31.8	56.0	-24.2
1.592	11.3	20.4	31.7	56.0	-24.3
1.104	11.3	20.3	31.6	56.0	-24.4
2.704	11.1	20.5	31.6	56.0	-24.4
3.872	10.9	20.6	31.5	56.0	-24.5
1.912	11.1	20.4	31.5	56.0	-24.5
0.640	11.2	20.3	31.5	56.0	-24.5
2.768	11.0	20.5	31.5	56.0	-24.5
4.440	10.8	20.7	31.5	56.0	-24.5
4.344	10.8	20.7	31.5	56.0	-24.5
3.360	10.9	20.6	31.5	56.0	-24.5

Peak Data - vs - Average Limit

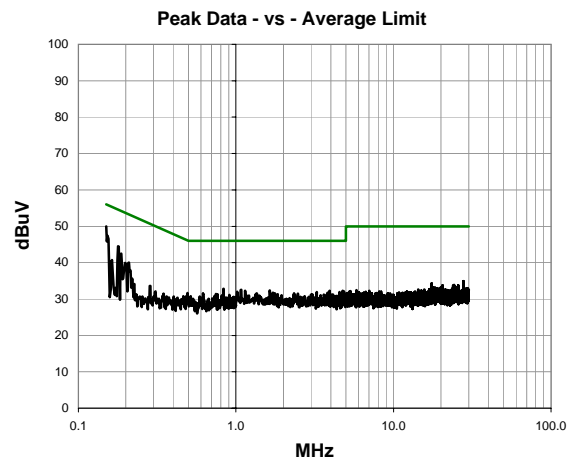
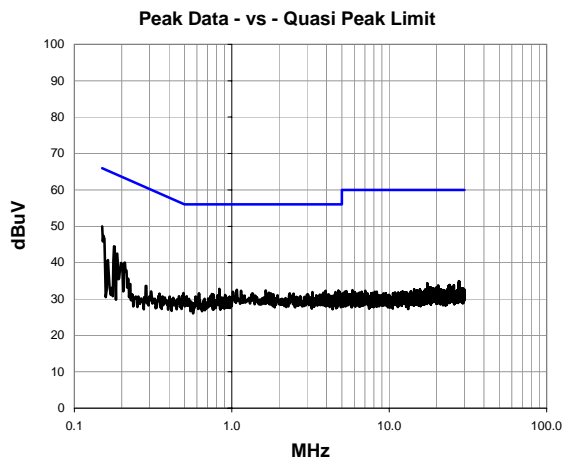
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.155	25.5	20.4	45.9	55.7	-9.8
0.210	21.3	20.3	41.6	53.2	-11.6
0.621	13.8	20.3	34.1	46.0	-11.9
0.189	21.2	20.3	41.5	54.1	-12.6
4.792	12.5	20.7	33.2	46.0	-12.8
1.992	12.1	20.4	32.5	46.0	-13.5
1.240	12.0	20.4	32.4	46.0	-13.6
4.016	11.3	20.6	31.9	46.0	-14.1
1.480	11.5	20.4	31.9	46.0	-14.1
4.112	11.1	20.7	31.8	46.0	-14.2
1.592	11.3	20.4	31.7	46.0	-14.3
1.104	11.3	20.3	31.6	46.0	-14.4
2.704	11.1	20.5	31.6	46.0	-14.4
3.872	10.9	20.6	31.5	46.0	-14.5
1.912	11.1	20.4	31.5	46.0	-14.5
0.640	11.2	20.3	31.5	46.0	-14.5
2.768	11.0	20.5	31.5	46.0	-14.5
4.440	10.8	20.7	31.5	46.0	-14.5
4.344	10.8	20.7	31.5	46.0	-14.5
3.360	10.9	20.6	31.5	46.0	-14.5

AC Powerline Conducted Emissions

Work Order:	FOCU0140	Date:	05/16/13	
Project:	None	Temperature:	23.7 °C	
Job Site:	EV07	Humidity:	40.3% RH	
Serial Number:	02EA4D000003	Barometric Pres.:	1014 mbar	
EUT:		Model 444-2225 (Athena UFL)		
Configuration:		7		
Customer:		Summit Semiconductor		
Attendees:		None		
EUT Power:		3.3 VDC Nominal		
Operating Mode:		Transmitting 802.11a, 50% Duty Cycle, Ch. 34, 5825 MHz		
Deviations:		None		
Comments:		Power supply was plugged into 110VAC/60Hz		

Test Specifications	Test Method
FCC 15.207:2013	ANSI C63.10:2009

Run #	28	Line:	High Line	Ext. Attenuation:	20	Results	Pass
-------	----	-------	-----------	-------------------	----	---------	------



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	29.5	20.4	49.9	66.0	-16.1
0.179	24.2	20.3	44.5	64.5	-20.0
0.187	22.2	20.3	42.5	64.2	-21.6
0.835	12.5	20.3	32.8	56.0	-23.2
0.210	19.7	20.3	40.0	63.2	-23.2
1.080	12.2	20.3	32.5	56.0	-23.5
1.640	12.0	20.4	32.4	56.0	-23.6
4.752	11.6	20.7	32.3	56.0	-23.7
1.144	11.9	20.4	32.3	56.0	-23.7
3.936	11.6	20.6	32.2	56.0	-23.8
0.198	19.6	20.3	39.9	63.7	-23.8
1.016	11.7	20.3	32.0	56.0	-24.0
4.848	11.3	20.7	32.0	56.0	-24.0
4.552	11.3	20.7	32.0	56.0	-24.0
3.256	11.4	20.5	31.9	56.0	-24.1
3.816	11.1	20.6	31.7	56.0	-24.3
1.768	11.2	20.4	31.6	56.0	-24.4
2.336	11.1	20.5	31.6	56.0	-24.4
0.493	11.4	20.3	31.7	56.1	-24.4
0.621	11.2	20.3	31.5	56.0	-24.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	29.5	20.4	49.9	56.0	-6.1
0.179	24.2	20.3	44.5	54.5	-10.0
0.187	22.2	20.3	42.5	54.2	-11.6
0.835	12.5	20.3	32.8	46.0	-13.2
0.210	19.7	20.3	40.0	53.2	-13.2
1.080	12.2	20.3	32.5	46.0	-13.5
1.640	12.0	20.4	32.4	46.0	-13.6
4.752	11.6	20.7	32.3	46.0	-13.7
1.144	11.9	20.4	32.3	46.0	-13.7
3.936	11.6	20.6	32.2	46.0	-13.8
0.198	19.6	20.3	39.9	53.7	-13.8
1.016	11.7	20.3	32.0	46.0	-14.0
4.848	11.3	20.7	32.0	46.0	-14.0
4.552	11.3	20.7	32.0	46.0	-14.0
3.256	11.4	20.5	31.9	46.0	-14.1
3.816	11.1	20.6	31.7	46.0	-14.3
1.768	11.2	20.4	31.6	46.0	-14.4
2.336	11.1	20.5	31.6	46.0	-14.4
0.493	11.4	20.3	31.7	46.1	-14.4
0.621	11.2	20.3	31.5	46.0	-14.5