



**Summit Semiconductor**  
**Model# 444-2216 (Glenwood)**

**Report #: FOCU0127**



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – [www.nwemc.com](http://www.nwemc.com)

California – Minnesota – Oregon – New York – Washington



22975 NW Evergreen Parkway  
Suite 400  
Hillsboro, Oregon 97124

**Certificate of Test**  
**Last Date of Test: March 23, 2012**  
**Summit Semiconductor**  
**Model: Model# 444-2216 (Glenwood)**

**Emissions**

Test Description	Specification	Test Method	Pass/Fail
Occupied Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	<b>Pass</b>
Output Power	FCC 15.247:2012	ANSI C63.10:2009	<b>Pass</b>
Band Edge Compliance	FCC 15.247:2012	ANSI C63.10:2009	<b>Pass</b>
Spurious Conducted Emissions	FCC 15.247:2012	ANSI C63.10:2009	<b>Pass</b>
Power Spectral Density	FCC 15.247:2012	ANSI C63.10:2009	<b>Pass</b>
Emission Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	<b>Pass</b>
Spurious Radiated Emissions	FCC 15.247:2012	ANSI C63.10:2009	<b>Pass</b>
AC Powerline Conducted Emissions	FCC 15.207:2012	ANSI C63.10:2009	<b>Pass</b>

**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		

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**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. The scope includes radio, ITE, and medical standards from around the world. See: <http://www.nwemc.com/accreditations/>

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**Canada**

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

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**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.

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**Australia/New Zealand**

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

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**Korea**

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

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**Japan**

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

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**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.

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**Singapore**

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

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**Hong Kong**

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

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**Vietnam**

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

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**Russia**

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

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### Oregon

Labs EV01-EV12  
22975 NW Evergreen Pkwy, #400  
Hillsboro, OR 97124  
(503) 844-4066

### California

Labs OC01-OC13  
41 Tesla  
Irvine, CA 92618  
(949) 861-8918

### New York

Labs WA01-WA04  
4939 Jordan Rd.  
Elbridge, NY 13060  
(315) 685-0796

### Minnesota

Labs MN01-MN08  
9349 W Broadway Ave.  
Brooklyn Park, MN 55445  
(763) 425-2281

### Washington

Labs SU01-SU07  
14128 339<sup>th</sup> Ave. SE  
Sultan, WA 98294  
(360) 793-8675

### VCCI

C-1071, R-1025, G-84,  
C-2687, T-1658, R-2318

R-1943, G-85,  
C-2766, T-1659, G-548

R-3125, G-86,  
G-141, C-3464, T-1634

R-871, G-83,  
C-3265, T-1511

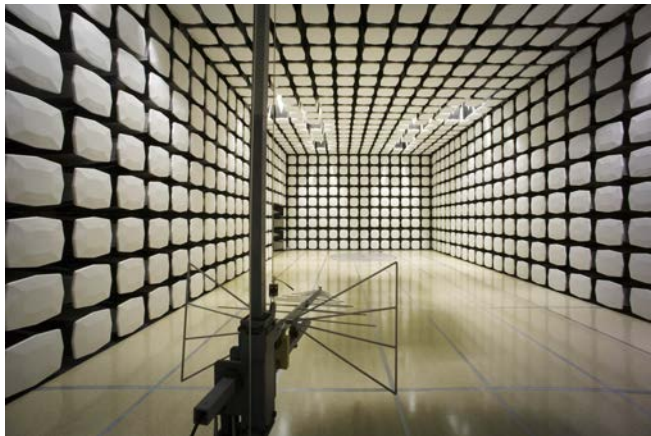
### Industry Canada

2834D-1, 2834D-2

2834B-1, 2834B-2, 2834B-3

2834E-1

2834C-1





## Product Description

### Client and Equipment Under Test (EUT) Information

<b>Company Name:</b>	Summit Semiconductor
<b>Address:</b>	22867 NW Bennett St, Suite 200
<b>City, State, Zip:</b>	Hillsboro, OR 97124
<b>Test Requested By:</b>	Ponnappa Pasura
<b>Model:</b>	Model# 444-2216 (Glenwood)
<b>First Date of Test:</b>	March 16, 2012
<b>Last Date of Test:</b>	March 23, 2012
<b>Receipt Date of Samples:</b>	March 13, 2012
<b>Equipment Design Stage:</b>	Preproduction
<b>Equipment Condition:</b>	No Damage

### Information Provided by the Party Requesting the Test

<b>Functional Description of the EUT (Equipment Under Test):</b>
UNII radio module
<b>Testing Objective:</b>
Seeking limited modular approval of the master under FCC 15.247 for operation in the 5.8 GHz band



## Configuration 1 FOCU0127

Software/Firmware Running during test	
Description	Version
Hood BIST Monitor	157

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Audio Board - Direct Connect	Summit Semiconductor	444-2216	02EA060000024

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Developer I/O Board	Summit Semiconductor	None	C0-4
RS-232 Serial Interface	Summit Semiconductor	None	None
DC Block	MCL	BLK-89-S+	15542
AC Adapter	Condor	SA-183A61V	0950

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remote PC	Dell	Latitude D820	2006-00516

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Multi-pin cable	No	0.2m	No	Wireless Audio Board - Direct Connect	DC Power / RS-232 Serial Interface
Serial	Yes	2.0m	No	Developer I/O Board	Remote PC
DC Lead	PA	1.8m	PA	AC Adapter	Developer I/O Board
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

## Configuration 2 FOCU0127

Software/Firmware Running during test	
Description	Version
Hood BIST Monitor	157

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Audio Board - Radiated	Summit Semiconductor	444-2216	02EA060000012

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Developer I/O Board	Summit Semiconductor	None	C0-4
DC Block	MCL	BLK-89-S+	15542

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
RS-232 Serial Interface	Summit Semiconductor	None	None
Remote PC	Dell	Latitude D820	2006-00516
DC Power Supply	Topward	6303D	743645

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Multi-pin cable	No	0.2m	No	Wireless Audio Board - Direct Connect	DC Power / RS-232 Serial Interface
Serial	Yes	2.0m	No	Developer I/O Board	Remote PC
DC Lead	PA	1.8m	PA	AC Adapter	Developer I/O Board

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



**Configuration 4 FOCU0127**

Software/Firmware Running during test	
Description	Version
Hood BIST Monitor	157

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Audio Board - Radiated	Summit Semiconductor	444-2216	02EA060000012

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Developer I/O Board	Summit Semiconductor	None	C0-4
DC Power Supply	Topward	6303D	743645

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
RS-232 Serial Interface	Summit Semiconductor	None	None
Remote PC	Dell	Latitude D820	2006-00516

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Lead	PA	1.8m	PA	AC Adapter	Developer I/O Board
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	3/16/2012	Spurious Radiated 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.
2	3/19/2012	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	3/19/2012	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.
4	3/19/2012	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	3/19/2012	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	3/19/2012	Emission 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.
7	3/22/2012	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.
8	3/23/2012	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

## 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
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	8/12/2011	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

To satisfy the requirements of FCC 15.247(a)(2), the 6 dB occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. In addition, the 99.9% power bandwidth was measured and used in determining the channel power integration bandwidth for maximum peak output power located elsewhere in this report. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate with the typical modulation.



## Occupied Bandwidth

XMit 2012.01.11  
PsaTx 2012.01.25

EUT: Model# 444-2216 (Glenwood)		Work Order: FOCU0127	
Serial Number: 02EA06000024		Date: 03/19/12	
Customer: Summit Semiconductor		Temperature: 21°C	
Attendees: None		Humidity: 28%	
Project: None		Barometric Pres.: 1013.5 mb	
Tested by: Rod Peloquin		Power: 18 VDC	
Job Site: EV06		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Rod Peloquin</i>	
		6 dB OBW	
		Value	Limit
			Result
5725 MHz - 5850 MHz Band			
6 Mbps			
Low Channel 149, 5745 MHz		15.829 MHz	> 500 kHz
Mid Channel 157, 5785 MHz		16.075 MHz	> 500 kHz
High Channel 165, 5825 MHz		15.506 MHz	> 500 kHz
			Pass
			Pass
			Pass

5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

6 dB OBW

Value

Limit

Result

15.829 MHz

> 500 kHz

Pass

Agilent 10:55:21 Mar 19, 2012

R T

Northwest EMC, Inc

Ref 15 dBm

#Atten 10 dB

#Peak

Log

5

dB/

Offst

23.2

dB

#LgAv

M1 S2

Center 5.745 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 29 MHz  
Sweep 2.799 ms (3000 pts)

Occupied Bandwidth

18.8811 MHz

Occ BW % Pwr

99.90 %

x dB

-6.00 dB

Transmit Freq Error

-305.320 kHz

Occupied Bandwidth

15.829 MHz

5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

6 dB OBW

Value

Limit

Result

16.075 MHz

> 500 kHz

Pass

Agilent 11:02:28 Mar 19, 2012

R T

Northwest EMC, Inc

Ref 15 dBm

#Atten 10 dB

#Peak

Log

5

dB/

Offst

23.2

dB

#LgAv

M1 S2

Center 5.785 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 32 MHz  
Sweep 3.199 ms (3000 pts)

Occupied Bandwidth

21.2451 MHz

Occ BW % Pwr

99.90 %

x dB

-6.00 dB

Transmit Freq Error

-376.746 kHz

Occupied Bandwidth

16.075 MHz

5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz

6 dB OBW

Value	Limit	Result
15.506 MHz	> 500 kHz	Pass

Agilent 11:05:16 Mar 19, 2012

R T

Northwest EMC, Inc

Ref 15 dBm

#Atten 10 dB

#Peak

Log

5

dB/

Offst

23.2

dB

#LgAv

M1 S2

Center 5.825 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 32 MHz

Sweep 3.199 ms (3000 pts)

Occupied Bandwidth

21.8813 MHz

Occ BW % Pwr

99.90 %

x dB

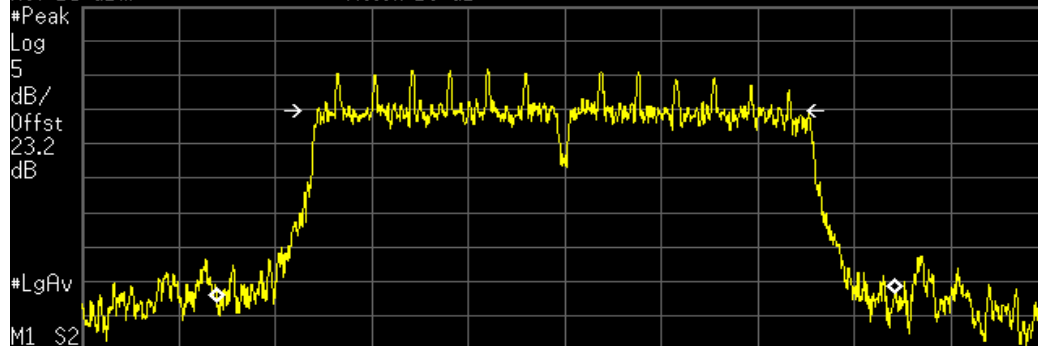
-6.00 dB

Transmit Freq Error

-333.440 kHz

Occupied Bandwidth

15.506 MHz



## 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
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	8/12/2011	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
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
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	5/5/2011	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

Measurement was made using the alternate method of integrated band power using the channel power measurement function of a spectrum analyzer and peak detector with sweep gating on the RF burst. The channel integration bandwidth was set to the Emission Bandwidth (EBW) of the carrier. The EBW was measured as the x -26 db bandwidth of the carrier using an RBW of between 1% - 3 %. The data is located in the Emission Bandwidth test data located elsewhere in this report.

RF Gating was used to ensure the measurement was integrated only across the high time of the transmission duration.

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





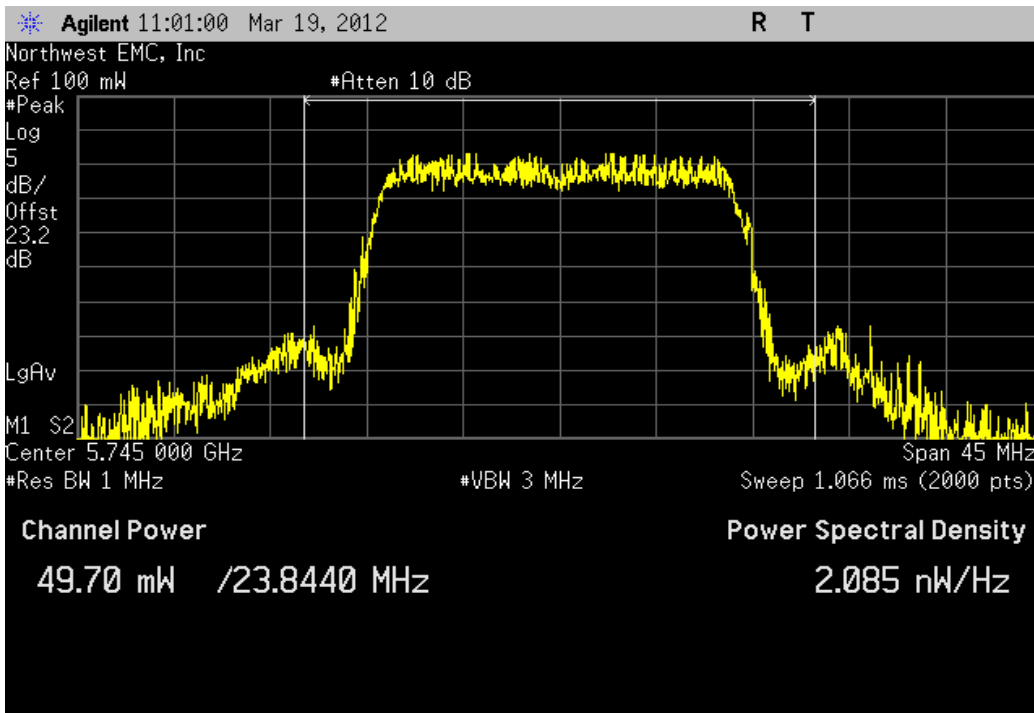
## Output Power

XMit 2012.01.11  
PsaTx 2012.01.25

EUT: Model# 444-2216 (Glenwood)		Work Order: FOCU0127	
Serial Number: 02EA06000024		Date: 03/19/12	
Customer: Summit Semiconductor		Temperature: 21°C	
Attendees: None		Humidity: 28%	
Project: None		Barometric Pres.: 1013.5 mb	
Tested by: Rod Peloquin		Power: 18 VDC	
Job Site: EV06			
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
Sweep Gating used on RF burst			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Rod Peloquin</i>	
		Value	Limit
5725 MHz - 5850 MHz Band			Result
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz		49.7 mW	< 1 W
Mid Channel 157, 5785 MHz		49.21 mW	< 1 W
High Channel 165, 5825 MHz		62.99 mW	< 1 W

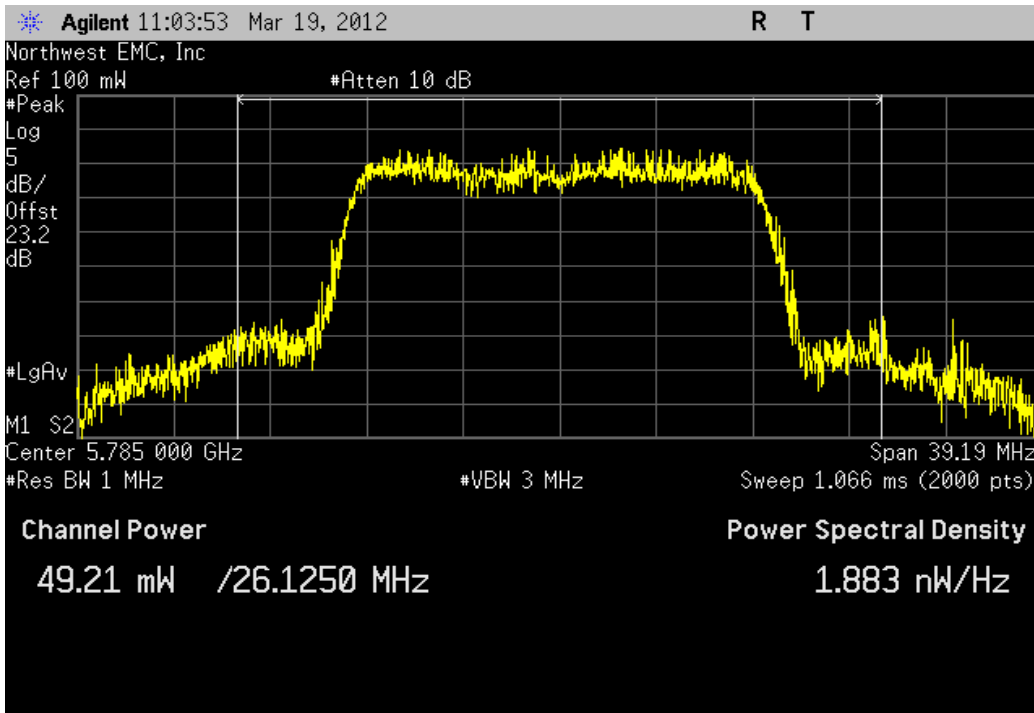
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

Value	Limit	Result
49.7 mW	< 1 W	Pass



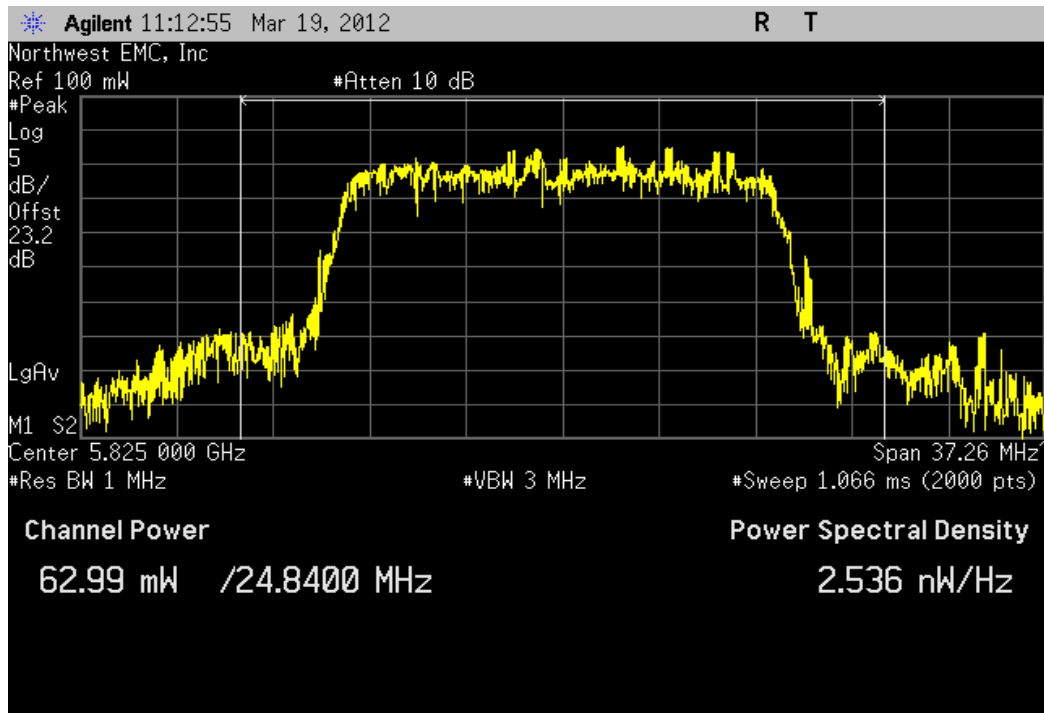
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz

Value	Limit	Result
49.21 mW	< 1 W	Pass



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

Value	Limit	Result
62.99 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
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	8/12/2011	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### 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 its lowest, middle, and maximum data rate available.

The spectrum was scanned across each band edge from at least 25 MHz below the band edge to 25 MHz above the band edge.



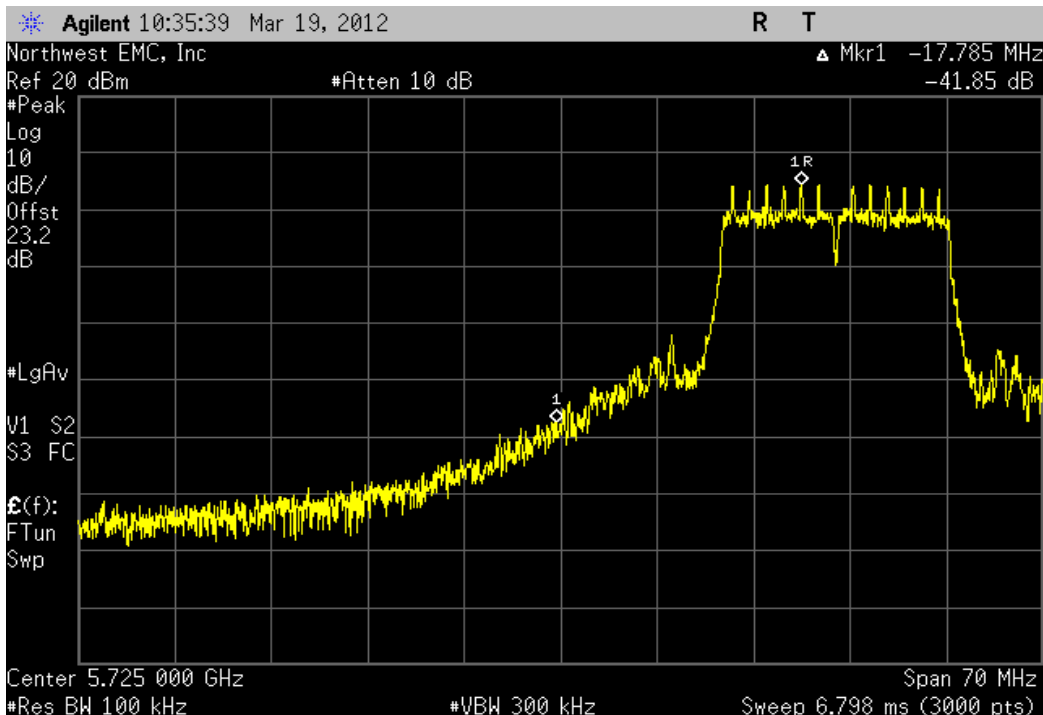
## Band Edge Compliance

XMit 2012.01.11  
PsaTx 2012.01.25

EUT: Model# 444-2216 (Glenwood)		Work Order: FOCU0127	
Serial Number: 02EA06000024		Date: 03/19/12	
Customer: Summit Semiconductor		Temperature: 21°C	
Attendees: None		Humidity: 28%	
Project: None		Barometric Pres.: 1013.5 mb	
Tested by: Rod Peloquin		Power: 18 VDC	
Job Site: EV06		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Rod Peloquin</i>	
		Value	Limit
5725 MHz - 5850 MHz Band			Result
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz		-41.85 dBc	≤ -20 dBc
High Channel 165, 5825 MHz		-48.81 dBc	≤ -20 dBc
			Pass
			Pass

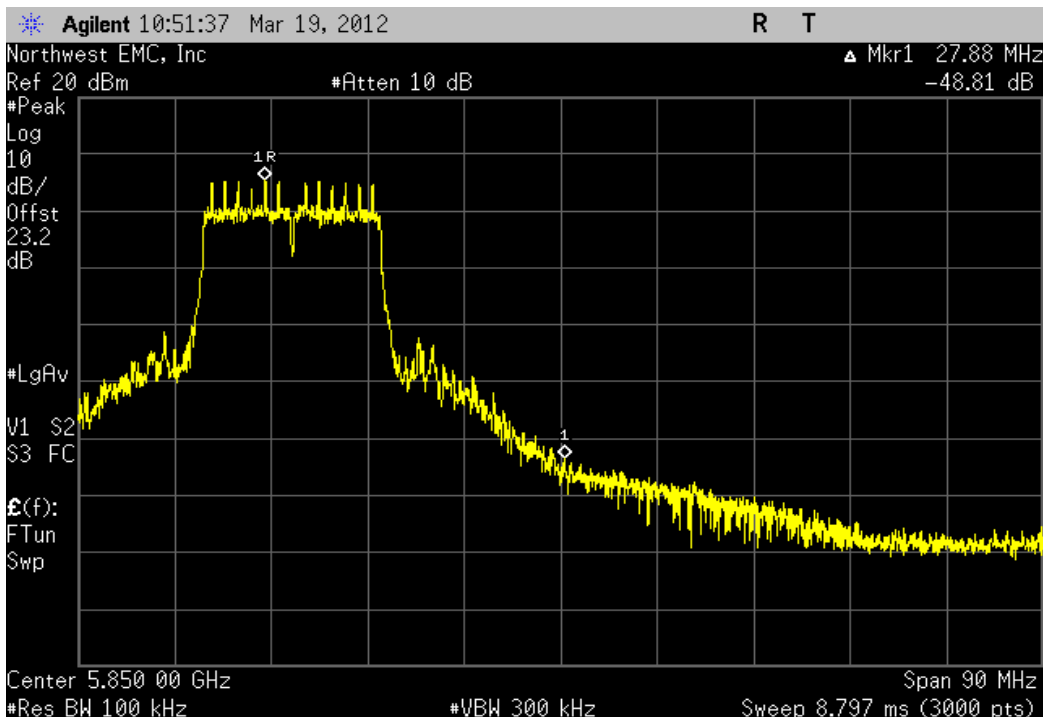
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

Value	Limit	Result
-41.85 dBc	≤ -20 dBc	Pass



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

Value	Limit	Result
-48.81 dBc	≤ -20 dBc	Pass



## Spurious Conducted 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.

### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AAW	4/19/2011	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### 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 its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.



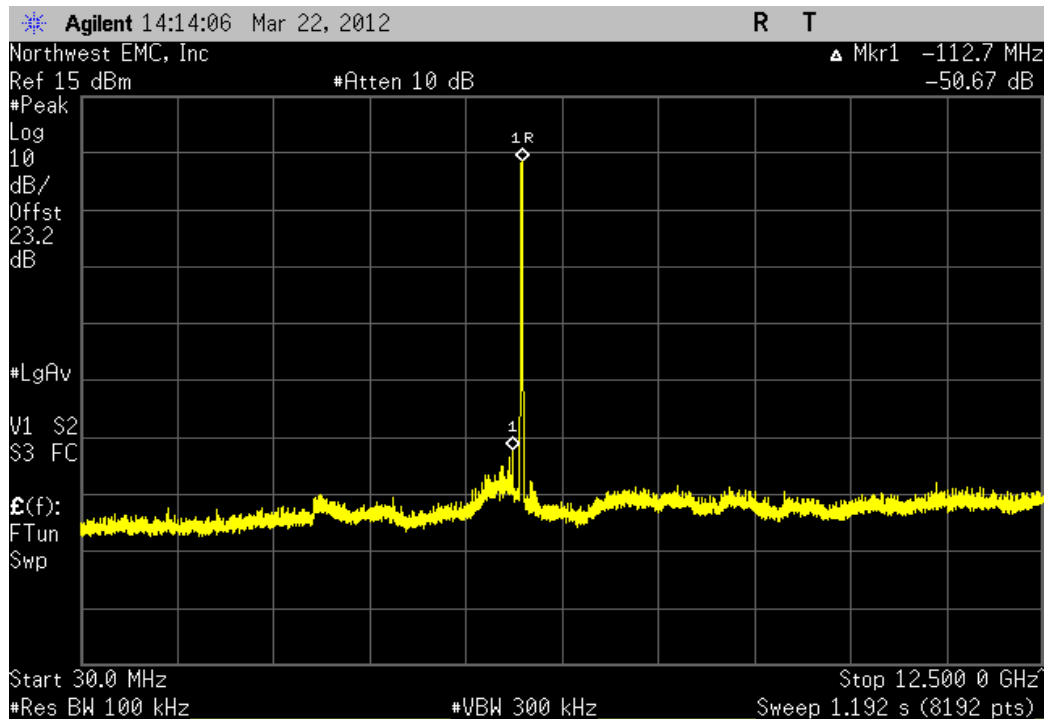


## Spurious Conducted Emissions

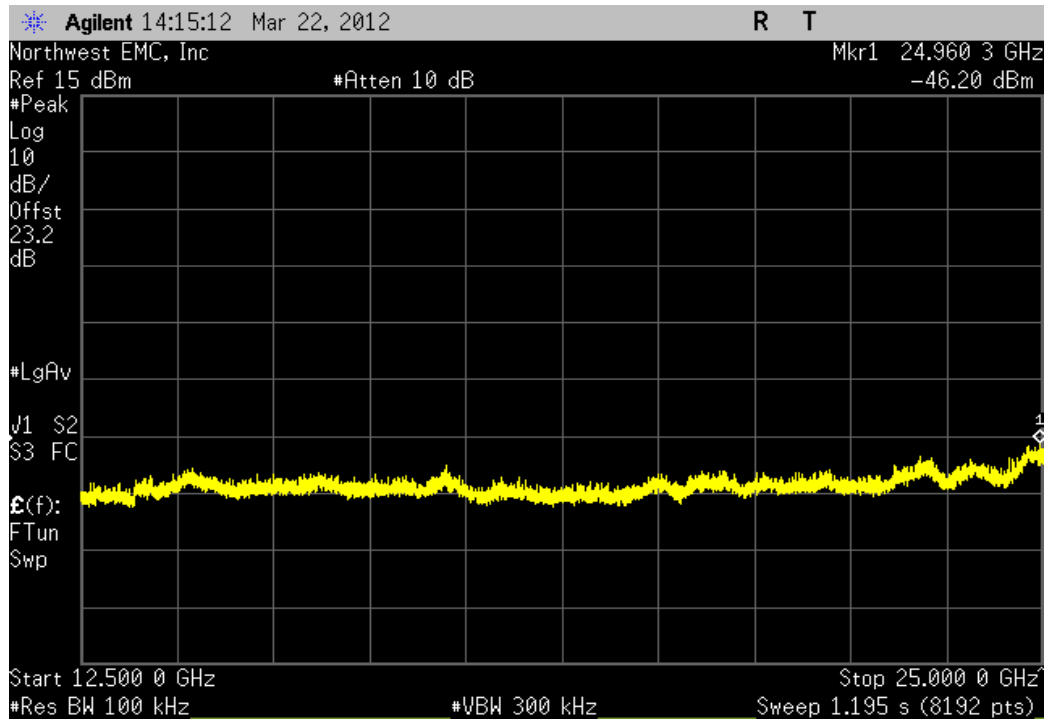
XMit 2012.01.11  
PsaTx 2012.01.25

EUT: Model# 444-2216 (Glenwood)		Work Order: FOCU0127			
Serial Number: 02EA06000024		Date: 03/22/12			
Customer: Summit Semiconductor		Temperature: 22°C			
Attendees: Ponnappa Pasura		Humidity: 29%			
Project: None		Barometric Pres.: 1011.5 mb			
Tested by: Rod Peloquin		Power: 18 VDC			
Job Site: EV01					
TEST SPECIFICATIONS		Test Method			
FCC 15.247:2012		ANSI C63.10:2009			
COMMENTS					
None					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	1	Signature <i>Rod Peloquin</i>			
		Frequency Range	Value	Limit	Result
5725 MHz - 5850 MHz Band					
6 Mbps					
Low Channel 149 (30), 5745 MHz		30 MHz - 12.5 GHz	-50.68 dBc	≤ -20 dBc	Pass
Low Channel 149 (30), 5745 MHz		12.5 GHz - 25 GHz	-49.64 dBc	≤ -20 dBc	Pass
Low Channel 149 (30), 5745 MHz		25 GHz - 32 GHz	-49.04 dBc	≤ -20 dBc	Pass
Low Channel 149 (30), 5745 MHz		32 GHz - 40 GHz	-38.95 dBc	≤ -20 dBc	Pass
Mid Channel 157 (32), 5785 MHz		30 MHz - 12.5 GHz	-50.05 dBc	≤ -20 dBc	Pass
Mid Channel 157 (32), 5785 MHz		12.5 GHz - 25 GHz	-49.53 dBc	≤ -20 dBc	Pass
Mid Channel 157 (32), 5785 MHz		25 GHz - 32 GHz	-49.04 dBc	≤ -20 dBc	Pass
Mid Channel 157 (32), 5785 MHz		32 GHz - 40 GHz	-39.47 dBc	≤ -20 dBc	Pass
High Channel 165 (34), 5825 MHz		30 MHz - 12.5 GHz	-51.23 dBc	≤ -20 dBc	Pass
High Channel 165 (34), 5825 MHz		12.5 GHz - 25 GHz	-50.37 dBc	≤ -20 dBc	Pass
High Channel 165 (34), 5825 MHz		25 GHz - 32 GHz	-48.86 dBc	≤ -20 dBc	Pass
High Channel 165 (34), 5825 MHz		32 GHz - 40 GHz	-39.64 dBc	≤ -20 dBc	Pass

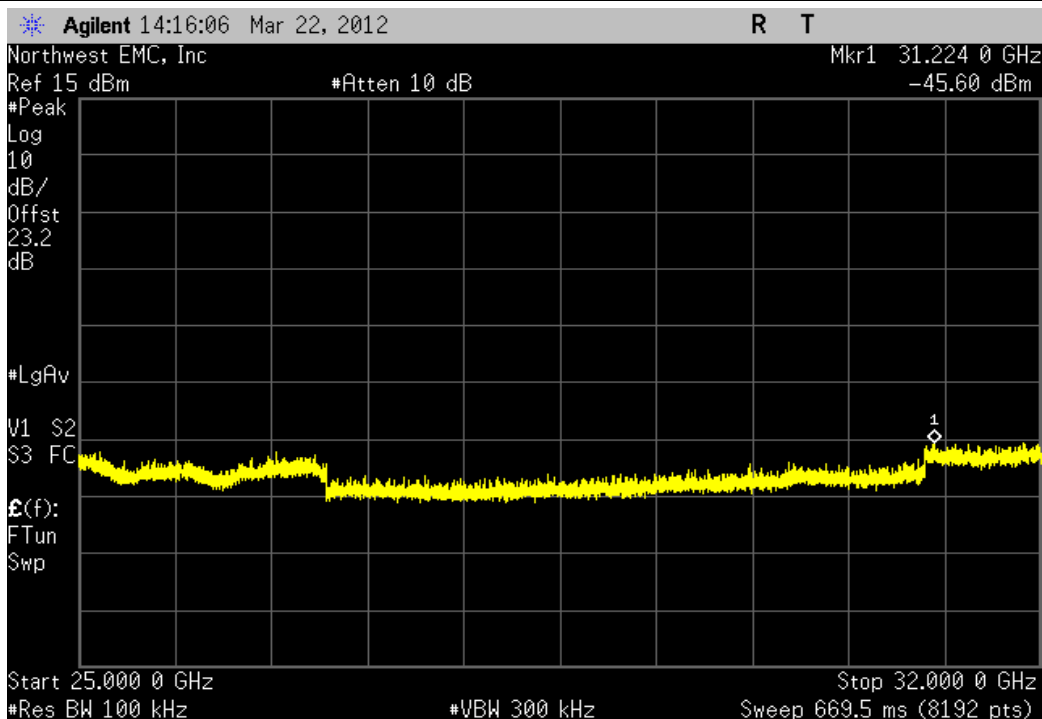
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149 (30), 5745 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-50.68 dBc	≤ -20 dBc	Pass	



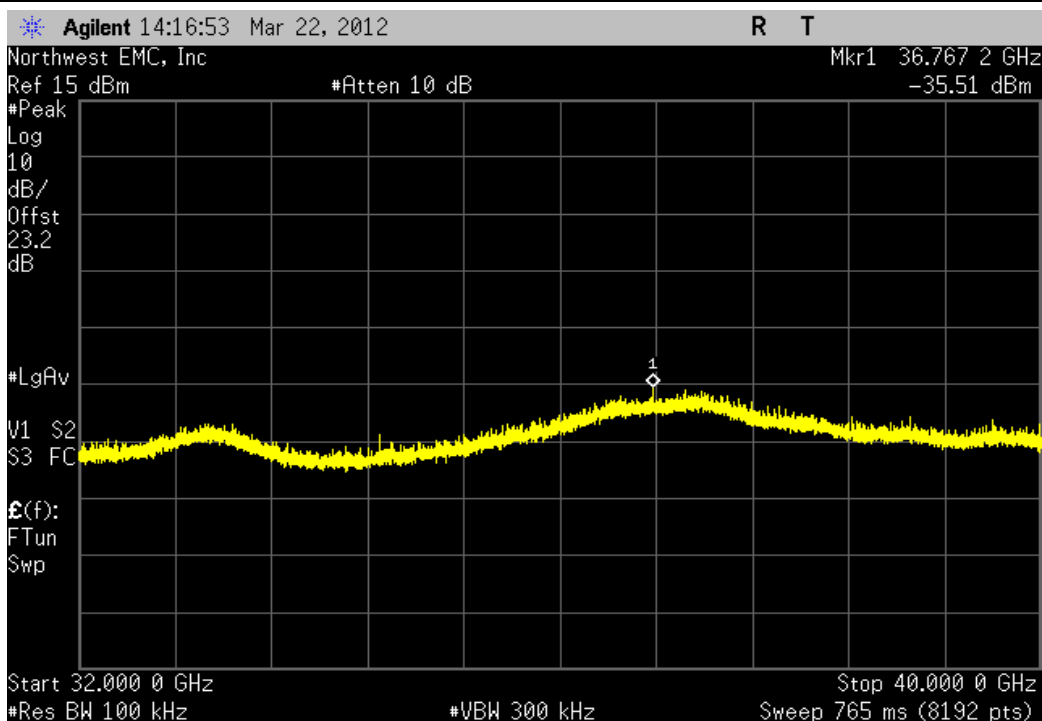
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149 (30), 5745 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-49.64 dBc	≤ -20 dBc	Pass	



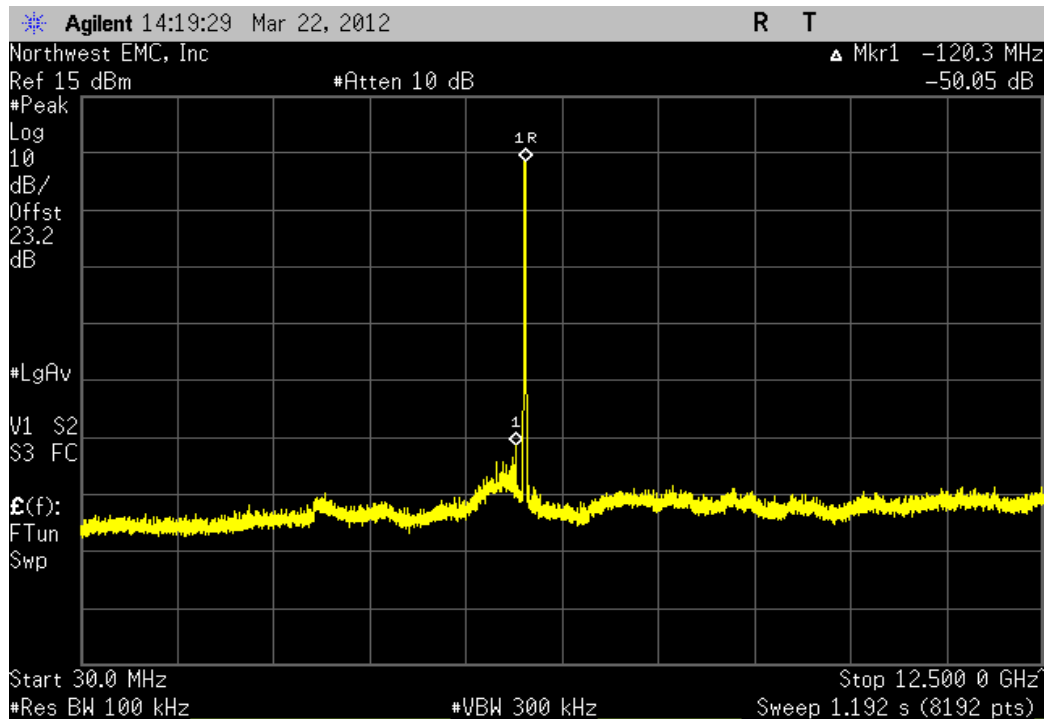
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149 (30), 5745 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-49.04 dBc	≤ -20 dBc	Pass	



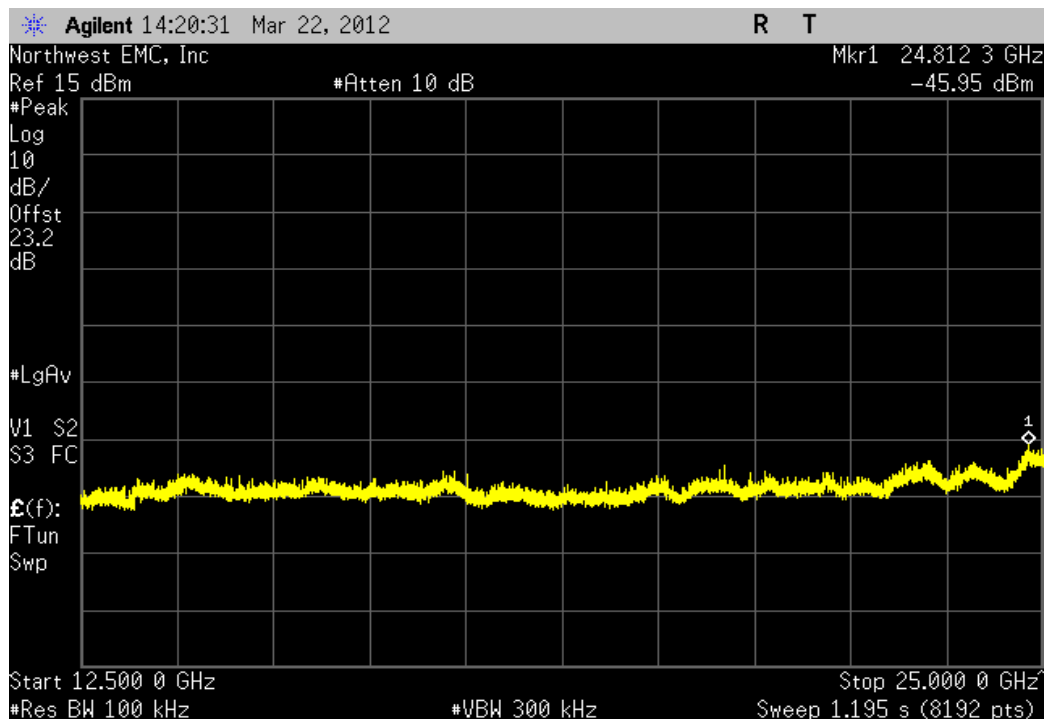
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149 (30), 5745 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-38.95 dBc	≤ -20 dBc	Pass	



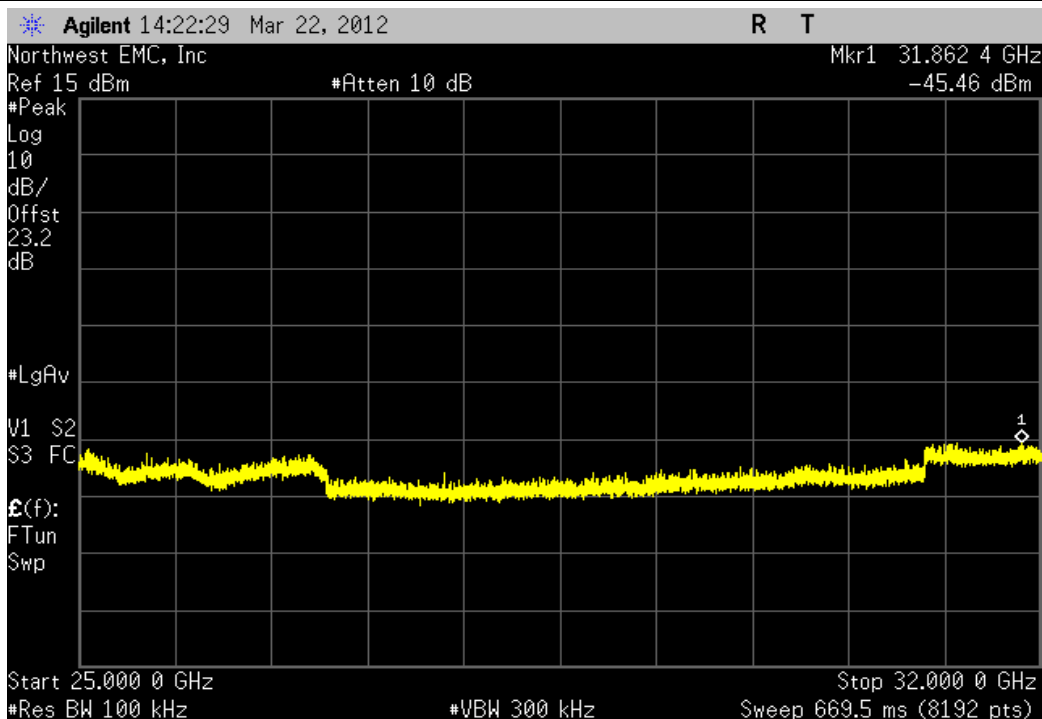
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157 (32), 5785 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-50.05 dBc	≤ -20 dBc	Pass	



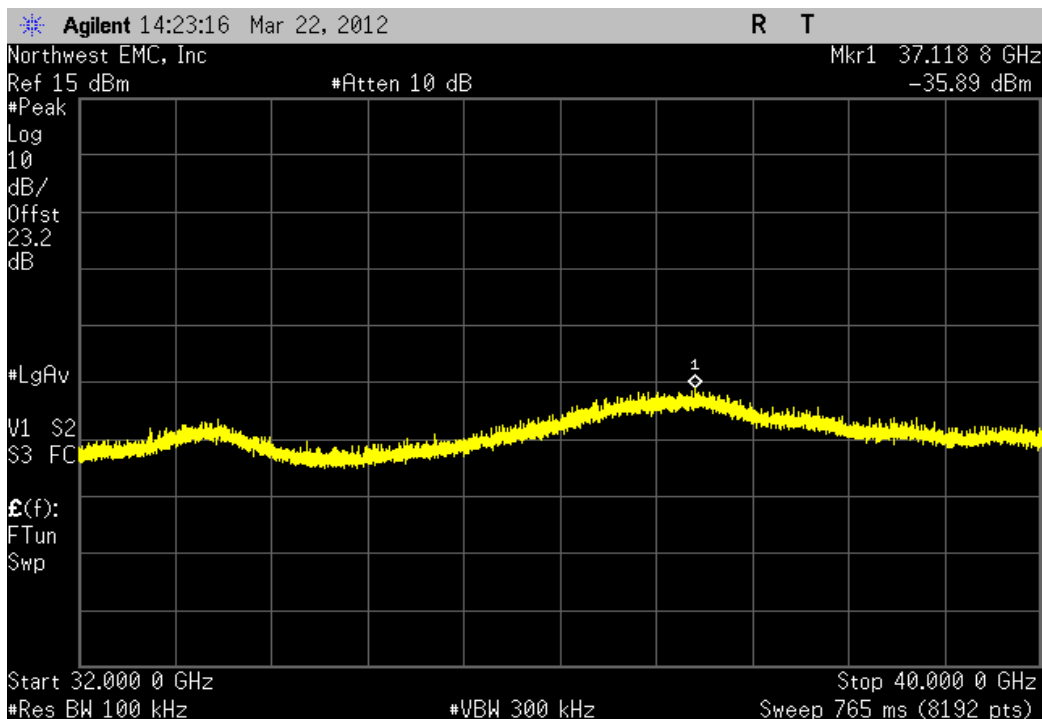
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157 (32), 5785 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-49.53 dBc	≤ -20 dBc	Pass	



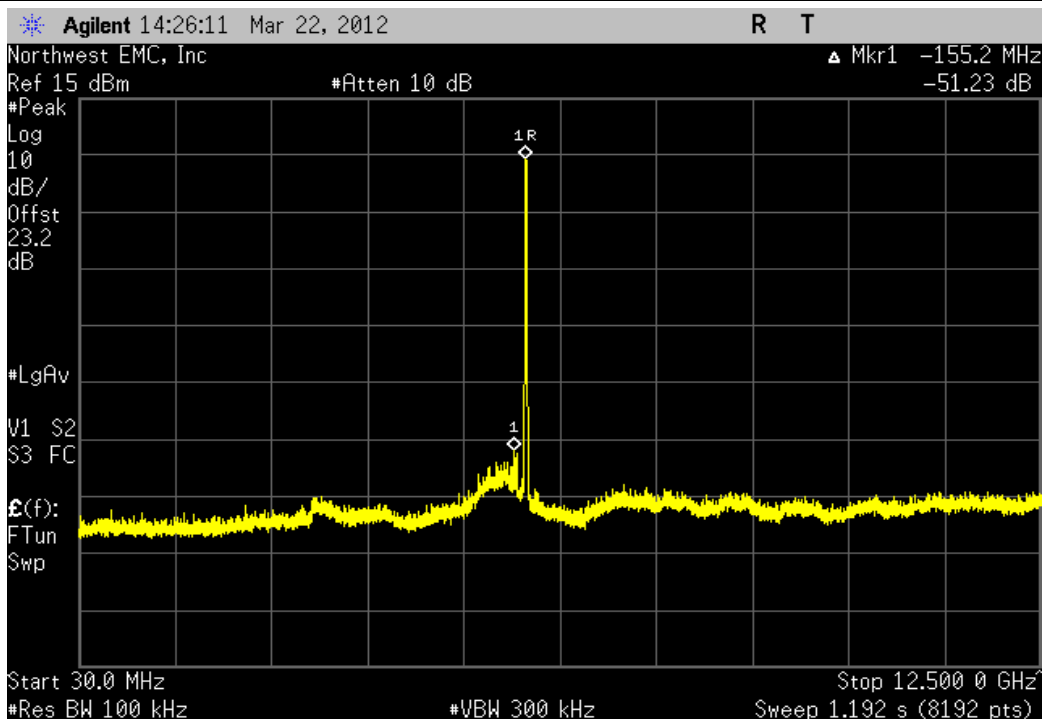
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157 (32), 5785 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-49.04 dBc	≤ -20 dBc	Pass	



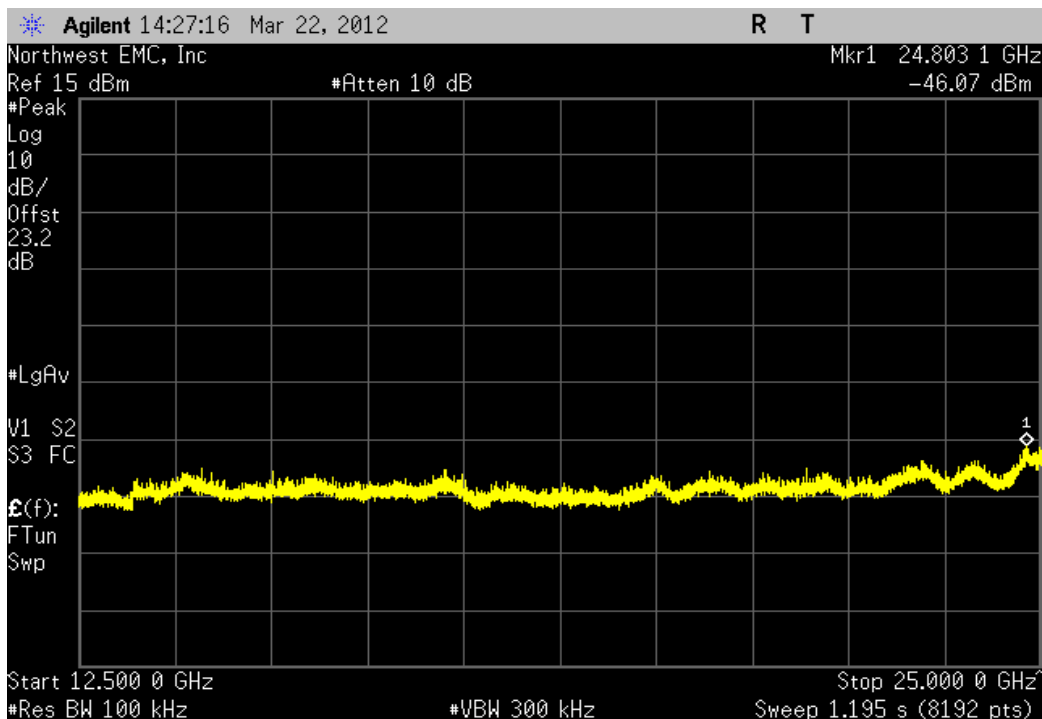
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157 (32), 5785 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-39.47 dBc	≤ -20 dBc	Pass	



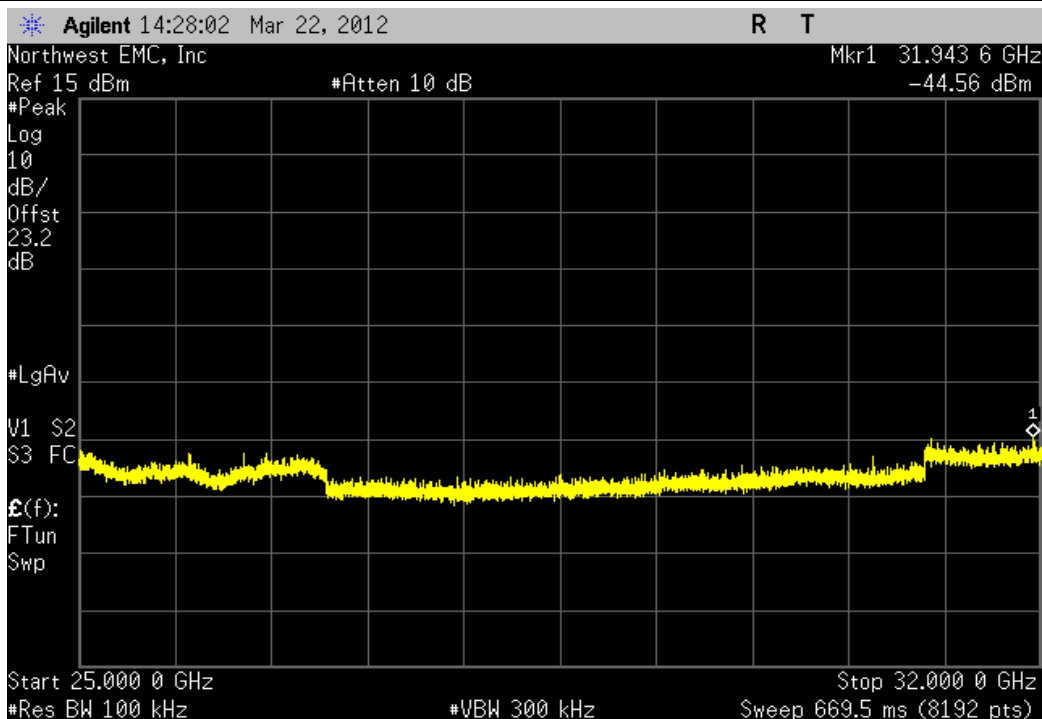
5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165 (34), 5825 MHz				
Frequency Range	Value	Limit	Result	
30 MHz - 12.5 GHz	-51.23 dBc	≤ -20 dBc	Pass	



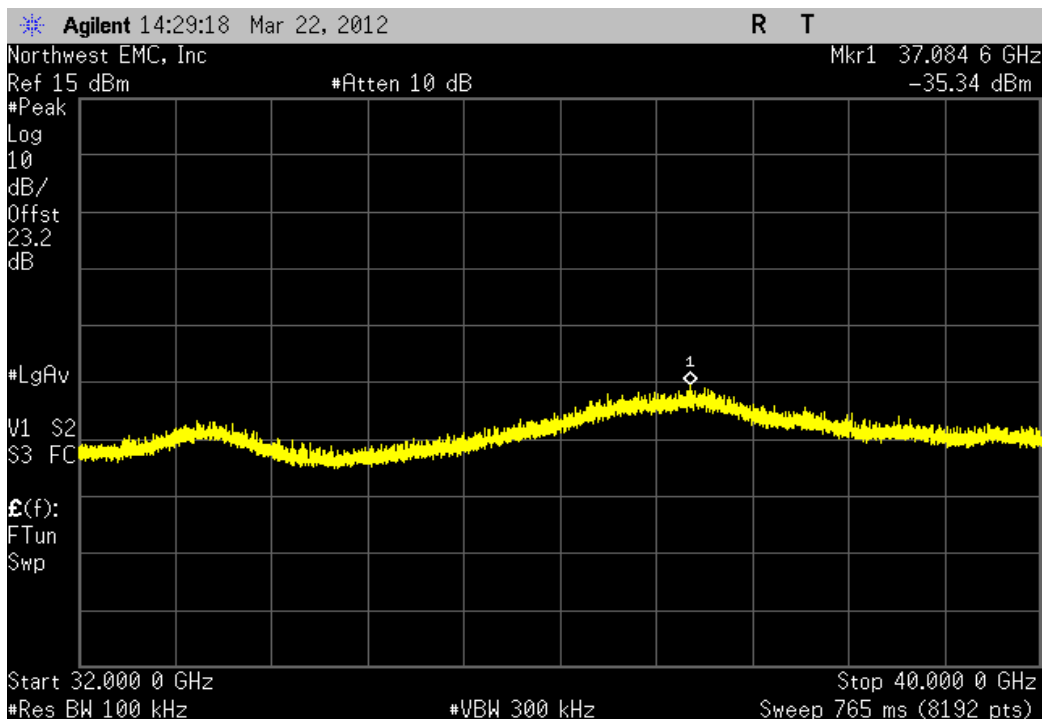
5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165 (34), 5825 MHz				
Frequency Range	Value	Limit	Result	
12.5 GHz - 25 GHz	-50.37 dBc	≤ -20 dBc	Pass	



5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165 (34), 5825 MHz				
Frequency Range	Value	Limit	Result	
25 GHz - 32 GHz	-48.86 dBc	≤ -20 dBc	Pass	



5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165 (34), 5825 MHz				
Frequency Range	Value	Limit	Result	
32 GHz - 40 GHz	-39.64 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
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	8/12/2011	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	5/5/2011	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### 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, 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:

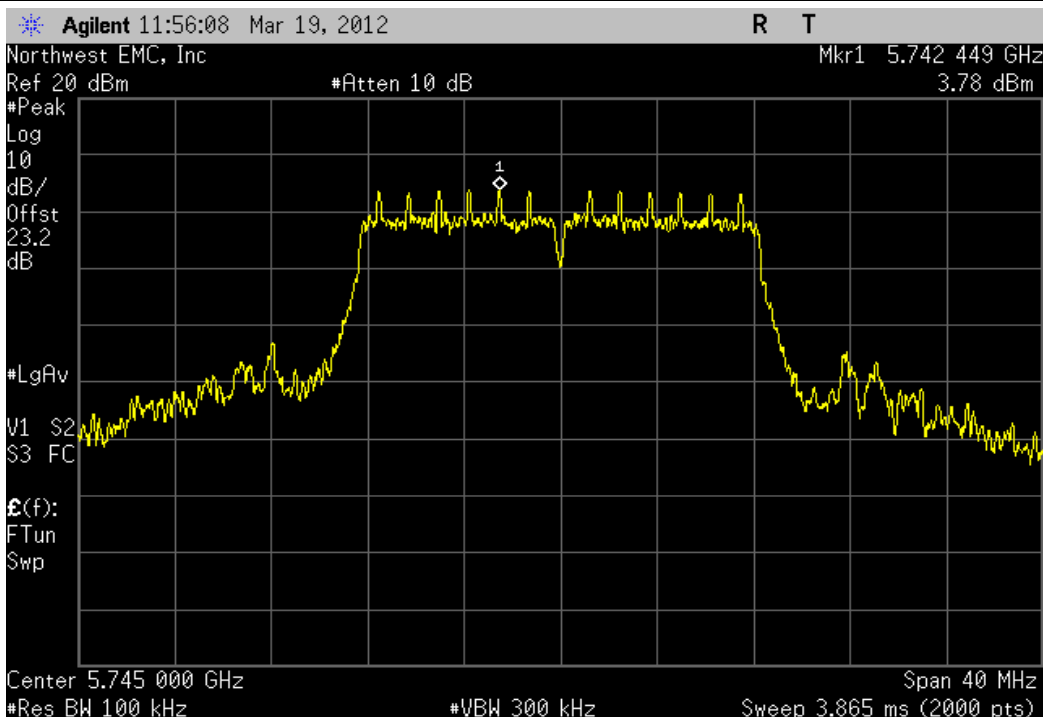
$$BWCF = 10 \cdot \log(3 \text{ kHz} / 100 \text{ kHz}) = -15.2 \text{ dB}$$



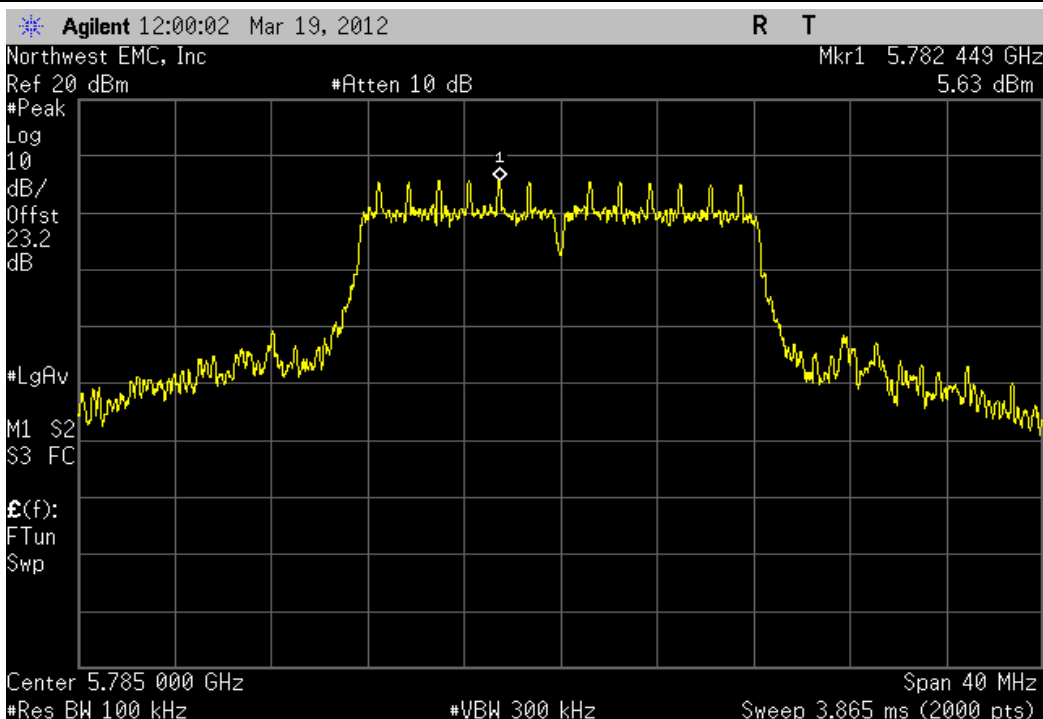
## POWER SPECTRAL DENSITY

EUT: Model# 444-2216 (Glenwood)		Work Order: FOCU0127				
Serial Number: 02EA06000024		Date: 03/19/12				
Customer: Summit Semiconductor		Temperature: 21°C				
Attendees: None		Humidity: 28%				
Project: None		Barometric Pres.: 1013.5 mb				
Tested by: Rod Peloquin		Power: 18 VDC				
Job Site: EV06						
TEST SPECIFICATIONS		Test Method				
FCC 15.247:2012		ANSI C63.10:2009				
COMMENTS						
None						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1	Signature <i>Rodry L. Peloquin</i>				
		Peak Reading dBm	BWCF dB	Value dBm / 3 kHz	Limit	Result
6 Mbps						
Low Channel 149, 5745 MHz		3.78	-15.2	-11.42	8 dBm / 3 kHz	Pass
Mid Channel 157, 5785 MHz		5.63	-15.2	-9.57	8 dBm / 3 kHz	Pass
High Channel 165, 5825 MHz		5.98	-15.2	-9.22	8 dBm / 3 kHz	Pass

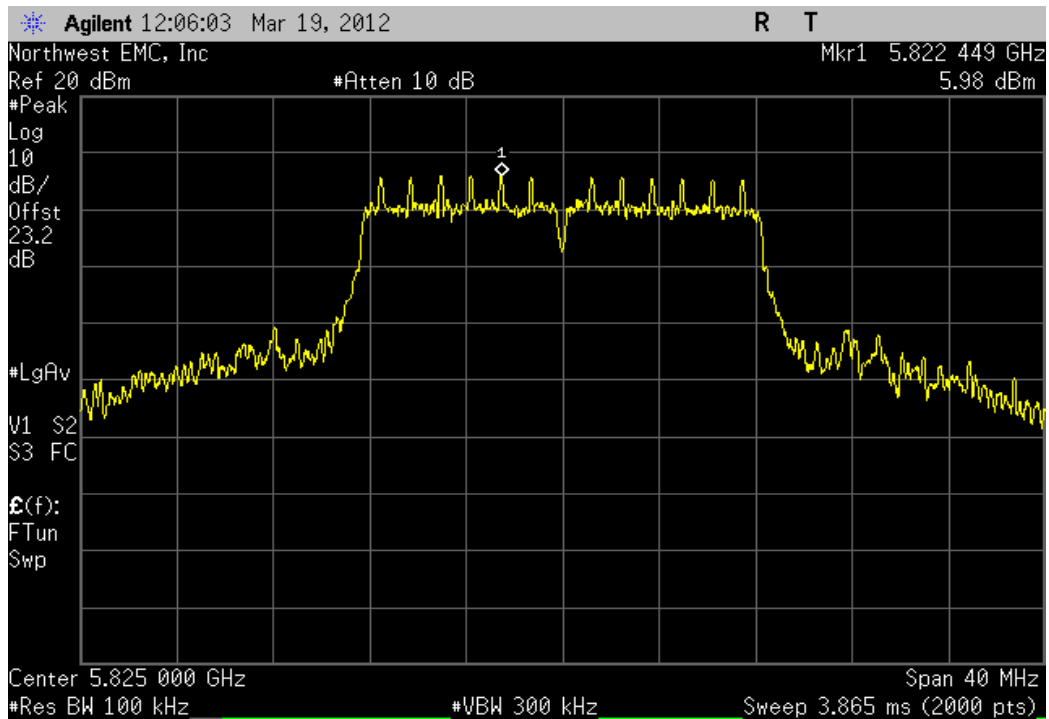
6 Mbps, Low Channel 149, 5745 MHz						
	Peak Reading	BWCF	Value	Limit	Result	
	dBm	dB	dBm / 3 kHz			
	3.78	-15.2	-11.42	8 dBm / 3 kHz	Pass	



6 Mbps, Mid Channel 157, 5785 MHz						
	Peak Reading	BWCF	Value	Limit	Result	
	dBm	dB	dBm / 3 kHz			
	5.63	-15.2	-9.57	8 dBm / 3 kHz	Pass	



6 Mbps, High Channel 165, 5825 MHz					
Peak Reading	BWCF	Value	Limit	Result	
dBm	dB	dBm / 3 kHz			
5.98	-15.2	-9.22	8 dBm / 3 kHz	Pass	



## Emission 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
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	8/12/2011	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

FCC KDB 558074 D01 V01, 1/18/2012 was followed. The transmit frequency was set to the lowest, a medium, and the highest channels in each band. The transmit power was set to its default maximum. The lowest, a medium, and the highest data rates were measured if available. 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.

The spectrum analyzer settings were as follows:

Span = approximately 1.5 to 2 times the emission bandwidth, centered on the transmit channel.

RBW = Approx. 1% of the emission bandwidth (B).

VBW = > 3x of the RBW

A peak detector was used.

The analyzer Occupied Bandwidth measurement function was used to measure the x dB -26 dB emission bandwidth.



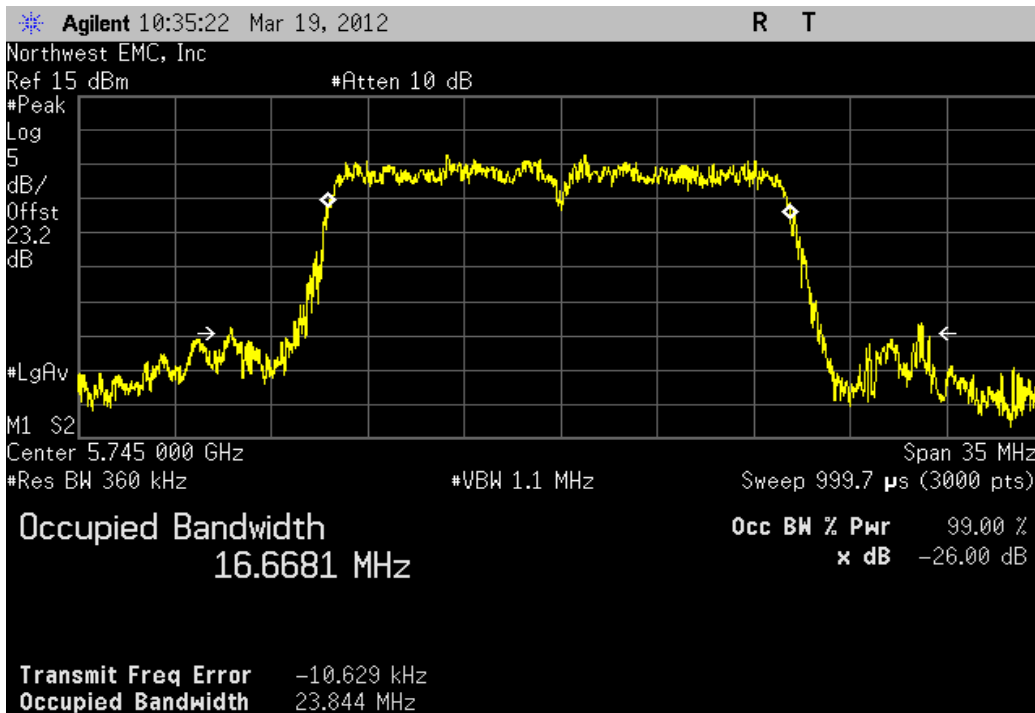
## Emission Bandwidth

XMit 2012.01.11  
PsaTx 2012.01.25

EUT: Model# 444-2216 (Glenwood)		Work Order: FOCU0127	
Serial Number: 02EA06000024		Date: 03/19/12	
Customer: Summit Semiconductor		Temperature: 21°C	
Attendees: None		Humidity: 28%	
Project: None		Barometric Pres.: 1013.5 mb	
Tested by: Rod Peloquin		Power: 18 VDC	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Rod Peloquin</i>	
		Value	Limit
5725 MHz - 5850 MHz Band			Result
6 Mbps			
Low Channel 149, 5745 MHz		23.844 MHz	> 500 kHz
Mid Channel 157, 5785 MHz		26.125 MHz	> 500 kHz
High Channel 165, 5825 MHz		24.84 MHz	> 500 kHz
			Pass
			Pass
			Pass

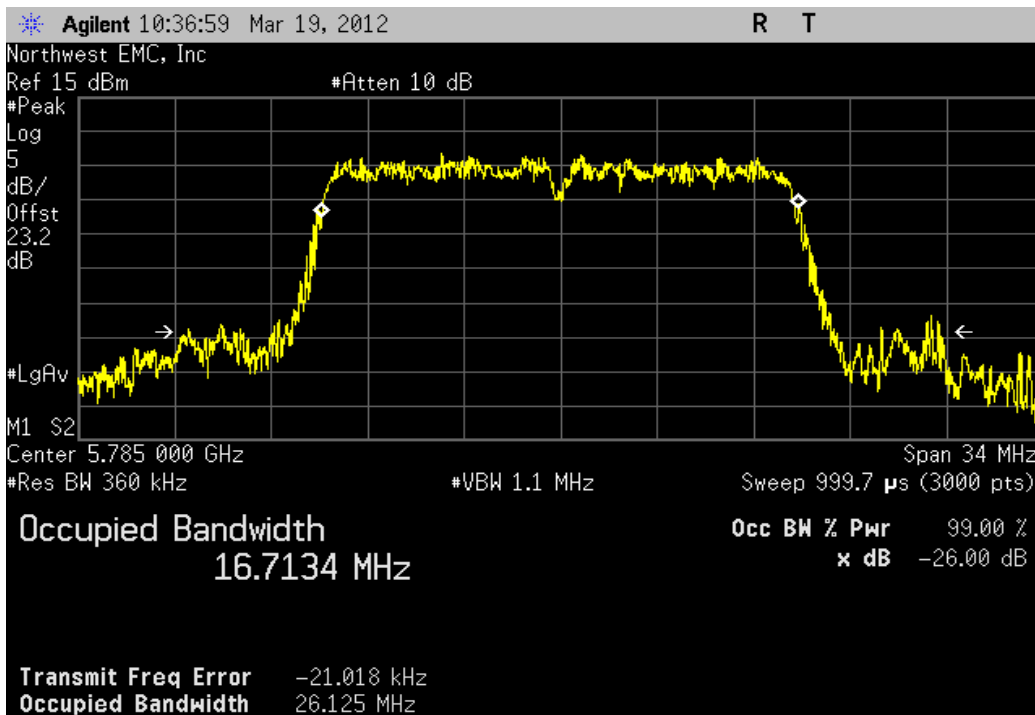
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				23.844 MHz	> 500 kHz	Pass



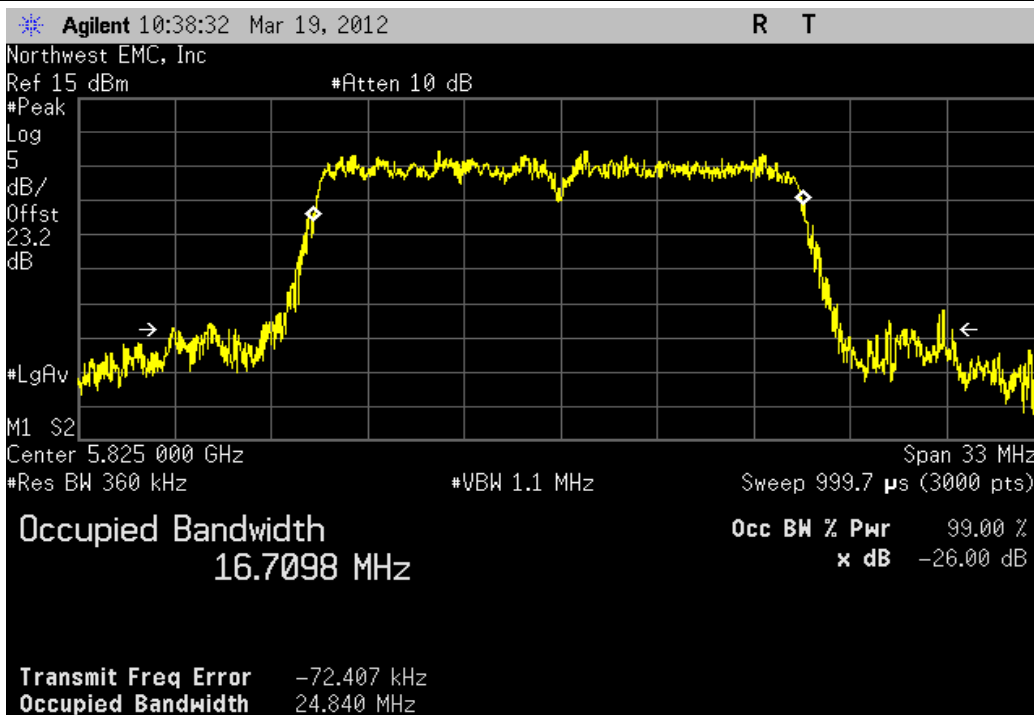
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				26.125 MHz	> 500 kHz	Pass



5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz

Value	Limit	Result
24.84 MHz	> 500 kHz	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. 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 55% duty cycle, 6 Mbps

## CHANNELS TESTED

Channel 149 (30), 5745 MHz

Channel 157(32), 5785 MHz

Channel 165 (34), 5825 MHz

## POWER SETTINGS INVESTIGATED

18 VDC

## CONFIGURATIONS INVESTIGATED

FOCU0127 - 2

## FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz
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## 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
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	12
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/28/2011	12
Antenna, Biconilog	EMCO	3142	AXJ	5/17/2011	12
EV01 Cables	N/A	Bilog Cables	EVA	6/28/2011	12
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	6/28/2011	12
Antenna, Horn	ETS	3115	AIZ	1/24/2011	24
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/28/2011	12
5.725-5.875 Notch Filter	Micro-Tronics	BRC50705	HGJ	8/6/2010	24
Antenna, Horn	ETS	3160-07	AHU	NCR	0
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/28/2012	12
Antenna, Horn	ETS	3160-08	AHV	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/28/2012	12
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/28/2012	12
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/12/2011	12
Cable	ESM Cable Corp.	KMKM-72	EVY	9/12/2011	12
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	7/1/2011	12
Antenna, Horn	ETS Lindgren	3160-10	AIW	NCR	0
OC Cable	ESM Cable Corp.	KMKM-72	OCV	7/1/2011	12

## 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 IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC

## MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

## 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, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.



# SPURIOUS RADIATED EMISSIONS

PSA 2012.01.13  
EMI 2008.1.9

EUT: Model# 444-2216 (Glenwood)		Work Order: FOCU0127
Serial Number: 02EA06000012		Date: 03/16/12
Customer: Summit Semiconductor		Temperature: 22°C
Attendees: None		Humidity: 31%
Project: None		Barometric Pres.: 1005.9 mb
Tested by: Rod Peloquin	Power: 18 VDC	Job Site: EV01

## TEST SPECIFICATIONS

FCC 15.247:2012

## Test Method

ANSI C63.10:2009

## TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	3
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## COMMENTS

None

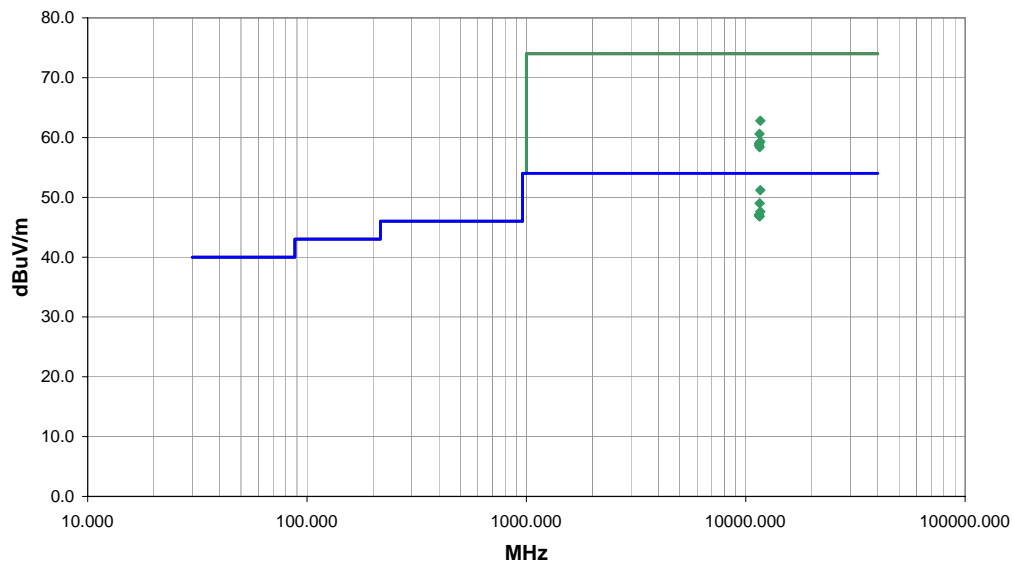
## EUT OPERATING MODES

Transmitting 55% duty cycle, 6 Mbps

## DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2	 Signature
Configuration #	2	
Results	Pass	



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
11650.000	57.5	-6.3	80.0	1.1	3.0	0.0	H-Horn	AV	0.0	51.2	54.0	-2.8	Ch. 165 (34), EUT on side
11570.000	55.5	-6.5	77.0	1.1	3.0	0.0	H-Horn	AV	0.0	49.0	54.0	-5.0	Ch. 157 (32), EUT on side
11650.000	53.9	-6.3	91.0	1.1	3.0	0.0	V-Horn	AV	0.0	47.6	54.0	-6.4	Ch. 165 (34), EUT up
11490.000	53.8	-6.7	288.0	1.0	3.0	0.0	H-Horn	AV	0.0	47.1	54.0	-6.9	Ch. 149 (30), EUT on side
11490.000	53.6	-6.7	295.0	1.1	3.0	0.0	V-Horn	AV	0.0	46.9	54.0	-7.1	Ch. 149 (30), EUT up
11570.000	53.3	-6.5	91.0	1.0	3.0	0.0	V-Horn	AV	0.0	46.8	54.0	-7.2	Ch. 157 (32), EUT up
11650.050	69.1	-6.3	80.0	1.1	3.0	0.0	H-Horn	PK	0.0	62.8	74.0	-11.2	Ch. 165 (34), EUT on side
11562.150	67.1	-6.5	77.0	1.1	3.0	0.0	H-Horn	PK	0.0	60.6	74.0	-13.4	Ch. 157 (32), EUT on side
11650.100	65.6	-6.3	91.0	1.1	3.0	0.0	V-Horn	PK	0.0	59.3	74.0	-14.7	Ch. 165 (34), EUT up
11490.200	65.7	-6.7	288.0	1.0	3.0	0.0	H-Horn	PK	0.0	59.0	74.0	-15.0	Ch. 149 (30), EUT on side
11481.950	65.4	-6.7	294.0	1.1	3.0	0.0	V-Horn	PK	0.0	58.7	74.0	-15.3	Ch. 149 (30), EUT up
11570.100	64.9	-6.5	91.0	1.0	3.0	0.0	V-Horn	PK	0.0	58.4	74.0	-15.6	Ch. 157 (32), EUT up

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 55% duty cycle, Ch. 165 (34) 5825 MHz  
 Transmitting 55% duty cycle, Ch. 157 (32) 5785 MHz  
 Transmitting 55% duty cycle, Ch. 149 (30) 5745 MHz

## POWER SETTINGS INVESTIGATED

18 VDC

## CONFIGURATIONS INVESTIGATED

4 - Powerline Conducted Emissions

## SAMPLE CALCULATIONS

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

## TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12 mo
LISN	Solar	9252-50-R-24-BNC	LIR	11/4/2011	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HFX	2/9/2011	24 mo
Attenuator	Coaxicom	66702 5910-20	RBJ	4/4/2011	12 mo
EV07 Cables	N/A	Conducted Cables	EVG	6/17/2011	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.

## MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

## TEST DESCRIPTION

The EUT will be powered indirectly from the AC power line while operating in a host device. Therefore, conducted emissions measurements were made on the DC input of the EUT, or on the DC input of the device used to power the EUT. The AC power line conducted emissions were measured on a linear power supply providing DC power to the module while providing no filtering of the power inputs to the module.

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 or bands. The EUT was transmitting in the mode which has the highest output power for the band. 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

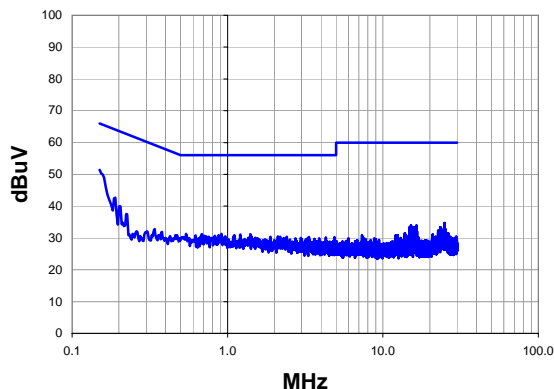
PSA-ESCI 2012.03.08  
PSA-ESCI Version 2011.12.21

Work Order:	FOCU0127	Date:	03/23/12	
Project:	None	Temperature:	21 °C	
Job Site:	EV07	Humidity:	39% RH	
Serial Number:	02EA06000012	Barometric Pres.:	1011.5 mbar	
EUT:	Model# 444-2216 (Glenwood)			Tested by: Rod Peloquin
Configuration:	4			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	18 VDC			
Operating Mode:	Transmitting 55% duty cycle, Ch. 149 (30) 5745 MHz			
Deviations:	No deviations.			
Comments:	None			

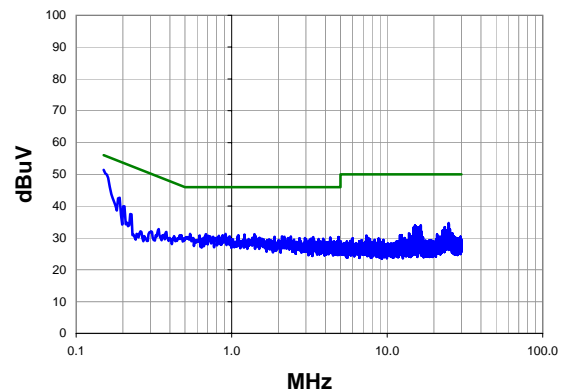
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	15	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	31.3	20.1	51.4	66.0	-14.6
0.190	22.6	20.1	42.7	64.0	-21.3
0.201	19.8	20.1	39.9	63.6	-23.7
0.540	11.2	20.1	31.3	56.0	-24.7
0.915	11.2	20.1	31.3	56.0	-24.7
0.682	11.1	20.1	31.2	56.0	-24.8
1.400	11.1	20.1	31.2	56.0	-24.8
1.210	11.0	20.1	31.1	56.0	-24.9
1.105	10.8	20.1	30.9	56.0	-25.1
0.624	10.7	20.1	30.8	56.0	-25.2
0.223	17.4	20.1	37.5	62.7	-25.2
24.891	13.8	21.0	34.8	60.0	-25.2
1.422	10.5	20.1	30.6	56.0	-25.4
2.107	10.4	20.1	30.5	56.0	-25.5
1.888	10.3	20.1	30.4	56.0	-25.6
2.183	10.3	20.1	30.4	56.0	-25.6
2.402	10.3	20.1	30.4	56.0	-25.6
3.342	10.2	20.1	30.3	56.0	-25.7
4.869	10.1	20.2	30.3	56.0	-25.7
1.513	10.0	20.1	30.1	56.0	-25.9

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	31.3	20.1	51.4	56.0	-4.6
0.190	22.6	20.1	42.7	54.0	-11.3
0.201	19.8	20.1	39.9	53.6	-13.7
0.540	11.2	20.1	31.3	46.0	-14.7
0.915	11.2	20.1	31.3	46.0	-14.7
0.682	11.1	20.1	31.2	46.0	-14.8
1.400	11.1	20.1	31.2	46.0	-14.8
1.210	11.0	20.1	31.1	46.0	-14.9
1.105	10.8	20.1	30.9	46.0	-15.1
0.624	10.7	20.1	30.8	46.0	-15.2
0.223	17.4	20.1	37.5	52.7	-15.2
24.891	13.8	21.0	34.8	50.0	-15.2
1.422	10.5	20.1	30.6	46.0	-15.4
2.107	10.4	20.1	30.5	46.0	-15.5
1.888	10.3	20.1	30.4	46.0	-15.6
2.183	10.3	20.1	30.4	46.0	-15.6
2.402	10.3	20.1	30.4	46.0	-15.6
3.342	10.2	20.1	30.3	46.0	-15.7
4.869	10.1	20.2	30.3	46.0	-15.7
1.513	10.0	20.1	30.1	46.0	-15.9



# AC POWERLINE CONDUCTED EMISSIONS

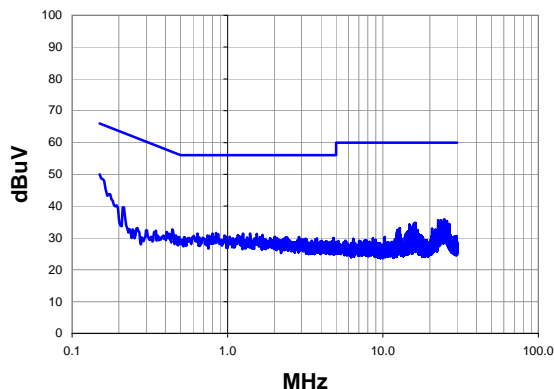
PSA-ESCI 2012.03.08  
PSA-ESCI Version 2011.12.21

Work Order:	FOCU0127	Date:	03/23/12	
Project:	None	Temperature:	21 °C	
Job Site:	EV07	Humidity:	39% RH	
Serial Number:	02EA06000012	Barometric Pres.:	1011.5 mbar	
EUT:	Model# 444-2216 (Glenwood)			Tested by: Rod Peloquin
Configuration:	4			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	18 VDC			
Operating Mode:	Transmitting 55% duty cycle, Ch. 149 (30) 5745 MHz			
Deviations:	No deviations.			
Comments:	None			

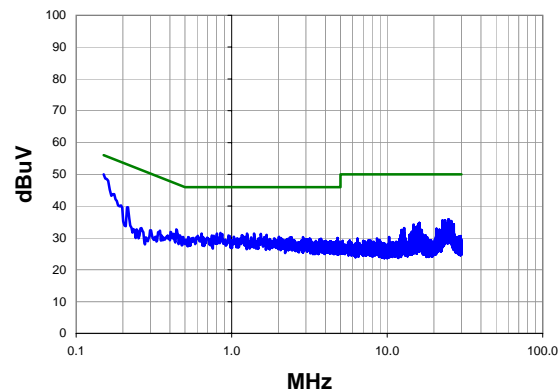
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	16	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
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Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	29.9	20.1	50.0	66.0	-16.0
0.212	19.5	20.1	39.6	63.1	-23.5
24.752	14.9	20.9	35.8	60.0	-24.2
24.898	14.8	21.0	35.8	60.0	-24.2
0.442	12.6	20.1	32.7	57.0	-24.3
0.846	11.5	20.1	31.6	56.0	-24.4
22.690	14.7	20.9	35.6	60.0	-24.4
23.593	14.6	20.9	35.5	60.0	-24.5
0.642	11.3	20.1	31.4	56.0	-24.6
0.802	11.3	20.1	31.4	56.0	-24.6
1.258	11.3	20.1	31.4	56.0	-24.6
1.396	11.3	20.1	31.4	56.0	-24.6
1.542	11.2	20.1	31.3	56.0	-24.7
25.827	14.3	21.0	35.3	60.0	-24.7
25.780	14.2	21.0	35.2	60.0	-24.8
1.677	10.9	20.1	31.0	56.0	-25.0
1.163	10.8	20.1	30.9	56.0	-25.1
24.822	13.9	21.0	34.9	60.0	-25.1
0.744	10.7	20.1	30.8	56.0	-25.2
0.955	10.7	20.1	30.8	56.0	-25.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	29.9	20.1	50.0	56.0	-6.0
0.212	19.5	20.1	39.6	53.1	-13.5
24.752	14.9	20.9	35.8	50.0	-14.2
24.898	14.8	21.0	35.8	50.0	-14.2
0.442	12.6	20.1	32.7	47.0	-14.3
0.846	11.5	20.1	31.6	46.0	-14.4
22.690	14.7	20.9	35.6	50.0	-14.4
23.593	14.6	20.9	35.5	50.0	-14.5
0.642	11.3	20.1	31.4	46.0	-14.6
0.802	11.3	20.1	31.4	46.0	-14.6
1.258	11.3	20.1	31.4	46.0	-14.6
1.396	11.3	20.1	31.4	46.0	-14.6
1.542	11.2	20.1	31.3	46.0	-14.7
25.827	14.3	21.0	35.3	50.0	-14.7
25.780	14.2	21.0	35.2	50.0	-14.8
1.677	10.9	20.1	31.0	46.0	-15.0
1.163	10.8	20.1	30.9	46.0	-15.1
24.822	13.9	21.0	34.9	50.0	-15.1
0.744	10.7	20.1	30.8	46.0	-15.2
0.955	10.7	20.1	30.8	46.0	-15.2



# AC POWERLINE CONDUCTED EMISSIONS

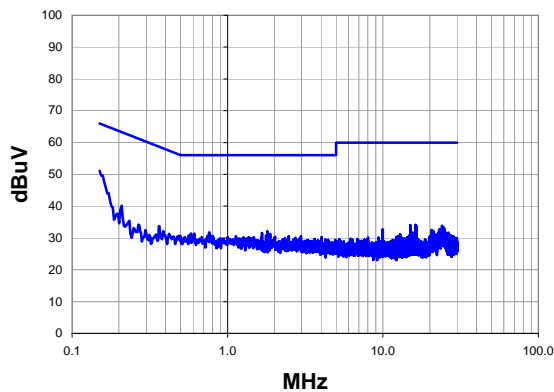
PSA-ESCI 2012.03.08  
PSA-ESCI Version 2011.12.21

Work Order:	FOCU0127	Date:	03/23/12	
Project:	None	Temperature:	21 °C	
Job Site:	EV07	Humidity:	39% RH	
Serial Number:	02EA06000012	Barometric Pres.:	1011.5 mbar	
EUT:	Model# 444-2216 (Glenwood)			Tested by: Rod Peloquin
Configuration:	4			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	18 VDC			
Operating Mode:	Transmitting 55% duty cycle, Ch. 157 (32) 5785 MHz			
Deviations:	No deviations.			
Comments:	None			

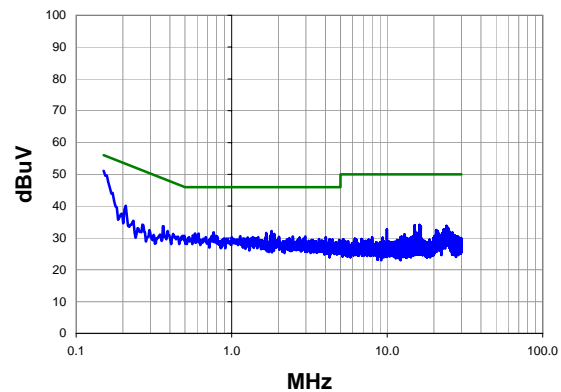
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	17	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	31.0	20.1	51.1	66.0	-14.9
0.208	20.0	20.1	40.1	63.3	-23.2
1.804	12.1	20.1	32.2	56.0	-23.8
0.766	11.7	20.1	31.8	56.0	-24.2
1.666	11.5	20.1	31.6	56.0	-24.4
0.580	11.3	20.1	31.4	56.0	-24.6
1.877	11.2	20.1	31.3	56.0	-24.7
0.361	13.6	20.1	33.7	58.7	-25.0
1.856	10.8	20.1	30.9	56.0	-25.1
1.772	10.7	20.1	30.8	56.0	-25.2
1.134	10.5	20.1	30.6	56.0	-25.4
2.475	10.4	20.1	30.5	56.0	-25.5
2.967	10.4	20.1	30.5	56.0	-25.5
2.016	10.3	20.1	30.4	56.0	-25.6
1.367	10.2	20.1	30.3	56.0	-25.7
1.480	10.2	20.1	30.3	56.0	-25.7
4.035	10.2	20.1	30.3	56.0	-25.7
1.265	10.1	20.1	30.2	56.0	-25.8
16.163	13.6	20.5	34.1	60.0	-25.9
1.648	10.0	20.1	30.1	56.0	-25.9

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	31.0	20.1	51.1	56.0	-4.9
0.208	20.0	20.1	40.1	53.3	-13.2
1.804	12.1	20.1	32.2	46.0	-13.8
0.766	11.7	20.1	31.8	46.0	-14.2
1.666	11.5	20.1	31.6	46.0	-14.4
0.580	11.3	20.1	31.4	46.0	-14.6
1.877	11.2	20.1	31.3	46.0	-14.7
0.361	13.6	20.1	33.7	48.7	-15.0
1.856	10.8	20.1	30.9	46.0	-15.1
1.772	10.7	20.1	30.8	46.0	-15.2
1.134	10.5	20.1	30.6	46.0	-15.4
2.475	10.4	20.1	30.5	46.0	-15.5
2.967	10.4	20.1	30.5	46.0	-15.5
2.016	10.3	20.1	30.4	46.0	-15.6
1.367	10.2	20.1	30.3	46.0	-15.7
1.480	10.2	20.1	30.3	46.0	-15.7
4.035	10.2	20.1	30.3	46.0	-15.7
1.265	10.1	20.1	30.2	46.0	-15.8
16.163	13.6	20.5	34.1	50.0	-15.9
1.648	10.0	20.1	30.1	46.0	-15.9



# AC POWERLINE CONDUCTED EMISSIONS

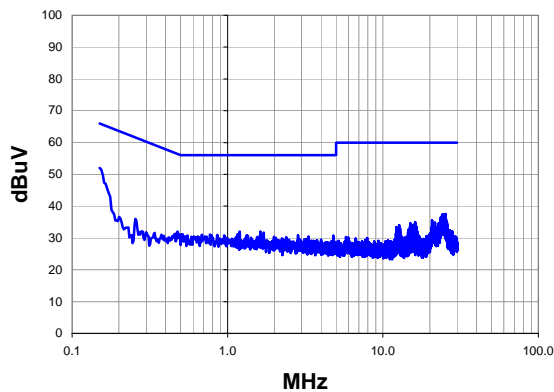
PSA-ESCI 2012.03.08  
PSA-ESCI Version 2011.12.21

Work Order:	FOCU0127	Date:	03/23/12	
Project:	None	Temperature:	21 °C	
Job Site:	EV07	Humidity:	39% RH	
Serial Number:	02EA06000012	Barometric Pres.:	1011.5 mbar	
EUT:	Model# 444-2216 (Glenwood)			Tested by: Rod Peloquin
Configuration:	4			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	18 VDC			
Operating Mode:	Transmitting 55% duty cycle, Ch. 157 (32) 5785 MHz			
Deviations:	No deviations.			
Comments:	None			

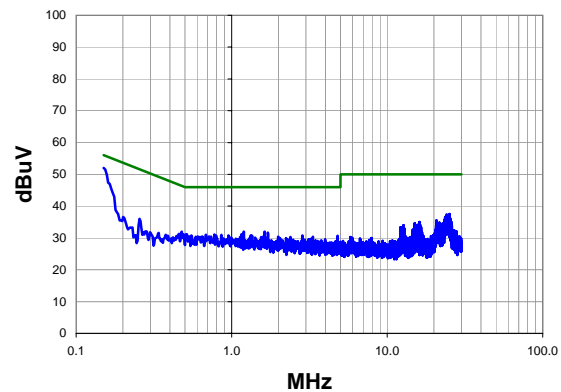
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	18	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
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Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	31.9	20.1	52.0	66.0	-14.0
25.233	16.6	21.0	37.6	60.0	-22.4
24.195	16.5	20.9	37.4	60.0	-22.6
24.705	16.2	20.9	37.1	60.0	-22.9
24.439	16.1	20.9	37.0	60.0	-23.0
24.104	15.9	20.9	36.8	60.0	-23.2
24.275	15.8	20.9	36.7	60.0	-23.3
24.756	15.7	20.9	36.6	60.0	-23.4
24.359	15.7	20.9	36.6	60.0	-23.4
23.674	15.7	20.9	36.6	60.0	-23.4
24.778	15.5	20.9	36.4	60.0	-23.6
23.626	15.5	20.9	36.4	60.0	-23.6
24.723	15.4	20.9	36.3	60.0	-23.7
24.614	15.4	20.9	36.3	60.0	-23.7
24.330	15.2	20.9	36.1	60.0	-23.9
23.830	15.2	20.9	36.1	60.0	-23.9
25.386	15.1	21.0	36.1	60.0	-23.9
24.898	15.1	21.0	36.1	60.0	-23.9
23.991	15.1	20.9	36.0	60.0	-24.0
1.196	11.9	20.1	32.0	56.0	-24.0

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	31.9	20.1	52.0	56.0	-4.0
25.233	16.6	21.0	37.6	50.0	-12.4
24.195	16.5	20.9	37.4	50.0	-12.6
24.705	16.2	20.9	37.1	50.0	-12.9
24.439	16.1	20.9	37.0	50.0	-13.0
24.104	15.9	20.9	36.8	50.0	-13.2
24.275	15.8	20.9	36.7	50.0	-13.3
24.756	15.7	20.9	36.6	50.0	-13.4
24.359	15.7	20.9	36.6	50.0	-13.4
23.674	15.7	20.9	36.6	50.0	-13.4
24.778	15.5	20.9	36.4	50.0	-13.6
23.626	15.5	20.9	36.4	50.0	-13.6
24.723	15.4	20.9	36.3	50.0	-13.7
24.614	15.4	20.9	36.3	50.0	-13.7
24.330	15.2	20.9	36.1	50.0	-13.9
23.830	15.2	20.9	36.1	50.0	-13.9
25.386	15.1	21.0	36.1	50.0	-13.9
24.898	15.1	21.0	36.1	50.0	-13.9
23.991	15.1	20.9	36.0	50.0	-14.0
1.196	11.9	20.1	32.0	46.0	-14.0



# AC POWERLINE CONDUCTED EMISSIONS

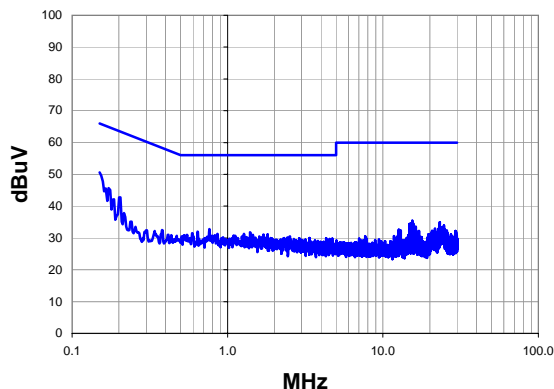
PSA-ESCI 2012.03.08  
PSA-ESCI Version 2011.12.21

Work Order:	FOCU0127	Date:	03/23/12	<i>Rod Peloquin</i>
Project:	None	Temperature:	21 °C	
Job Site:	EV07	Humidity:	39% RH	
Serial Number:	02EA06000012	Barometric Pres.:	1011.5 mbar	
EUT:	Model# 444-2216 (Glenwood)			Tested by: Rod Peloquin
Configuration:	4			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	18 VDC			
Operating Mode:	Transmitting 55% duty cycle, Ch. 165 (34) 5825 MHz			
Deviations:	No deviations.			
Comments:	None			

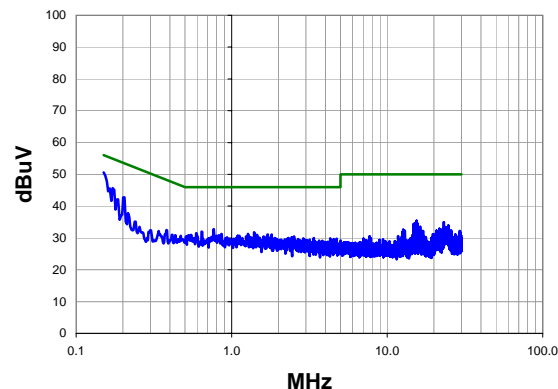
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	19	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	30.5	20.1	50.6	66.0	-15.4
0.172	25.6	20.1	45.7	64.9	-19.2
0.201	22.7	20.1	42.8	63.6	-20.8
0.186	22.1	20.1	42.2	64.2	-22.0
0.766	12.7	20.1	32.8	56.0	-23.2
0.642	11.9	20.1	32.0	56.0	-24.0
1.396	11.7	20.1	31.8	56.0	-24.2
0.591	11.4	20.1	31.5	56.0	-24.5
15.474	14.9	20.5	35.4	60.0	-24.6
1.276	11.2	20.1	31.3	56.0	-24.7
1.702	11.0	20.1	31.1	56.0	-24.9
1.812	11.0	20.1	31.1	56.0	-24.9
1.455	10.9	20.1	31.0	56.0	-25.0
23.167	14.0	20.9	34.9	60.0	-25.1
0.216	17.7	20.1	37.8	63.0	-25.2
1.094	10.7	20.1	30.8	56.0	-25.2
15.128	14.1	20.5	34.6	60.0	-25.4
15.667	14.0	20.5	34.5	60.0	-25.5
1.604	10.4	20.1	30.5	56.0	-25.5
2.515	10.4	20.1	30.5	56.0	-25.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	30.5	20.1	50.6	56.0	-5.4
0.172	25.6	20.1	45.7	54.9	-9.2
0.201	22.7	20.1	42.8	53.6	-10.8
0.186	22.1	20.1	42.2	54.2	-12.0
0.766	12.7	20.1	32.8	46.0	-13.2
0.642	11.9	20.1	32.0	46.0	-14.0
1.396	11.7	20.1	31.8	46.0	-14.2
0.591	11.4	20.1	31.5	46.0	-14.5
15.474	14.9	20.5	35.4	50.0	-14.6
1.276	11.2	20.1	31.3	46.0	-14.7
1.702	11.0	20.1	31.1	46.0	-14.9
1.812	11.0	20.1	31.1	46.0	-14.9
1.455	10.9	20.1	31.0	46.0	-15.0
23.167	14.0	20.9	34.9	50.0	-15.1
0.216	17.7	20.1	37.8	53.0	-15.2
1.094	10.7	20.1	30.8	46.0	-15.2
15.128	14.1	20.5	34.6	50.0	-15.4
15.667	14.0	20.5	34.5	50.0	-15.5
1.604	10.4	20.1	30.5	46.0	-15.5
2.515	10.4	20.1	30.5	46.0	-15.5





# AC POWERLINE CONDUCTED EMISSIONS

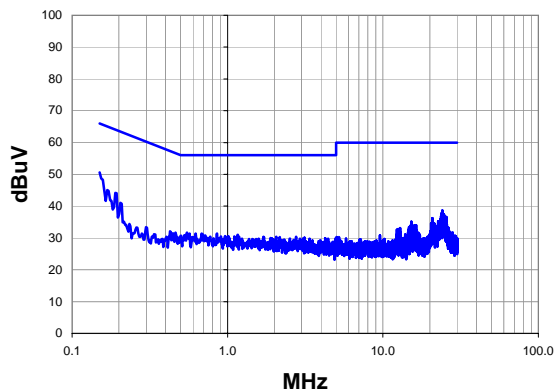
PSA-ESCI 2012.03.08  
PSA-ESCI Version 2011.12.21

Work Order:	FOCU0127	Date:	03/23/12	
Project:	None	Temperature:	21 °C	
Job Site:	EV07	Humidity:	39% RH	
Serial Number:	02EA06000012	Barometric Pres.:	1011.5 mbar	
EUT:	Model# 444-2216 (Glenwood)			Tested by: Rod Peloquin
Configuration:	4			
Customer:	Summit Semiconductor			
Attendees:	None			
EUT Power:	18 VDC			
Operating Mode:	Transmitting 55% duty cycle, Ch. 165 (34) 5825 MHz			
Deviations:	No deviations.			
Comments:	None			

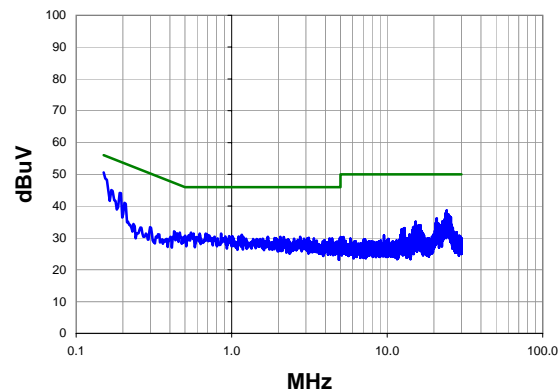
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	20	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
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Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	30.5	20.1	50.6	66.0	-15.4
0.190	24.1	20.1	44.2	64.0	-19.8
0.168	25.0	20.1	45.1	65.0	-19.9
24.111	17.7	20.9	38.6	60.0	-21.4
24.187	17.2	20.9	38.1	60.0	-21.9
24.173	17.0	20.9	37.9	60.0	-22.1
23.838	16.9	20.9	37.8	60.0	-22.2
0.205	20.9	20.1	41.0	63.4	-22.4
24.709	16.5	20.9	37.4	60.0	-22.6
24.570	16.3	20.9	37.2	60.0	-22.8
24.464	16.2	20.9	37.1	60.0	-22.9
24.749	16.0	20.9	36.9	60.0	-23.1
24.125	16.0	20.9	36.9	60.0	-23.1
25.142	15.9	21.0	36.9	60.0	-23.1
23.710	15.9	20.9	36.8	60.0	-23.2
24.217	15.6	20.9	36.5	60.0	-23.5
24.020	15.6	20.9	36.5	60.0	-23.5
25.623	15.5	21.0	36.5	60.0	-23.5
25.058	15.4	21.0	36.4	60.0	-23.6
20.795	15.5	20.8	36.3	60.0	-23.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	30.5	20.1	50.6	56.0	-5.4
0.190	24.1	20.1	44.2	54.0	-9.8
0.168	25.0	20.1	45.1	55.0	-9.9
24.111	17.7	20.9	38.6	50.0	-11.4
24.187	17.2	20.9	38.1	50.0	-11.9
24.173	17.0	20.9	37.9	50.0	-12.1
23.838	16.9	20.9	37.8	50.0	-12.2
0.205	20.9	20.1	41.0	53.4	-12.4
24.709	16.5	20.9	37.4	50.0	-12.6
24.570	16.3	20.9	37.2	50.0	-12.8
24.464	16.2	20.9	37.1	50.0	-12.9
24.749	16.0	20.9	36.9	50.0	-13.1
24.125	16.0	20.9	36.9	50.0	-13.1
25.142	15.9	21.0	36.9	50.0	-13.1
23.710	15.9	20.9	36.8	50.0	-13.2
24.217	15.6	20.9	36.5	50.0	-13.5
24.020	15.6	20.9	36.5	50.0	-13.5
25.623	15.5	21.0	36.5	50.0	-13.5
25.058	15.4	21.0	36.4	50.0	-13.6
20.795	15.5	20.8	36.3	50.0	-13.7