Summit Semiconductor

Ice Axe - Slave Module

Model: 444-2213

EMC Test Report

Report No. FOCU0115

Report Prepared By

NORTHWEST EMC

www.nwemc.com
1-888-EMI-CERT

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: September 27, 2011

Summit Semiconductor

Model: Ice Axe - Slave Module

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Occupied Bandwidth	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Output Power	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Band Edge Compliance	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Spurious Conducted Emissions	FCC 15.247:2011	ANSI C63.10:2009	**Pass**
Power Spectral Density	FCC 15.247: 2011	ANSI C63.10:2009	**Pass**
Radiated Spurious Emissions	FCC 15.209:2011	ANSI C63.10:2009	**Pass**
AC Powerline Conducted Emissions	FCC 15.207:2011	ANSI C63.10:2009	**Pass**

Modifications made to the product
See the Modifications section of this report

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).

Approved By:
Don Facteau, IS Manager

NVLAP Lab Code: 200630-0

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 Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

Accreditations and Authorizations

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP

Northwest EMC, Inc. is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1)*

CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

Accreditations and Authorizations

VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-3265, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).*

BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017).

GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157, Brooklyn Park: US0175)*

VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

Northwest EMC Locations

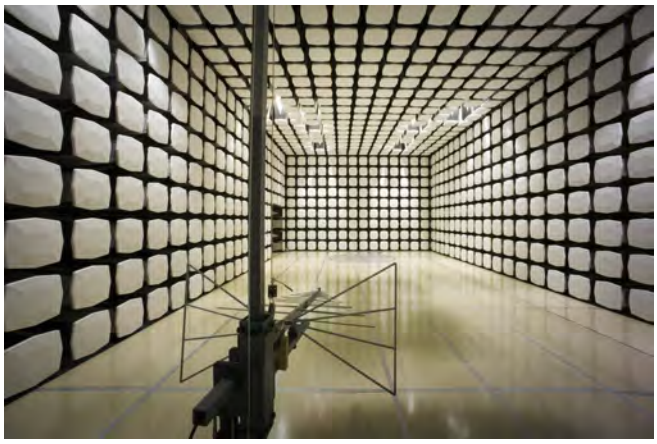
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

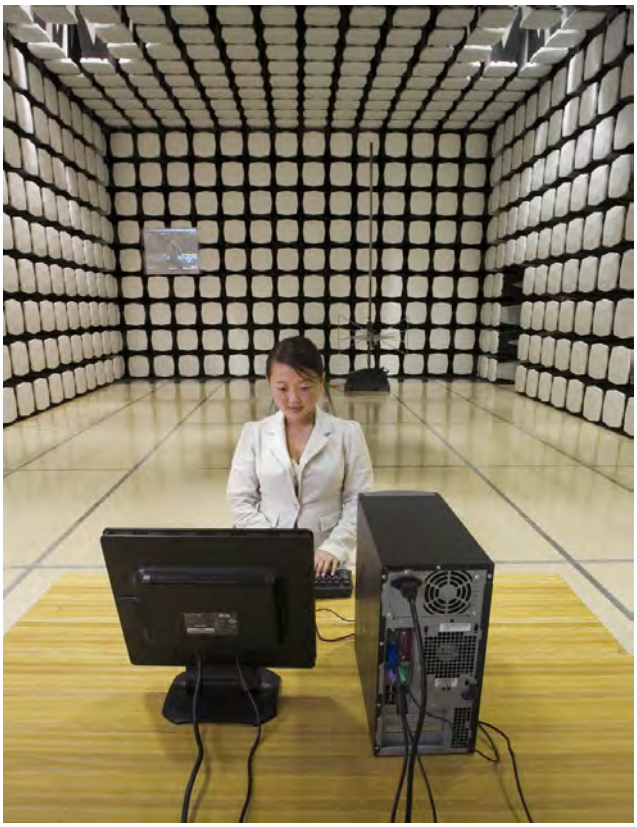
California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

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

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

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





Party Requesting the Test

Company Name:	Summit Semiconductor
Address:	22867 NW Bennett St, Suite 200
City, State, Zip:	Hillsboro, OR 97124
Test Requested By:	Ponnappa Pasura
Model:	Ice Axe - Slave Module
First Date of Test:	September 12, 2011
Last Date of Test:	September 19, 2011
Receipt Date of Samples:	September 12, 2011
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
UNII radio module

Testing Objective:
Seeking modular approval of the client under FCC 15.247 for operation in the 5.8 GHz band.

CONFIGURATION 1 FOCU0115

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

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Wireless Audio Slave Board - Direct Connect	Summit Semiconductor	Ice Axe - Slave Module	03 EA 12 00 5A 6D

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power / RS-232 Serial Interface	Summit Semiconductor	Unknown	None
DC Block	MCL	BLK-89-S+	15542
AC Adapter	PHIHONG	PSA21R-033	C22300479A8

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 flex cable	No	0.3m	No	Wireless Audio Slave Board - Direct Connect	DC Power / RS-232 Serial Interface
Serial	Yes	2.0m	No	DC Power / RS-232 Serial Interface	Remote PC
DC Lead	PA	1.8m	PA	AC Adapter	DC Power / RS-232 Serial Interface
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 4 FOCU0115

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

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Wireless Audio Slave Board - Radiated	Summit Semiconductor	Ice Axe - Slave Module	02 EA 12 00 5A 67

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	Topward	6303D	743645

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power / RS-232 Serial Interface	Summit Semiconductor	Unknown	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	DC Power / RS-232 Serial Interface
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	9/12/2011	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	9/12/2011	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.
3	9/12/2011	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.
4	9/12/2011	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.
5	9/13/2011	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.
6	9/15/2011	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.
7	9/19/2011	Radiated Spurious 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

The occupied bandwidth 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 the spectrum analyzer. The EUT was transmitting at its maximum data rate with the typical modulation.

NORTHWEST EMC

Occupied Bandwidth

XMit 2011.08.04
PsaTx 2011.09.07

EUT:	Ice Axe - Slave Module			Work Order:	FOCU0115
Serial Number:	03 EA 12 00 5A 6D			Date:	09/12/11
Customer:	Summit Semiconductor			Temperature:	23.7°C
Attendees:	Ponnappa Pasura			Humidity:	47%
Project:	None			Barometric Pres.:	30.11
Tested by:	Rod Peloquin	Power:	3.3 VDC	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

Operated per TPC power table, data randomization enabled.

DEVIATIONS FROM TEST STANDARD

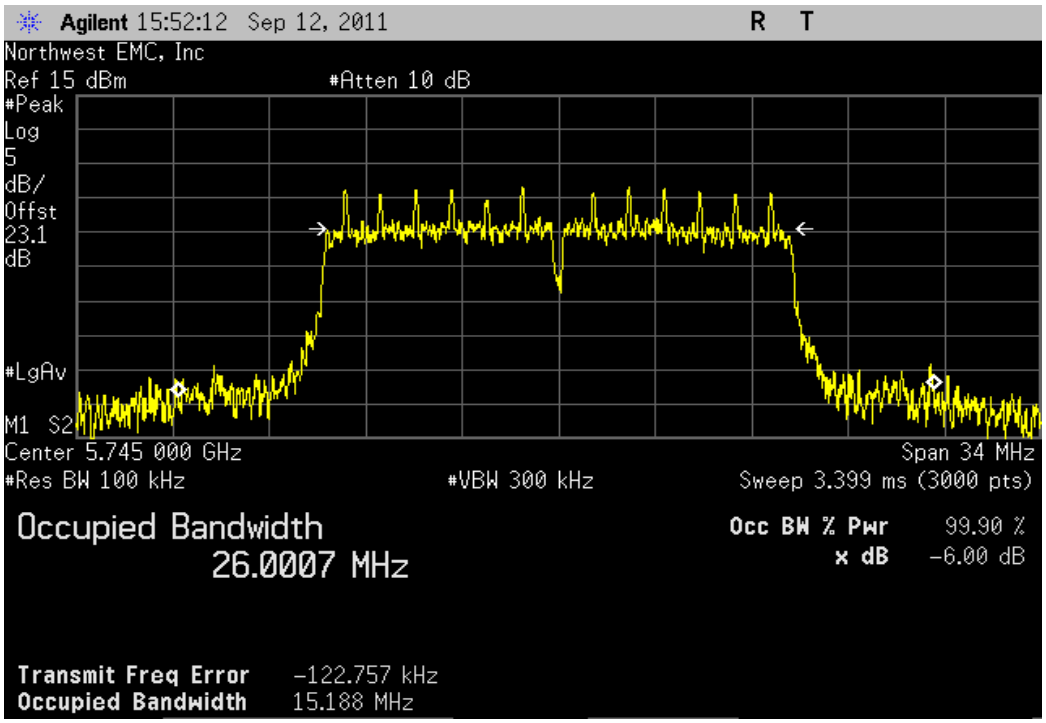
No Deviations

Configuration #	1	Signature

		Value	Limit	Result
5725 MHz - 5850 MHz Band				
6 Mbps				
	Low Channel 149, 5745 MHz	15.188 MHz	> 500 kHz	Pass
	Mid Channel 157, 5785 MHz	15.49 MHz	> 500 kHz	Pass
	High Channel 165, 5825 MHz	14.778 MHz	> 500 kHz	Pass

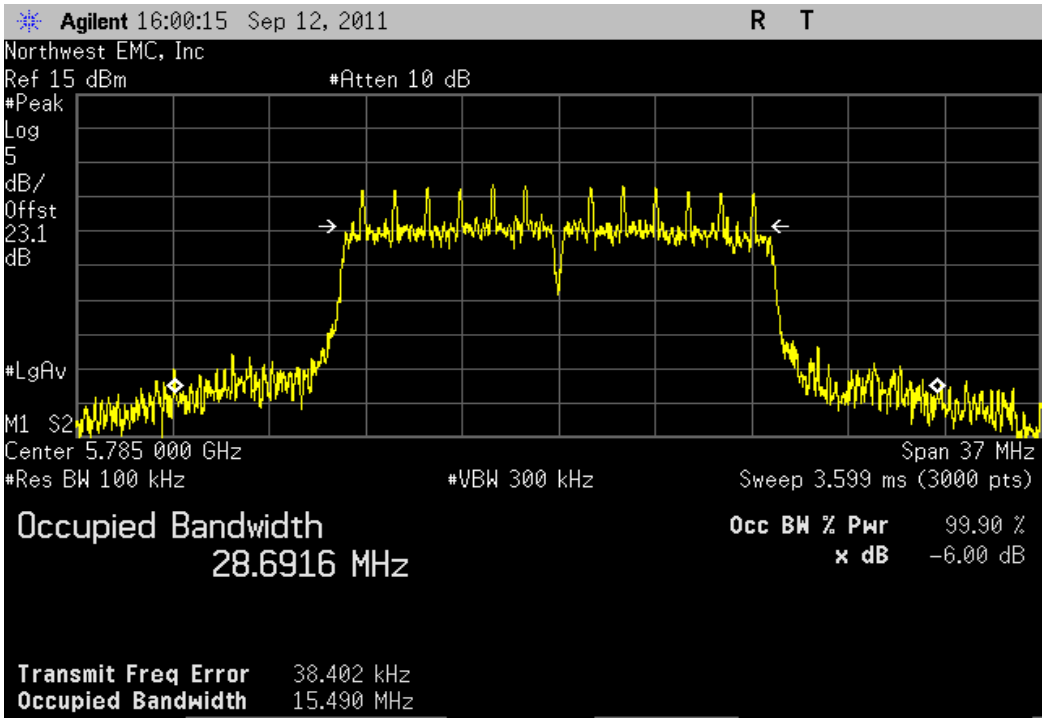
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				15.188 MHz	> 500 kHz	Pass



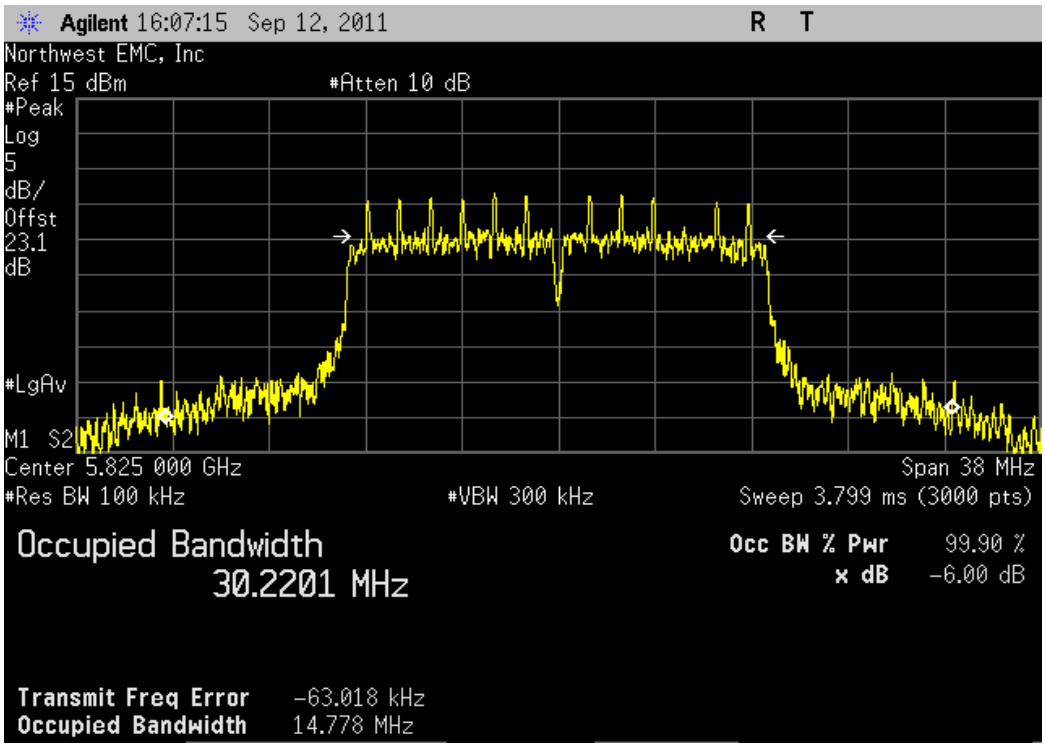
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				15.49 MHz	> 500 kHz	Pass



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

					Value	Limit	Result
					14.778 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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2011	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
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
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	5/5/2011	12
Power Meter	Gigatronics	8651A	SPM	1/7/2010	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	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 transmit frequency was set to the required channels in each band, at each of the required data rates. 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. The amplitude accuracy of the spectrum analyzer was further enhanced by calibrating the setup using the power meter and synthesized signal generator.

- Prior to measuring peak transmit power; the emission bandwidth (B) was measured.
- Power was integrated across “B”, by using the channel power function of the spectrum analyzer and its default bandwidths.

NORTHWEST EMC

Output Power

XMit 2011.08.04
PsaTx 2011.09.07

EUT:	Ice Axe - Slave Module			Work Order:	FOCU0115
Serial Number:	03 EA 12 00 5A 6D			Date:	09/12/11
Customer:	Summit Semiconductor			Temperature:	23.7°C
Attendees:	Ponnappa Pasura			Humidity:	47%
Project:	None			Barometric Pres.:	30.11
Tested by:	Rod Peloquin	Power:	3.3 VDC	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

Operated per TPC power table, data randomization enabled.

DEVIATIONS FROM TEST STANDARD

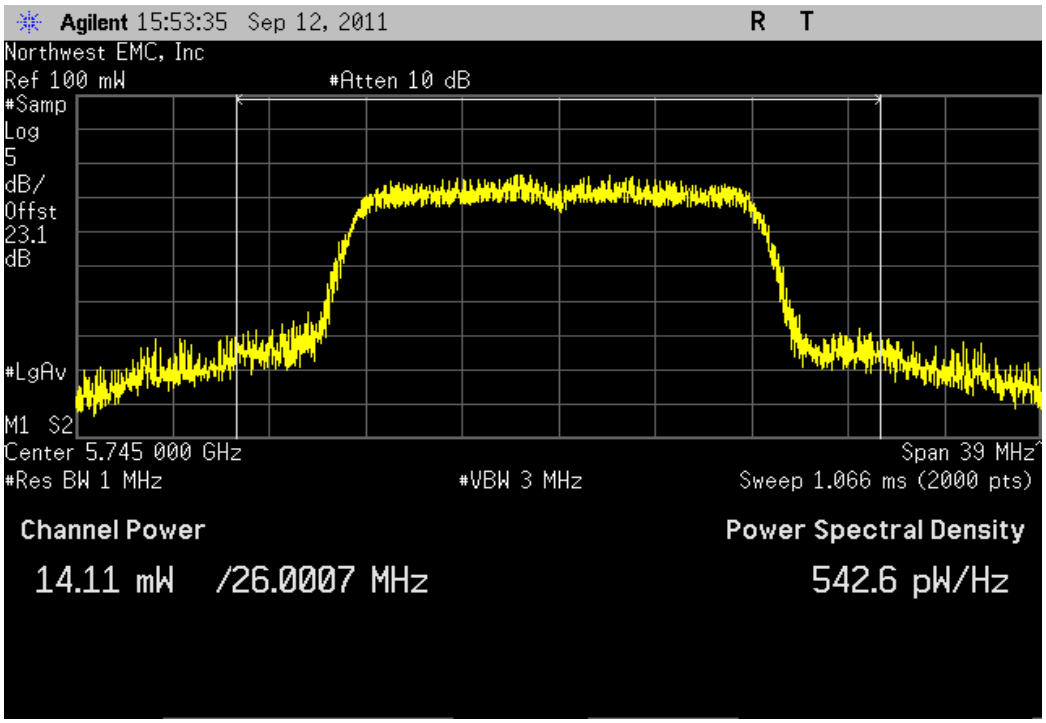
No Deviations

Configuration #	1	Signature

		Value	Limit	Result
5725 MHz - 5850 MHz Band				
6 Mbps				
	Low Channel 149, 5745 MHz	14.107 mW	< 1 W	Pass
	Mid Channel 157, 5785 MHz	13.5 mW	< 1 W	Pass
	High Channel 165, 5825 MHz	12.383 mW	< 1 W	Pass

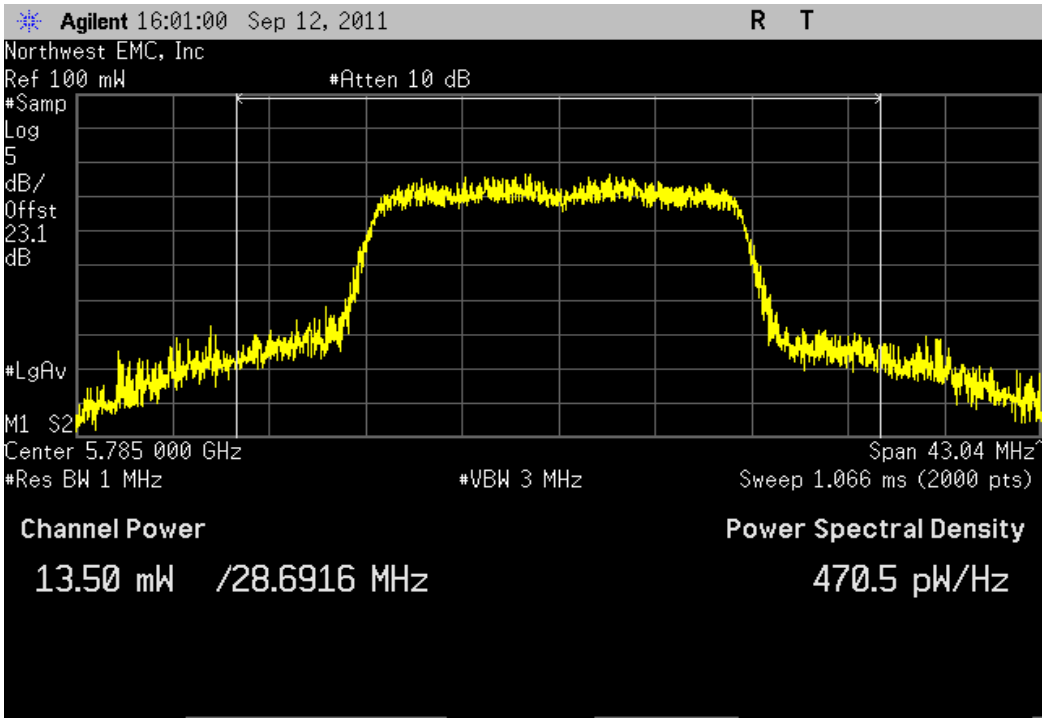
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				14.107 mW	< 1 W	Pass



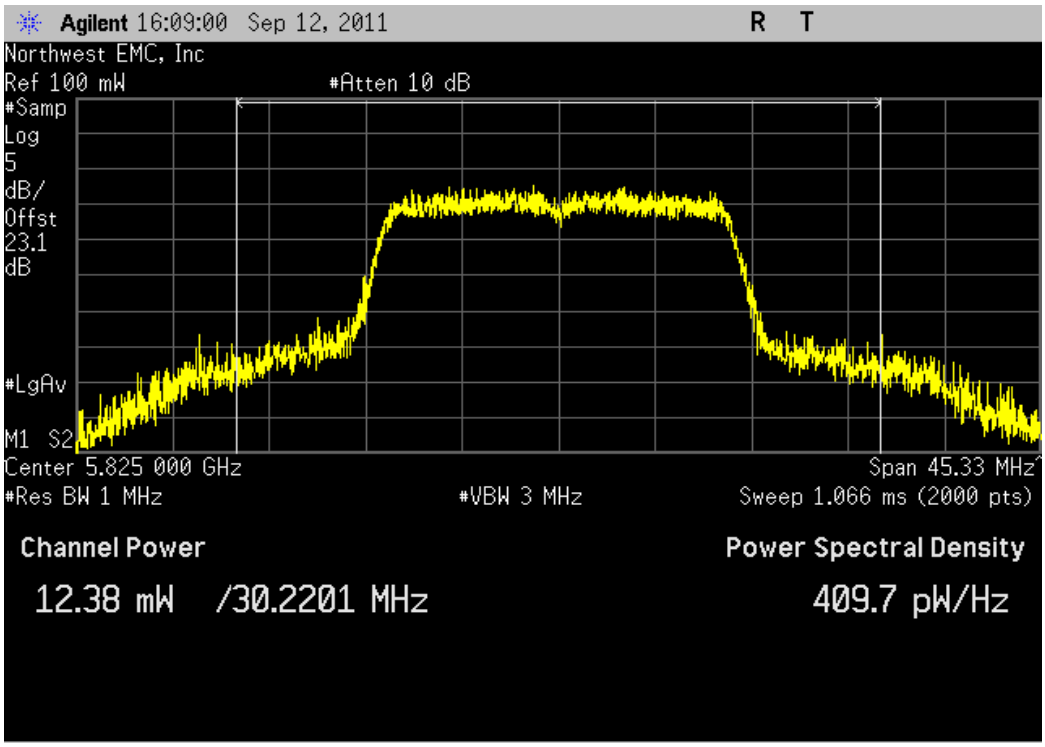
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				13.5 mW	< 1 W	Pass



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

					Value	Limit	Result
					12.383 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 only data rate available.

The spectrum was scanned across each band edge from at least 10 MHz below the band edge to 10 MHz above the band edge.

NORTHWEST EMC

Band Edge Compliance

XMit 2011.08.04
PsaTx 2011.09.07

EUT:	Ice Axe - Slave Module			Work Order:	FOCU0115
Serial Number:	03 EA 12 00 5A 6D			Date:	09/12/11
Customer:	Summit Semiconductor			Temperature:	23.7°C
Attendees:	Ponnappa Pasura			Humidity:	47%
Project:	None			Barometric Pres.:	30.11
Tested by:	Rod Peloquin	Power:	3.3 VDC	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

Operated per TPC power table, data randomization enabled.

DEVIATIONS FROM TEST STANDARD

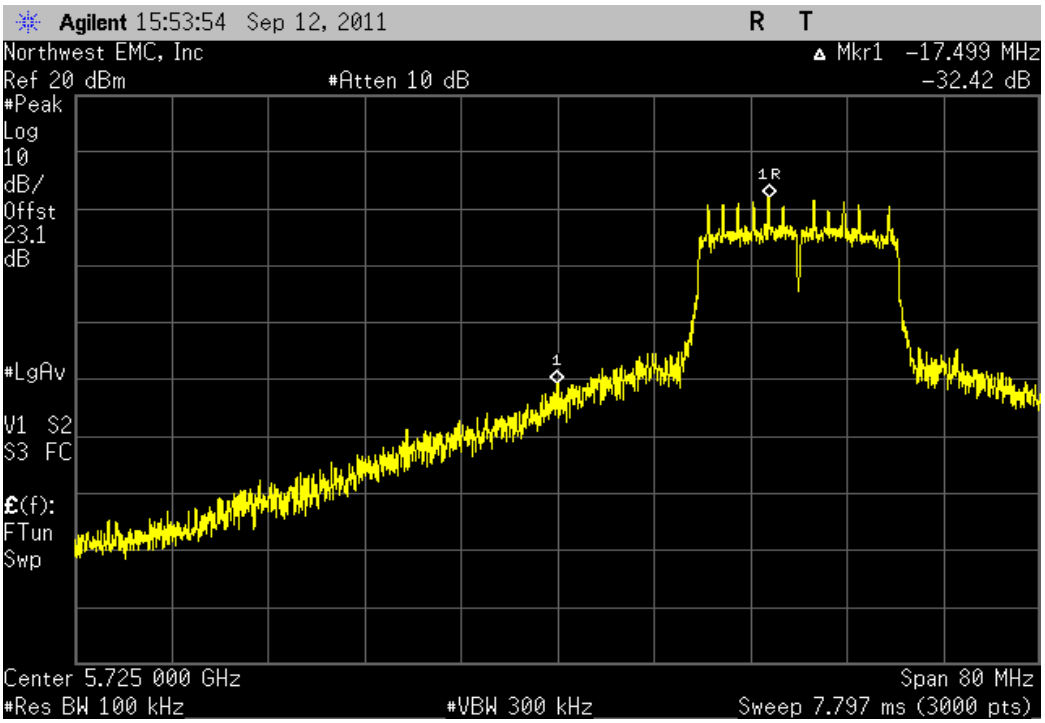
No Deviations

Configuration #	1	Signature

		Value	Limit	Result
5725 MHz - 5850 MHz Band				
6 Mbps				
	Low Channel 149, 5745 MHz	-32.42 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	-38.35 dBc	≤ -20 dBc	Pass

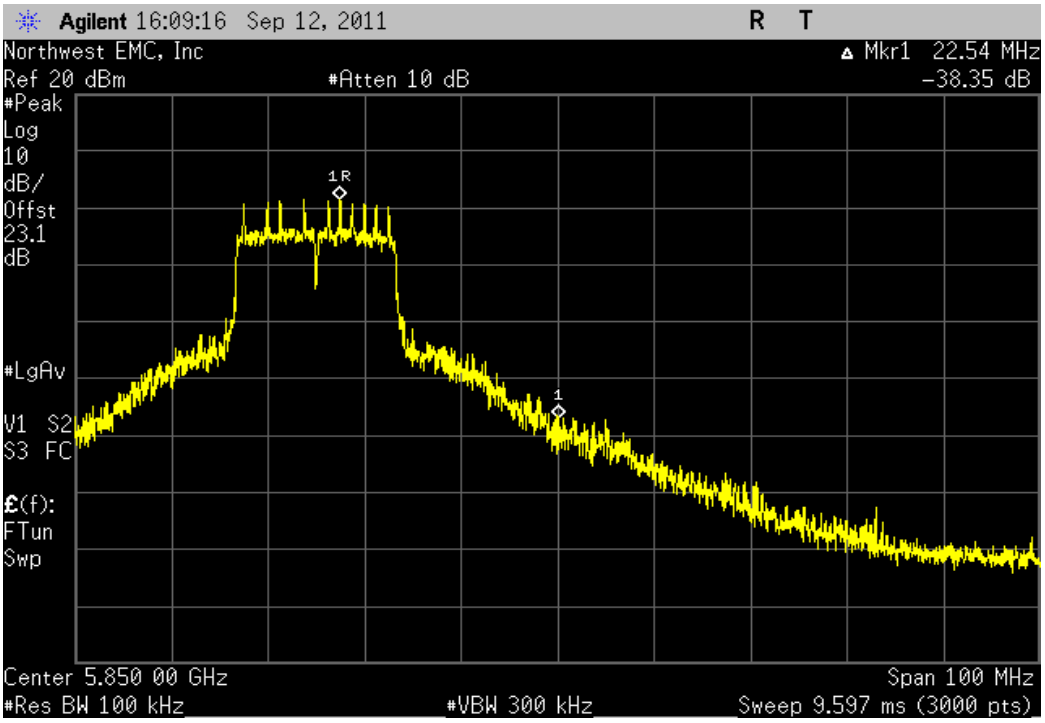
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				-32.42 dBc	≤ -20 dBc	Pass



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

				Value	Limit	Result
				-38.35 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	E4446A	AAQ	6/24/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	8/12/2011	12
Attenuator	Weinschel Corp.	54A-20	RBL	10/11/2010	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.

NORTHWEST EMC

Spurious Conducted Emissions

XMit 2011.08.04
PsaTx 2011.09.07

EUT:	Ice Axe - Slave Module			**Work Order:**	FOCU0115
Serial Number:	03 EA 12 00 5A 6D			**Date:**	09/13/11
Customer:	Summit Semiconductor			**Temperature:**	23.7°C
Attendees:	None			**Humidity:**	47%
Project:	None			**Barometric Pres.:**	30.11
Tested by:	Rod Peloquin	**Power:**	3.3 VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

Operated per TPC power table, data randomization enabled.

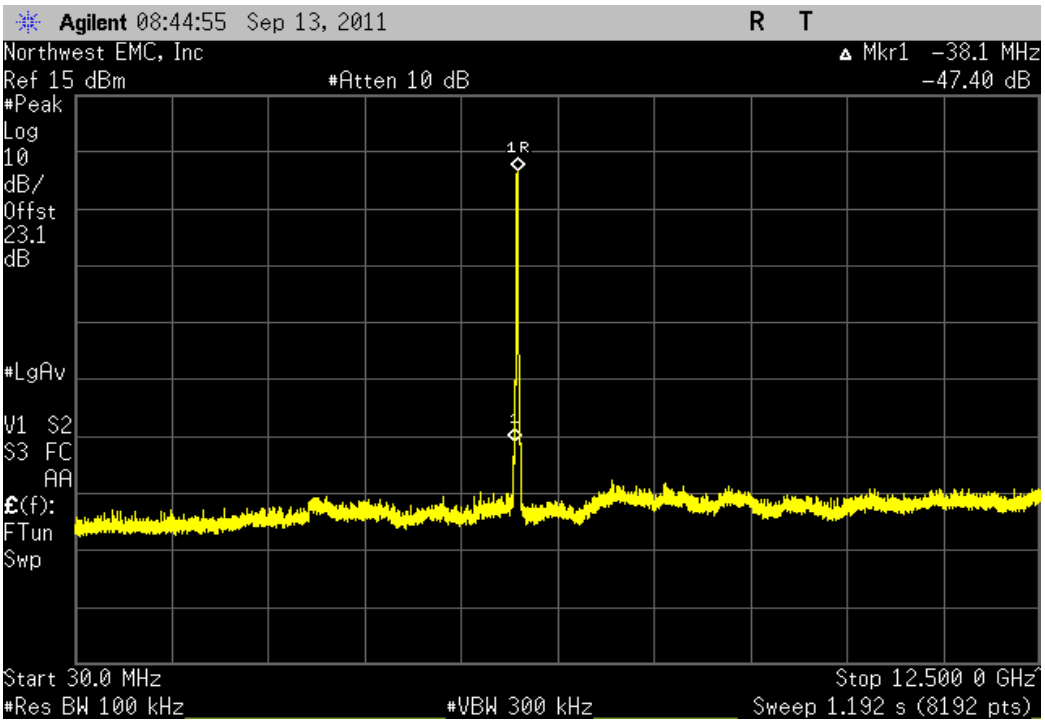
DEVIATIONS FROM TEST STANDARD

No Deviations

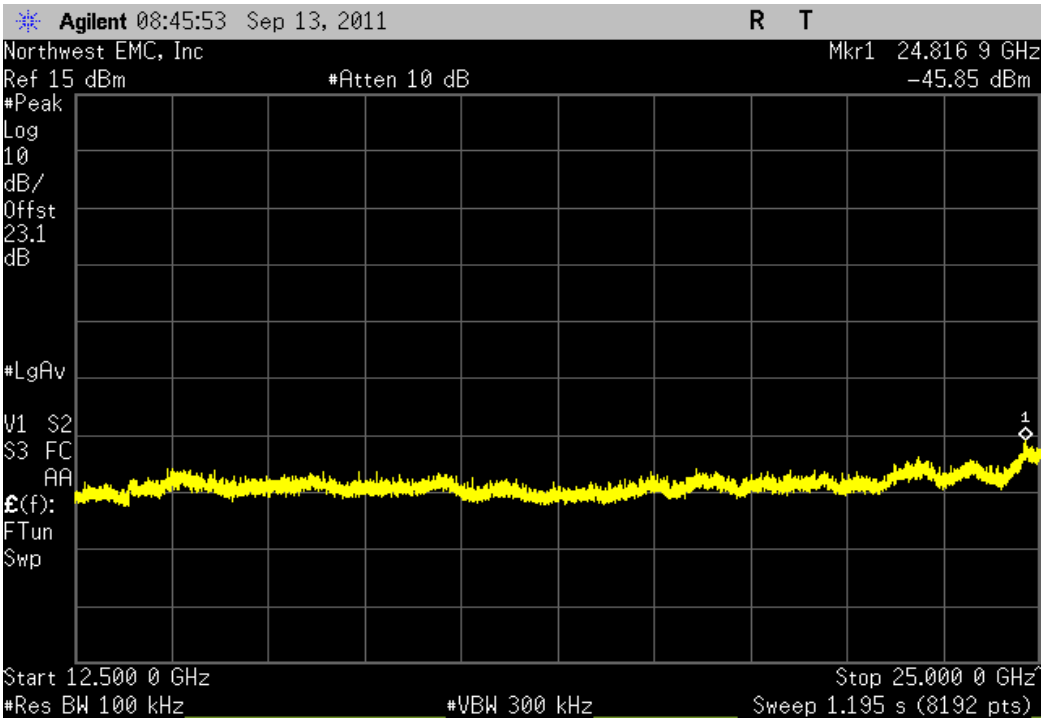
Configuration #	1	Signature

		Frequency Range	Value	Limit	Result
5725 MHz - 5850 MHz Band					
	6 Mbps				
	Low Channel 149, 5745 MHz	30 MHz - 12.5 GHz	-47.4 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	12.5 GHz - 25 GHz	-47.46 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	25 GHz - 32 GHz	-45.76 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	32 GHz - 40 GHz	-36 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	30 MHz - 12.5 GHz	-54.37 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	12.5 GHz - 25 GHz	-48.21 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	25 GHz - 32 GHz	-45.59 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	32 GHz - 40 GHz	-36.3 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	30 MHz - 12.5 GHz	-53.83 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	12.5 GHz - 25 GHz	-47.28 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	25 GHz - 32 GHz	-44.45 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	32 GHz - 40 GHz	-35.21 dBc	≤ -20 dBc	Pass

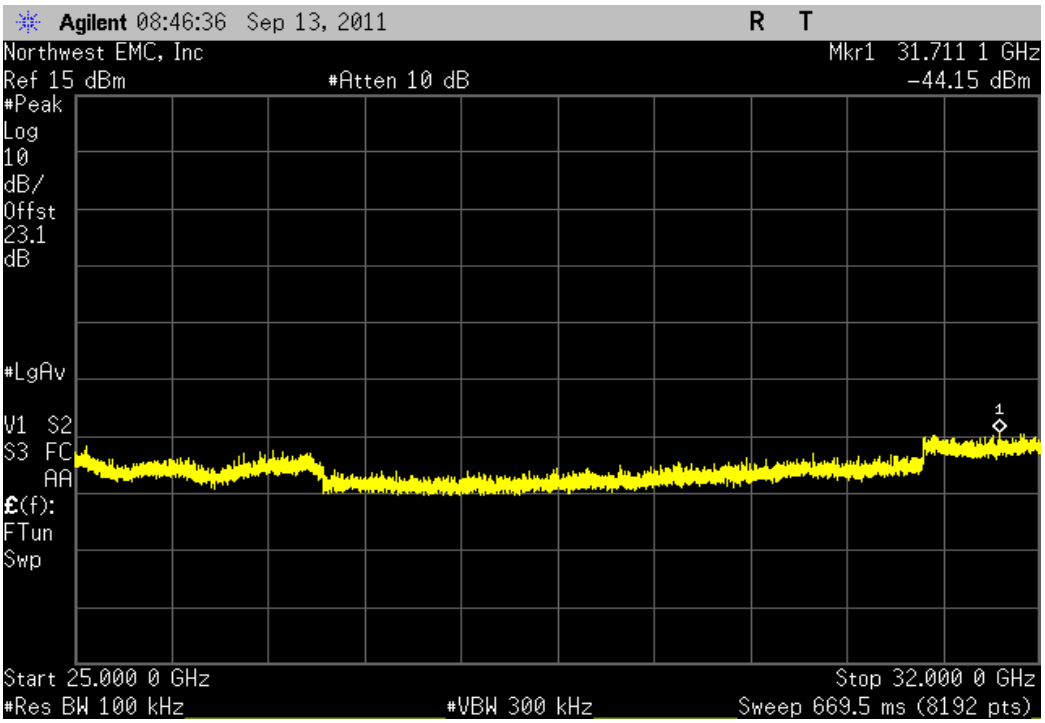
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-47.4 dBc	≤ -20 dBc	Pass



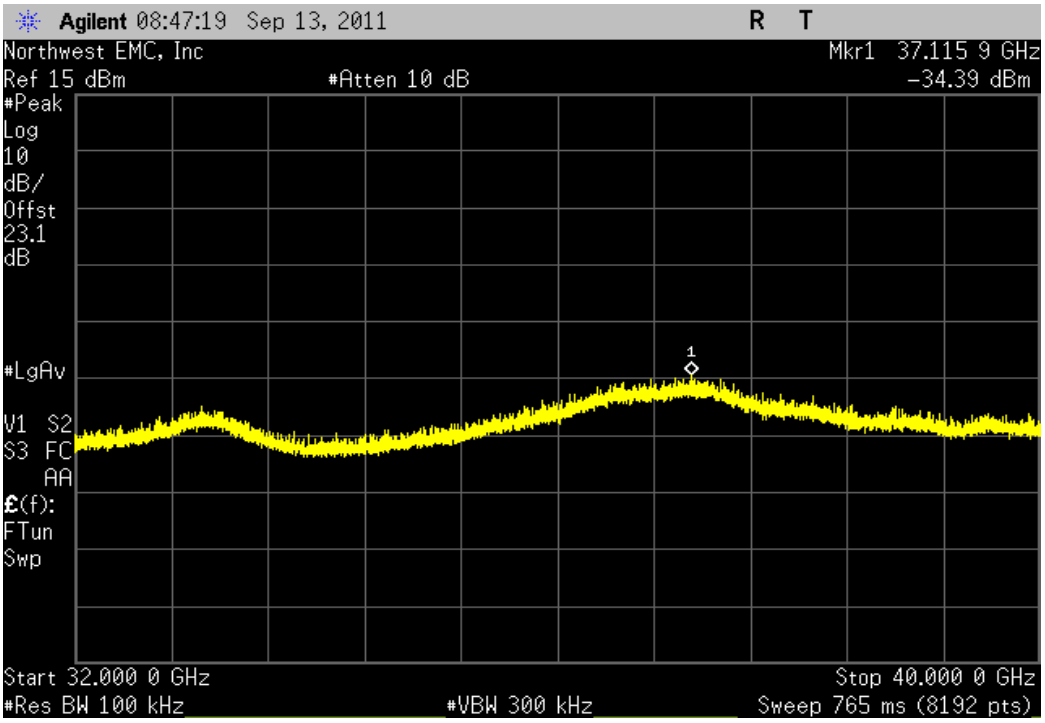
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-47.46 dBc	≤ -20 dBc	Pass



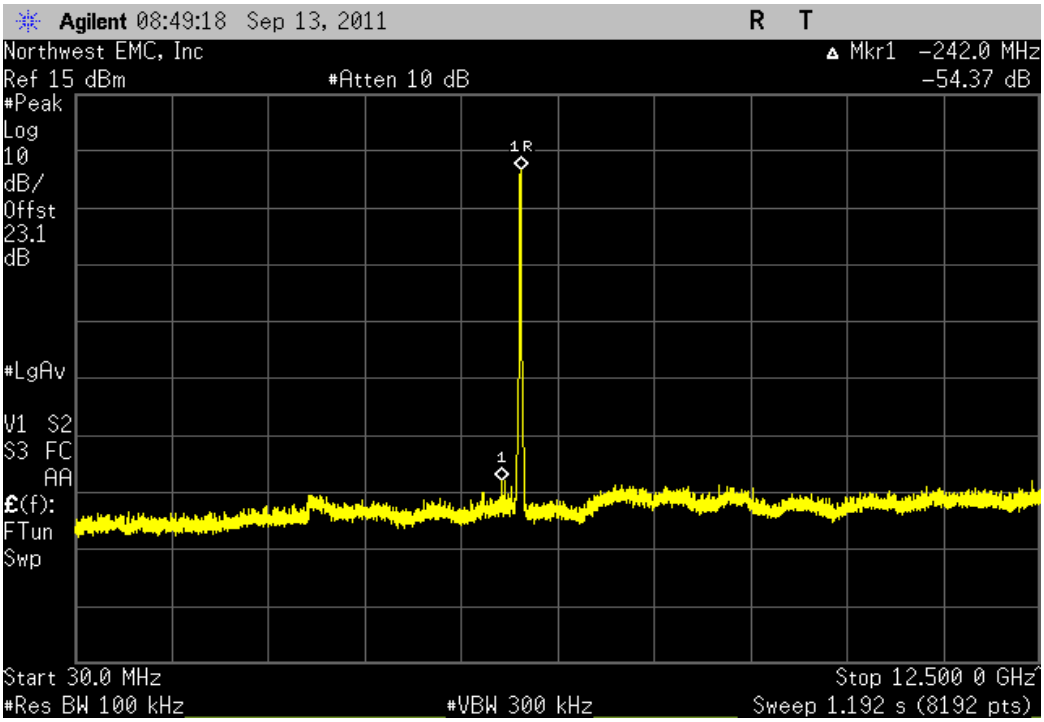
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-45.76 dBc	≤ -20 dBc	Pass



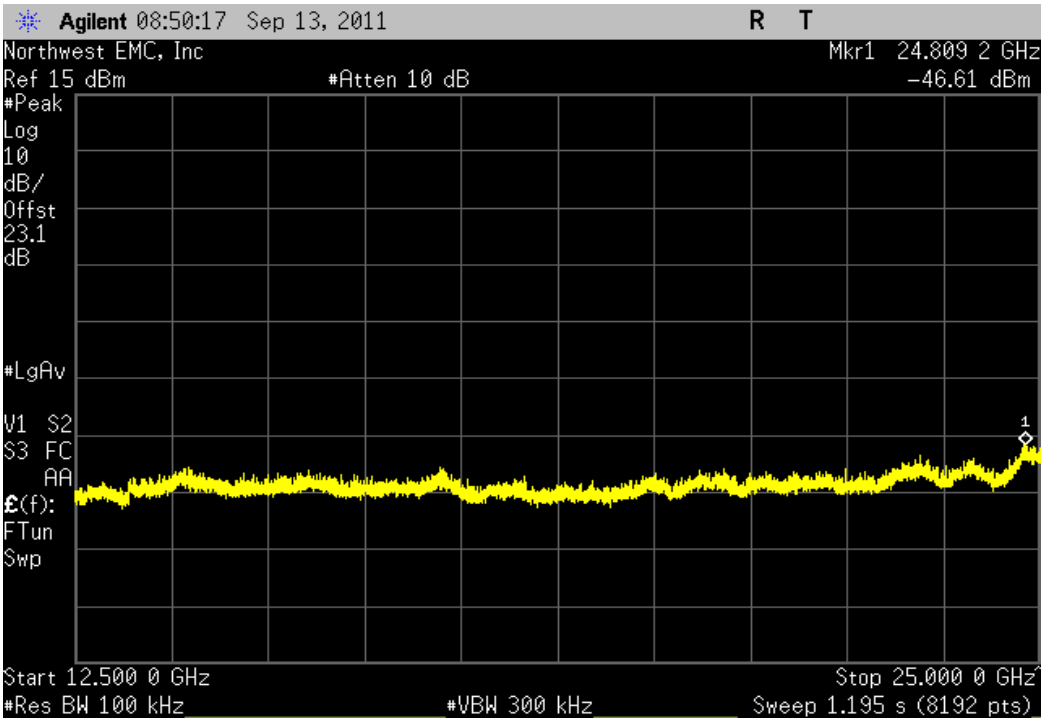
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-36 dBc	≤ -20 dBc	Pass



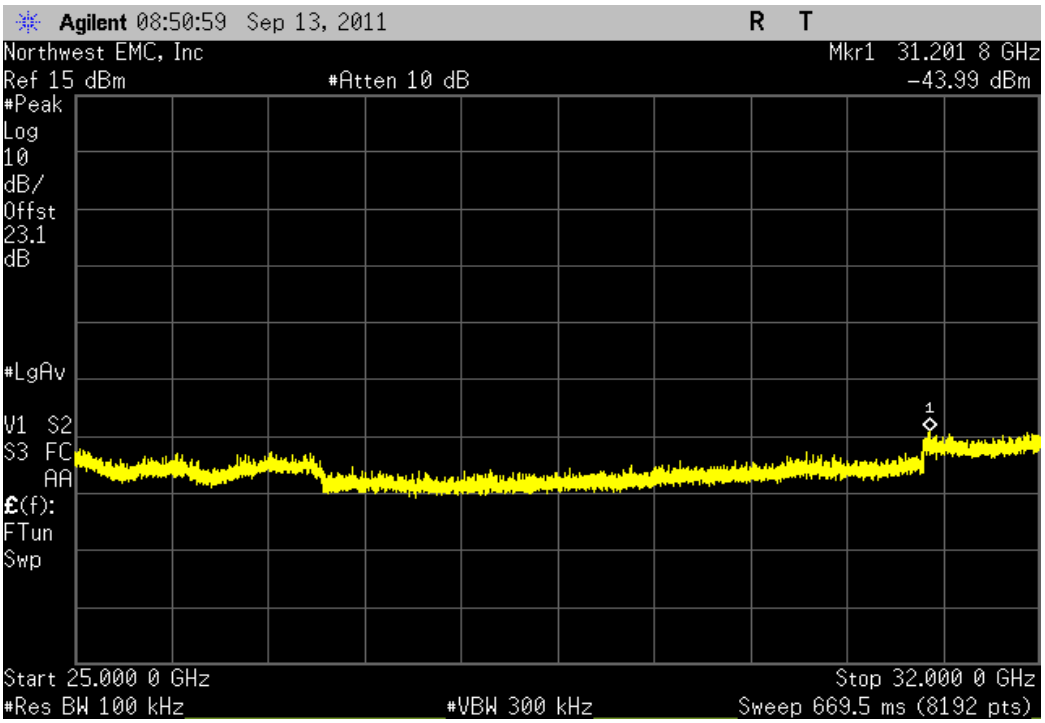
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-54.37 dBc	≤ -20 dBc	Pass



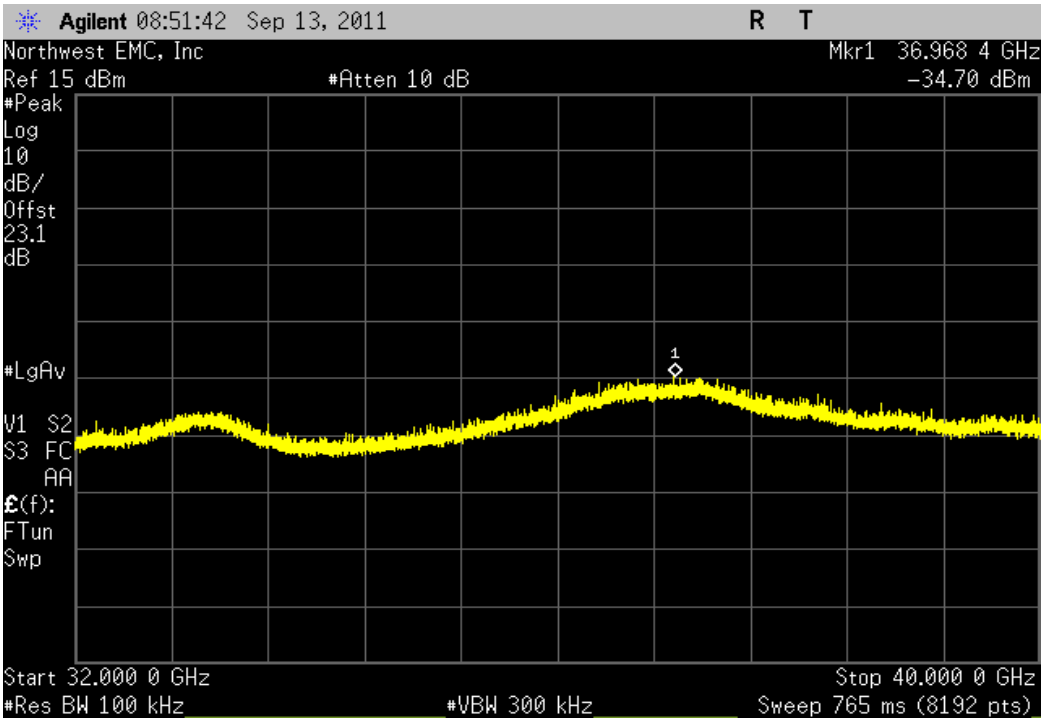
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-48.21 dBc	≤ -20 dBc	Pass



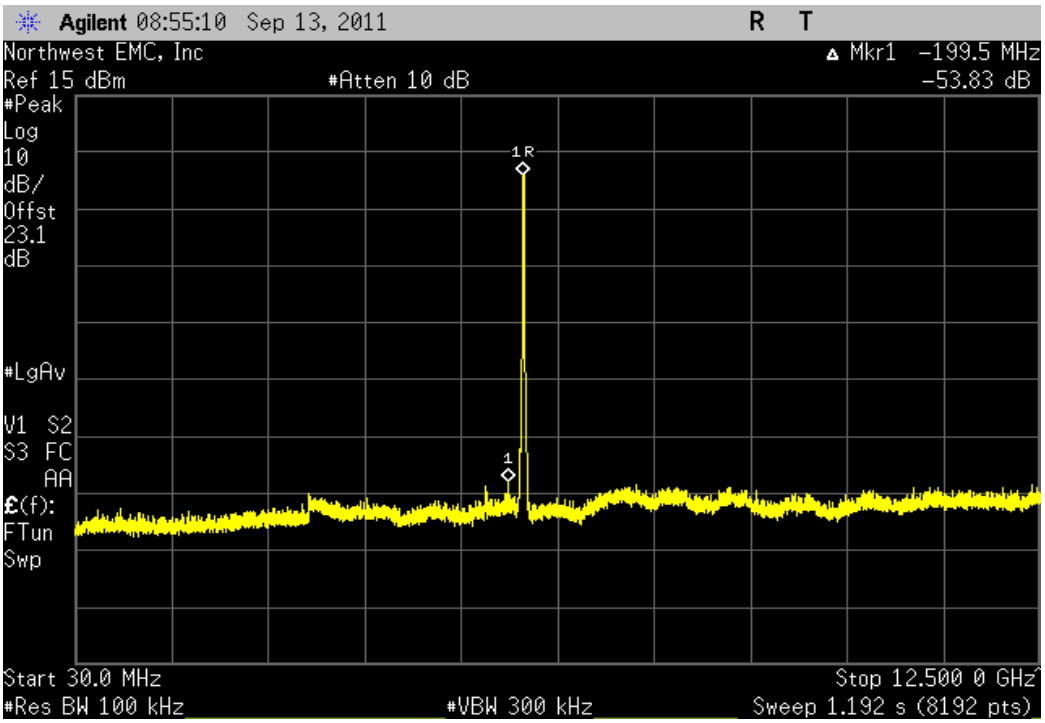
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-45.59 dBc	≤ -20 dBc	Pass



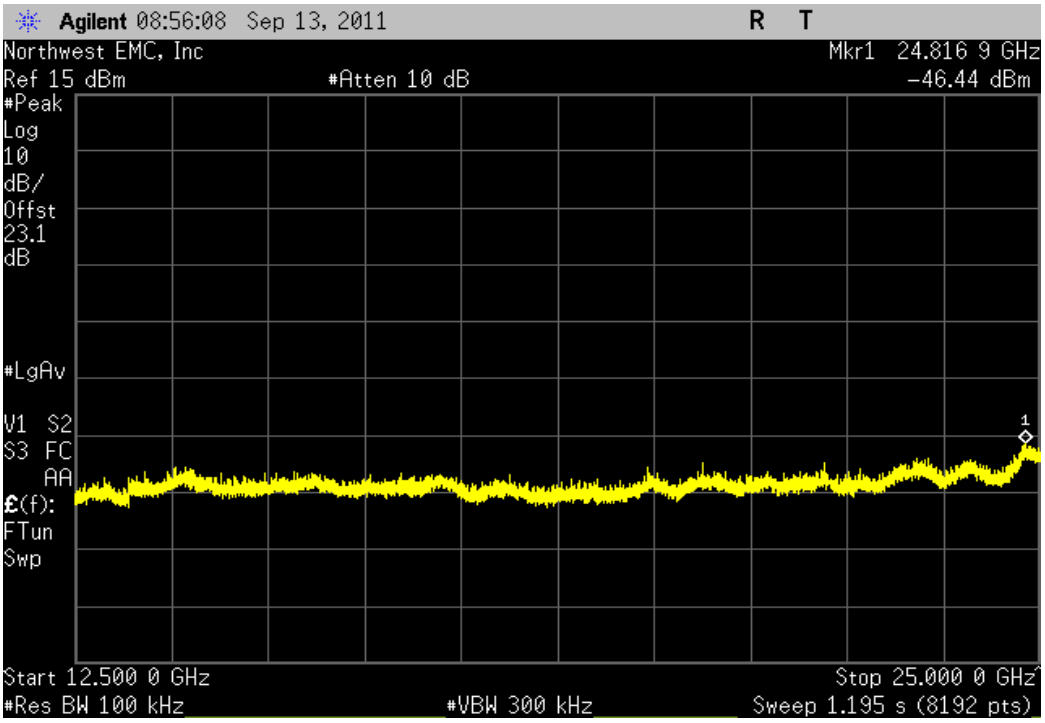
5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-36.3 dBc	≤ -20 dBc	Pass



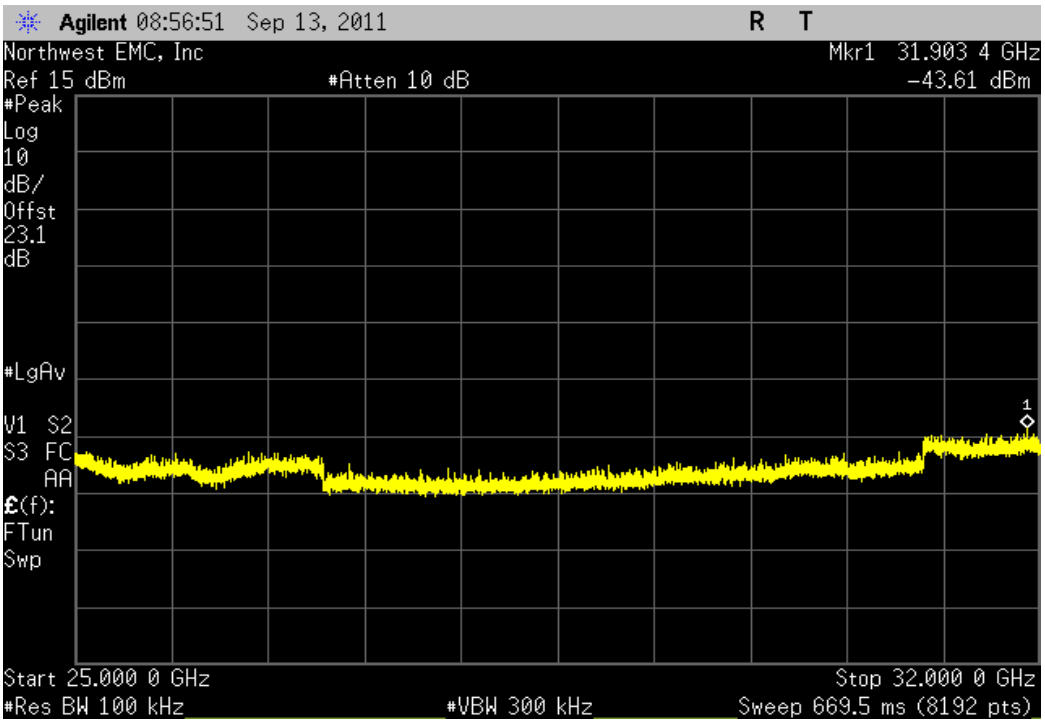
5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-53.83 dBc	≤ -20 dBc	Pass



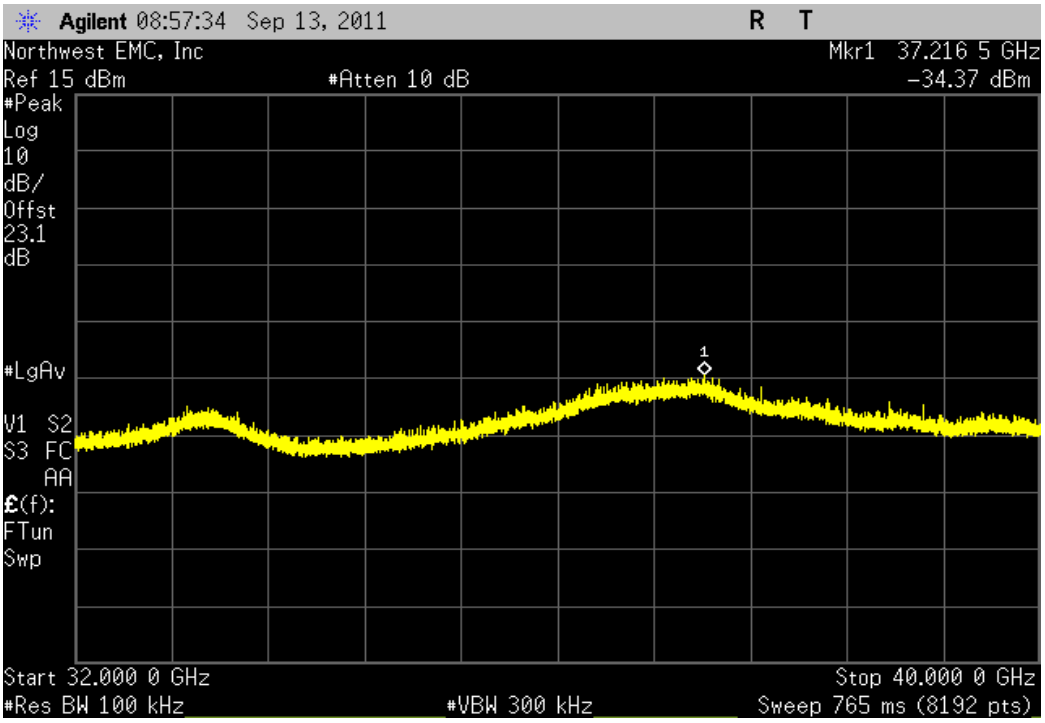
5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-47.28 dBc	≤ -20 dBc	Pass



5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.45 dBc	≤ -20 dBc	Pass



5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-35.21 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	1/7/2010	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	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 power spectral density measurements were measured with the EUT set to low, mid, 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 its maximum data rate for each modulation type available. ANSI C63.10:2009, Section 6.11.2.3 was followed. The spectrum analyzer was set as follows:

The emission peak was located and zoomed in on within the passband.

a) RBW = 3 kHz

b) VBW = 10 kHz

c) Span = 300 kHz

d) Sweep time = 100s

e) Trace set to MAX

f) The 1 hz Marker Noise function on the analyzer was used. The data was corrected to 3 kHz by adding 34.8 dB to the reading.

NORTHWEST EMC

Power Spectral Density

XMit 2011.08.04
PsaTx 2011.09.07

EUT:	Ice Axe - Slave Module			Work Order:	FOCU0115
Serial Number:	03 EA 12 00 5A 6D			Date:	09/12/11
Customer:	Summit Semiconductor			Temperature:	23.7°C
Attendees:	Ponnappa Pasura			Humidity:	47%
Project:	None			Barometric Pres.:	30.11
Tested by:	Rod Peloquin	Power:	3.3 VDC	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

COMMENTS

Operated per TPC power table, data randomization enabled.

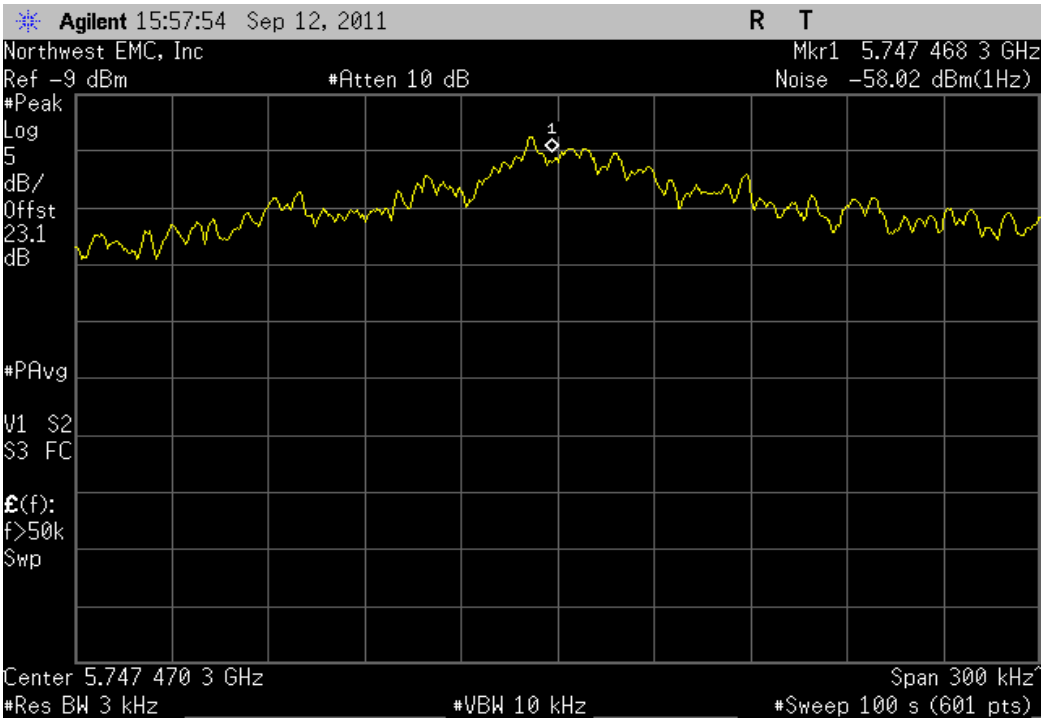
DEVIATIONS FROM TEST STANDARD

No Deviations

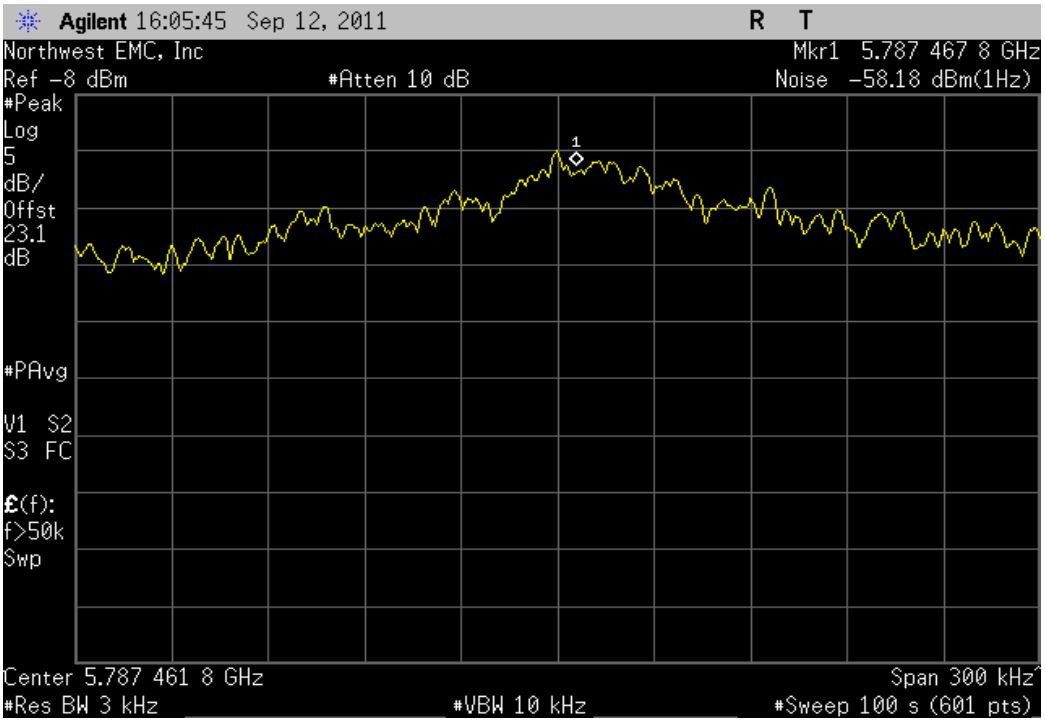
Configuration #	1	Signature

		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
5725 MHz - 5850 MHz Band						
6 Mbps						
	Low Channel 149, 5745 MHz	-58.018	34.8	-23.218	8	Pass
	Mid Channel 157, 5785 MHz	-58.178	34.8	-23.378	8	Pass
	High Channel 165, 5825 MHz	-58.391	34.8	-23.591	8	Pass

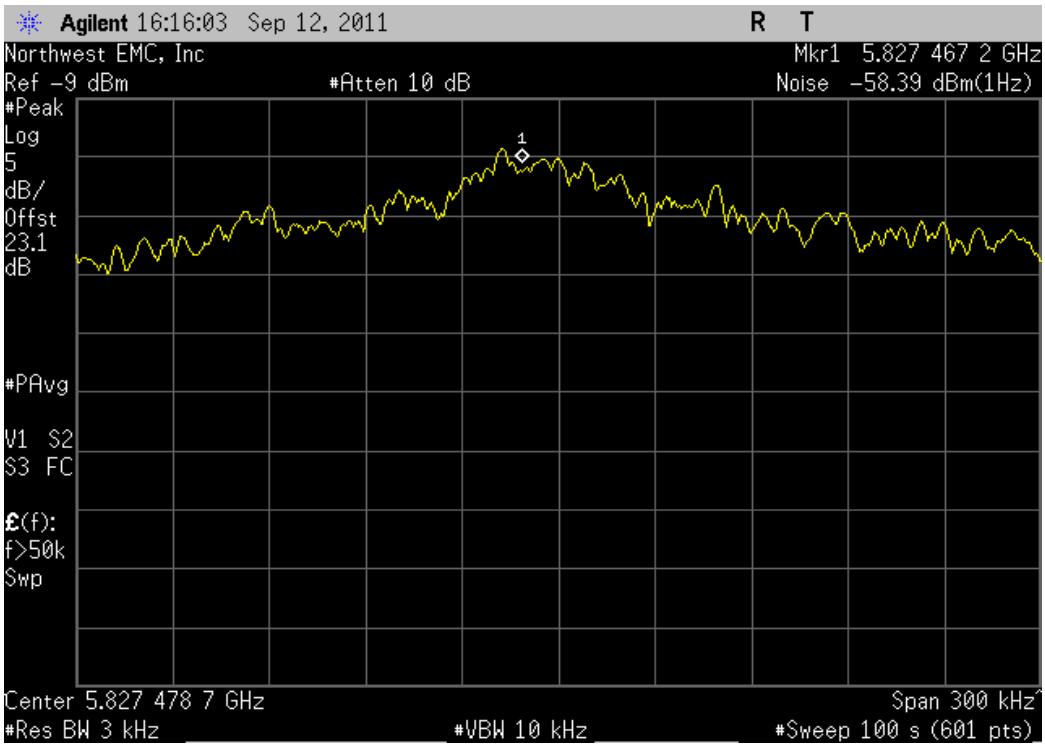
5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-58.018	34.8	-23.218	8	Pass



5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-58.178	34.8	-23.378	8	Pass



5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-58.391	34.8	-23.591	8	Pass



RADIATED SPURIOUS 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.

MODES OF OPERATION

Transmitting 6 Mbps

CHANNELS TESTED

Channel 149 (30), 5745 MHz
Channel 157 (32), 5785 MHz
Channel 165 (34), 5825 MHz

POWER SETTINGS INVESTIGATED

3.3 VDC

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz

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	6/24/2011	12
5.725-5.875 Notch Filter	Micro-Tronics	BRC50705	HGJ	8/6/2010	24
5.47-5.725 Notch Filter	Micro-Tronics	BRC50704	HGI	10/8/2010	24
High Pass Filter	Micro-Tronics	HPM50112	HGA	10/8/2010	24
5.25 GHz Notch Filter	K&L Microwave	8N50-5250/X200-0/0	HFK	4/2/2010	24
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/28/2011	12
Antenna, Bilog	Teseq	CBL 6141B	AXR	11/29/2010	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
Antenna, Horn	ETS	3160-07	AHU	NCR	0
Antenna, Horn	ETS	3160-08	AHV	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	3/2/2011	12
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	3/2/2011	12
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	3/2/2011	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
Antenna, Horn	ETS Lindgren	3160-10	AIW	NCR	0
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	7/1/2011	12
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 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. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is 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.

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2011.05.11
EMI 2008.1.9

EUT:	Ice Axe - Slave Module	Work Order:	FOCU0115
Serial Number:	02 EA 12 00 5A 67	Date:	09/19/11
Customer:	Summit Semiconductor	Temperature:	23°C
Attendees:	None	Humidity:	49%
Project:	None	Barometric Pres.:	30.05
Tested by:	Rod Peloquin	Power: 3.3 VDC	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.209:2011	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs

EUT OPERATING MODES

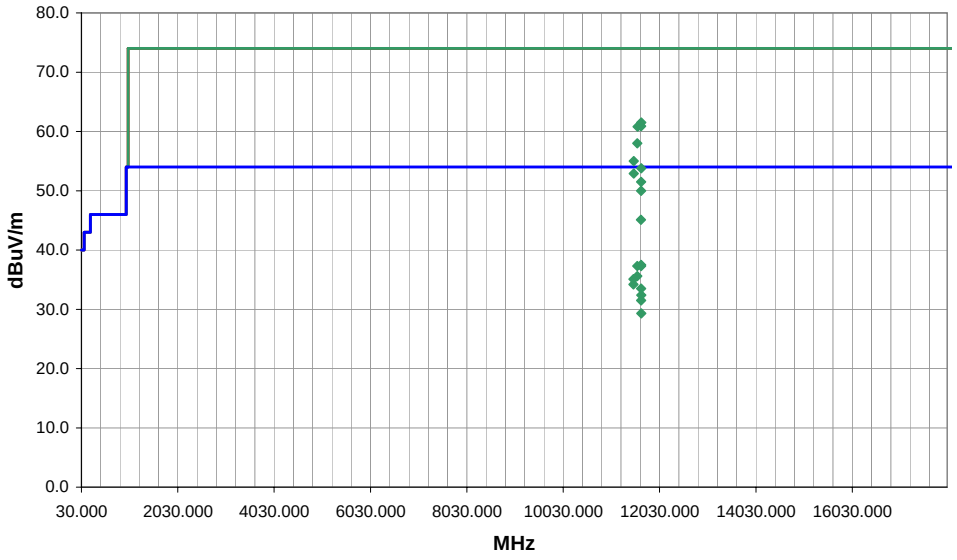
Continuous Transmitting.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	7
Configuration #	1
Results	Pass

Signature



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
11650.040	68.4	-6.9	321.0	1.1	3.0	0.0	H-Horn	PK	0.0	61.5	74.0	-12.5	Ch. 165 (34), EUT vertical
11647.710	67.8	-6.9	335.0	1.5	3.0	0.0	V-Horn	PK	0.0	60.9	74.0	-13.1	Ch. 165 (34), EUT on side
11572.250	68.1	-7.3	357.0	1.3	3.0	0.0	H-Horn	PK	0.0	60.8	74.0	-13.2	Ch. 157 (32), EUT vertical
11568.120	65.3	-7.3	347.0	1.0	3.0	0.0	V-Horn	PK	0.0	58.0	74.0	-16.0	Ch. 157 (32), EUT on side
11648.540	44.4	-6.9	321.0	1.1	3.0	0.0	H-Horn	AV	0.0	37.5	54.0	-16.5	Ch. 165 (34), EUT vertical
11568.790	44.6	-7.3	357.0	1.3	3.0	0.0	H-Horn	AV	0.0	37.3	54.0	-16.7	Ch. 157 (32), EUT vertical
11648.500	44.2	-6.9	335.0	1.5	3.0	0.0	V-Horn	AV	0.0	37.3	54.0	-16.7	Ch. 165 (34), EUT on side
11568.540	42.9	-7.3	347.0	1.0	3.0	0.0	V-Horn	AV	0.0	35.6	54.0	-18.4	Ch. 157 (32), EUT on side
11488.830	42.6	-7.5	353.0	1.3	3.0	0.0	H-Horn	AV	0.0	35.1	54.0	-18.9	Ch. 149 (30), EUT vertical
11493.710	62.5	-7.5	353.0	1.3	3.0	0.0	H-Horn	PK	0.0	55.0	74.0	-19.0	Ch. 149 (30), EUT vertical
11488.790	41.7	-7.5	2.0	1.4	3.0	0.0	V-Horn	AV	0.0	34.2	54.0	-19.8	Ch. 149 (30), EUT on side
11651.790	60.7	-6.9	87.0	1.5	3.0	0.0	V-Horn	PK	0.0	53.8	74.0	-20.2	Ch. 165 (34), EUT horizontal
11648.540	40.4	-6.9	87.0	1.5	3.0	0.0	V-Horn	AV	0.0	33.5	54.0	-20.5	Ch. 165 (34), EUT horizontal
11493.670	60.4	-7.5	2.0	1.4	3.0	0.0	V-Horn	PK	0.0	52.9	74.0	-21.1	Ch. 149 (30), EUT on side
11651.540	39.3	-6.9	28.0	1.2	3.0	0.0	H-Horn	AV	0.0	32.4	54.0	-21.6	Ch. 165 (34), EUT horizontal
11647.670	58.4	-6.9	28.0	1.2	3.0	0.0	H-Horn	PK	0.0	51.5	74.0	-22.5	Ch. 165 (34), EUT horizontal
11648.330	38.4	-6.9	344.0	1.3	3.0	0.0	V-Horn	AV	0.0	31.5	54.0	-22.5	Ch. 165 (34), EUT vertical
11647.790	56.9	-6.9	344.0	1.3	3.0	0.0	V-Horn	PK	0.0	50.0	74.0	-24.0	Ch. 165 (34), EUT vertical
11648.620	36.2	-6.9	54.0	1.1	3.0	0.0	H-Horn	AV	0.0	29.3	54.0	-24.7	Ch. 165 (34), EUT on side
11644.210	52.0	-6.9	54.0	1.1	3.0	0.0	H-Horn	PK	0.0	45.1	74.0	-28.9	Ch. 165 (34), EUT on side

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2011.05.11
EMI 2008.1.9

EUT:	Ice Axe - Slave Module	Work Order:	FOCU0115
Serial Number:	02 EA 12 00 5A 67	Date:	09/16/11
Customer:	Summit Semiconductor	Temperature:	24
Attendees:	Ponnappa Pasura	Humidity:	47%
Project:	None	Barometric Pres.:	1011.2
Tested by:	Rod Peloquin	Power: 3.3 VDC	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.209:2011	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1-2	Test Distance (m)	3

COMMENTS

Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs

EUT OPERATING MODES

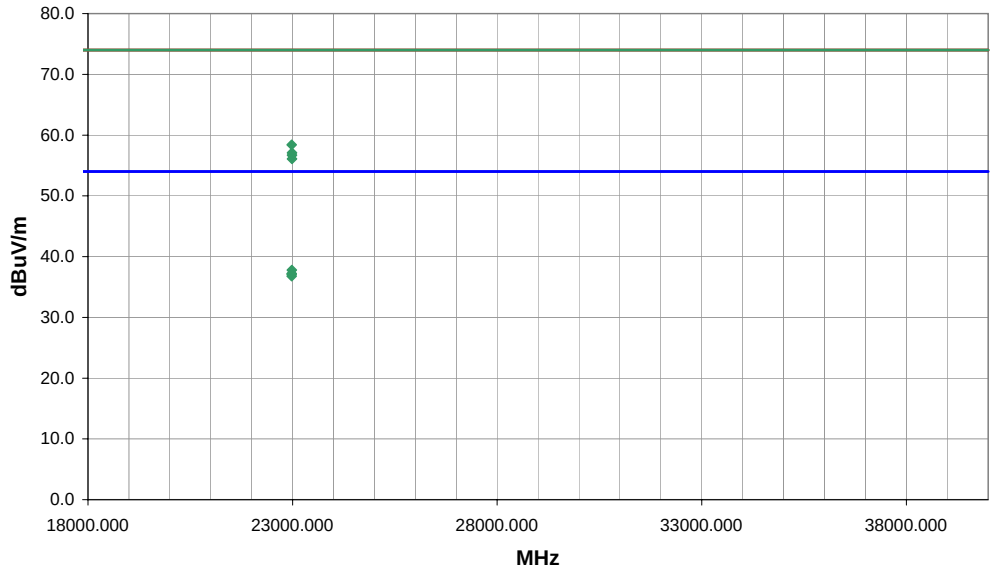
Transmitting 6 Mbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5
Configuration #	1
Results	Pass

Signature



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
22977.600	66.0	-7.6	150.0	1.3	3.0	0.0	-High Horr	PK	0.0	58.4	74.0	-15.6	Ch 149, EUT vertical
22980.000	45.4	-7.6	150.0	1.3	3.0	0.0	-High Horr	AV	0.0	37.8	54.0	-16.2	Ch 149, EUT vertical
22979.720	44.8	-7.6	322.0	1.3	3.0	0.0	-High Horr	AV	0.0	37.2	54.0	-16.8	Ch 149, EUT on side
22979.800	44.7	-7.6	255.0	1.1	3.0	0.0	√-High Horr	AV	0.0	37.1	54.0	-16.9	Ch 149, EUT vertical
22984.230	64.7	-7.6	255.0	1.1	3.0	0.0	√-High Horr	PK	0.0	57.1	74.0	-16.9	Ch 149, EUT vertical
22979.910	44.4	-7.6	157.0	1.3	3.0	0.0	√-High Horr	AV	0.0	36.8	54.0	-17.2	Ch 149, EUT on side
22983.880	64.3	-7.6	322.0	1.3	3.0	0.0	-High Horr	PK	0.0	56.7	74.0	-17.3	Ch 149, EUT on side
22985.890	63.7	-7.6	157.0	1.3	3.0	0.0	√-High Horr	PK	0.0	56.1	74.0	-17.9	Ch 149, EUT on side

AC POWERLINE 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.

MODES OF OPERATION
Transmitting Channel 165 (34) 5825 MHz
Transmitting Channel 157 (32) 5785 MHz
Transmitting Channel 149 (30) 55745 MHz

POWER SETTINGS INVESTIGATED
3.3 VDC via 120VAC/60Hz

CONFIGURATIONS INVESTIGATED
FOCU0115 -4

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARH	3/30/2011	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HFX	2/9/2011	24 mo
Attenuator	Coaxicom	66702 2910-20	ATO	7/20/2011	12 mo
LISN	Solar	9252-50-R-24-BNC	LIR	2/17/2011	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 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.

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

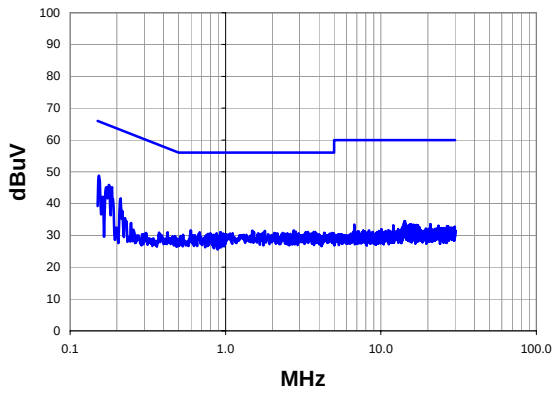
PSA-ESCI 2011.07.26
PSA-ESCI Version 2011.06.23

Work Order:	FOCU0115	**Date:**	09/15/11		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	EV07	**Humidity:**	44% RH		
Serial Number:	02 EA 12 00 5A 67	**Barometric Pres.:**	1015.9 mbar	**Tested by:**	Rod Peloquin
EUT:	Ice Axe - Slave Module				
Configuration:	4 - Powerline Conducted Emissions				
Customer:	Summit Semiconductor				
Attendees:	None				
EUT Power:	3.3 VDC via 120VAC/60Hz				
Operating Mode:	Transmitting Channel 149 (30) 55745 MHz				
Deviations:	No deviations.				
Comments:	Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs				

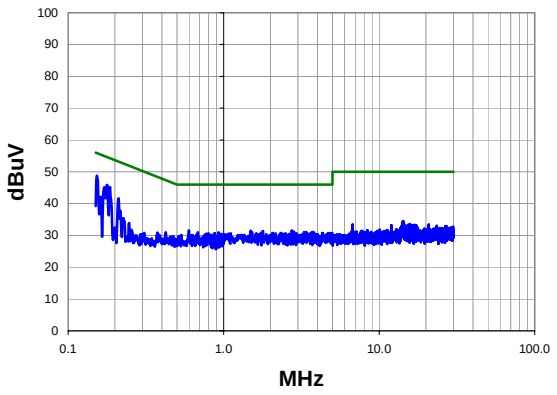
Test Specifications	**Test Method**
FCC 15.207:2011	ANSI C63.10:2009

Run #	1	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

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)
0.153	28.7	20.1	48.8	65.8	-17.0
0.177	25.8	20.1	45.9	64.6	-18.7
0.186	25.1	20.1	45.2	64.2	-19.0
0.172	25.1	20.1	45.2	64.9	-19.7
0.211	21.5	20.1	41.6	63.2	-21.6
0.162	22.1	20.1	42.2	65.4	-23.2
0.597	11.5	20.1	31.6	56.0	-24.4
2.744	11.5	20.1	31.6	56.0	-24.4
1.488	11.4	20.1	31.5	56.0	-24.5
1.784	11.3	20.1	31.4	56.0	-24.6
2.832	11.1	20.1	31.2	56.0	-24.8
3.392	10.9	20.2	31.1	56.0	-24.9
3.696	10.9	20.2	31.1	56.0	-24.9
3.784	10.9	20.2	31.1	56.0	-24.9
0.684	10.9	20.1	31.0	56.0	-25.0
0.929	10.9	20.1	31.0	56.0	-25.0
1.528	10.9	20.1	31.0	56.0	-25.0
1.736	10.7	20.1	30.8	56.0	-25.2
2.056	10.7	20.1	30.8	56.0	-25.2
2.328	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)
0.153	28.7	20.1	48.8	55.8	-7.0
0.177	25.8	20.1	45.9	54.6	-8.7
0.186	25.1	20.1	45.2	54.2	-9.0
0.172	25.1	20.1	45.2	54.9	-9.7
0.211	21.5	20.1	41.6	53.2	-11.6
0.162	22.1	20.1	42.2	55.4	-13.2
0.597	11.5	20.1	31.6	46.0	-14.4
2.744	11.5	20.1	31.6	46.0	-14.4
1.488	11.4	20.1	31.5	46.0	-14.5
1.784	11.3	20.1	31.4	46.0	-14.6
2.832	11.1	20.1	31.2	46.0	-14.8
3.392	10.9	20.2	31.1	46.0	-14.9
3.696	10.9	20.2	31.1	46.0	-14.9
3.784	10.9	20.2	31.1	46.0	-14.9
0.684	10.9	20.1	31.0	46.0	-15.0
0.929	10.9	20.1	31.0	46.0	-15.0
1.528	10.9	20.1	31.0	46.0	-15.0
1.736	10.7	20.1	30.8	46.0	-15.2
2.056	10.7	20.1	30.8	46.0	-15.2
2.328	10.7	20.1	30.8	46.0	-15.2

AC POWERLINE CONDUCTED EMISSIONS

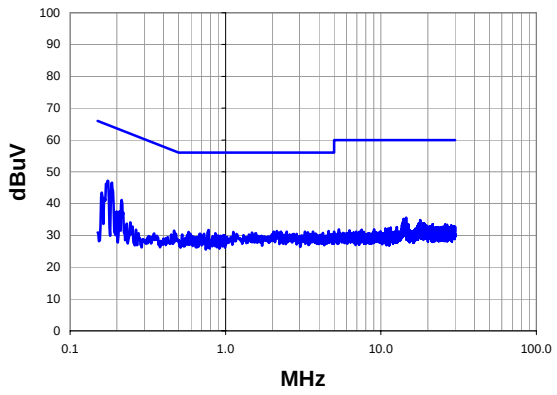
Work Order:	FOCU0115	**Date:**	09/15/11		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	EV07	**Humidity:**	44% RH		
Serial Number:	02 EA 12 00 5A 67	**Barometric Pres.:**	1015.9 mbar	**Tested by:**	Rod Peloquin

EUT:	Ice Axe - Slave Module
Configuration:	4 - Powerline Conducted Emissions
Customer:	Summit Semiconductor
Attendees:	None
EUT Power:	3.3 VDC via 120VAC/60Hz
Operating Mode:	Transmitting Channel 149 (30) 55745 MHz
Deviations:	No deviations.
Comments:	Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs

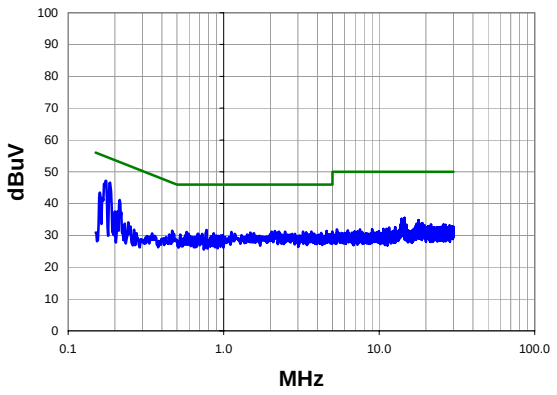
Test Specifications	**Test Method**
FCC 15.207:2011	ANSI C63.10:2009

Run #	2	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

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)
0.174	27.1	20.1	47.2	64.8	-17.6
0.186	26.5	20.1	46.6	64.2	-17.6
0.215	21.0	20.1	41.1	63.0	-21.9
0.160	23.4	20.1	43.5	65.5	-22.0
0.776	11.6	20.1	31.7	56.0	-24.3
14.530	14.9	20.6	35.5	60.0	-24.5
2.136	11.3	20.1	31.4	56.0	-24.6
4.600	11.2	20.2	31.4	56.0	-24.6
2.040	11.1	20.1	31.2	56.0	-24.8
2.272	11.1	20.1	31.2	56.0	-24.8
2.480	11.1	20.1	31.2	56.0	-24.8
3.240	11.0	20.2	31.2	56.0	-24.8
3.656	11.0	20.2	31.2	56.0	-24.8
4.992	11.0	20.2	31.2	56.0	-24.8
13.950	14.6	20.6	35.2	60.0	-24.8
0.577	11.0	20.1	31.1	56.0	-24.9
1.120	11.0	20.1	31.1	56.0	-24.9
3.392	10.8	20.2	31.0	56.0	-25.0
0.466	11.4	20.1	31.5	56.6	-25.1
1.480	10.8	20.1	30.9	56.0	-25.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.174	27.1	20.1	47.2	54.8	-7.6
0.186	26.5	20.1	46.6	54.2	-7.6
0.215	21.0	20.1	41.1	53.0	-11.9
0.160	23.4	20.1	43.5	55.5	-12.0
0.776	11.6	20.1	31.7	46.0	-14.3
14.530	14.9	20.6	35.5	50.0	-14.5
2.136	11.3	20.1	31.4	46.0	-14.6
4.600	11.2	20.2	31.4	46.0	-14.6
2.040	11.1	20.1	31.2	46.0	-14.8
2.272	11.1	20.1	31.2	46.0	-14.8
2.480	11.1	20.1	31.2	46.0	-14.8
3.240	11.0	20.2	31.2	46.0	-14.8
3.656	11.0	20.2	31.2	46.0	-14.8
4.992	11.0	20.2	31.2	46.0	-14.8
13.950	14.6	20.6	35.2	50.0	-14.8
0.577	11.0	20.1	31.1	46.0	-14.9
1.120	11.0	20.1	31.1	46.0	-14.9
3.392	10.8	20.2	31.0	46.0	-15.0
0.466	11.4	20.1	31.5	46.6	-15.1
1.480	10.8	20.1	30.9	46.0	-15.1

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2011.07.26
PSA-ESCI Version 2011.06.23

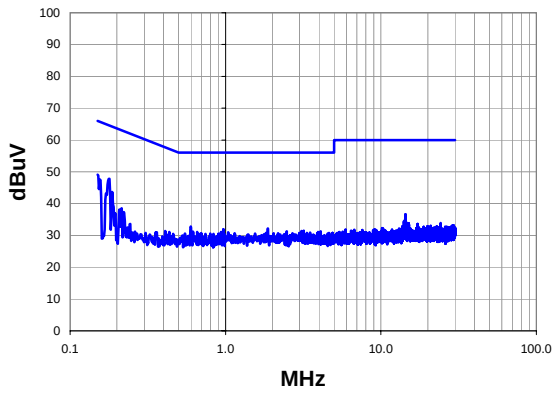
Work Order:	FOCU0115	**Date:**	09/15/11		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	EV07	**Humidity:**	44% RH		
Serial Number:	02 EA 12 00 5A 67	**Barometric Pres.:**	1015.9 mbar	**Tested by:**	Rod Peloquin

EUT:	Ice Axe - Slave Module
Configuration:	4 - Powerline Conducted Emissions
Customer:	Summit Semiconductor
Attendees:	None
EUT Power:	3.3 VDC via 120VAC/60Hz
Operating Mode:	Transmitting Channel 157 (32) 5785 MHz
Deviations:	No deviations.
Comments:	Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs

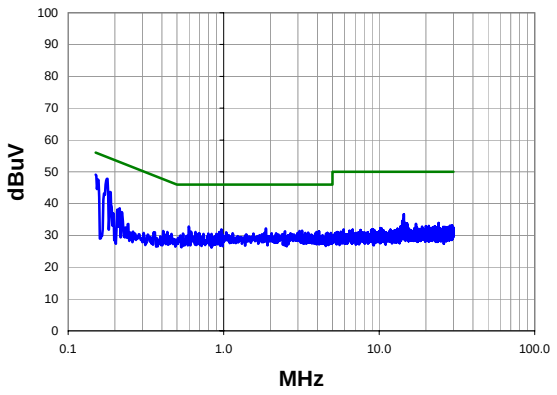
Test Specifications	**Test Method**
FCC 15.207:2011	ANSI C63.10:2009

Run #	3	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

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)
0.177	27.7	20.1	47.8	64.6	-16.8
0.150	29.0	20.1	49.1	66.0	-16.9
0.186	23.6	20.1	43.7	64.2	-20.5
0.597	12.7	20.1	32.8	56.0	-23.2
14.390	16.0	20.6	36.6	60.0	-23.4
1.872	12.1	20.1	32.2	56.0	-23.8
0.969	11.8	20.1	31.9	56.0	-24.1
3.192	11.3	20.2	31.5	56.0	-24.5
0.215	18.4	20.1	38.5	63.0	-24.5
3.080	11.2	20.2	31.4	56.0	-24.6
2.480	11.2	20.1	31.3	56.0	-24.7
4.104	11.1	20.2	31.3	56.0	-24.7
0.618	11.1	20.1	31.2	56.0	-24.8
0.658	11.0	20.1	31.1	56.0	-24.9
0.939	11.0	20.1	31.1	56.0	-24.9
3.944	10.9	20.2	31.1	56.0	-24.9
14.300	14.5	20.6	35.1	60.0	-24.9
1.040	10.9	20.1	31.0	56.0	-25.0
3.496	10.7	20.2	30.9	56.0	-25.1
0.208	18.0	20.1	38.1	63.3	-25.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.177	27.7	20.1	47.8	54.6	-6.8
0.150	29.0	20.1	49.1	56.0	-6.9
0.186	23.6	20.1	43.7	54.2	-10.5
0.597	12.7	20.1	32.8	46.0	-13.2
14.390	16.0	20.6	36.6	50.0	-13.4
1.872	12.1	20.1	32.2	46.0	-13.8
0.969	11.8	20.1	31.9	46.0	-14.1
3.192	11.3	20.2	31.5	46.0	-14.5
0.215	18.4	20.1	38.5	53.0	-14.5
3.080	11.2	20.2	31.4	46.0	-14.6
2.480	11.2	20.1	31.3	46.0	-14.7
4.104	11.1	20.2	31.3	46.0	-14.7
0.618	11.1	20.1	31.2	46.0	-14.8
0.658	11.0	20.1	31.1	46.0	-14.9
0.939	11.0	20.1	31.1	46.0	-14.9
3.944	10.9	20.2	31.1	46.0	-14.9
14.300	14.5	20.6	35.1	50.0	-14.9
1.040	10.9	20.1	31.0	46.0	-15.0
3.496	10.7	20.2	30.9	46.0	-15.1
0.208	18.0	20.1	38.1	53.3	-15.2

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

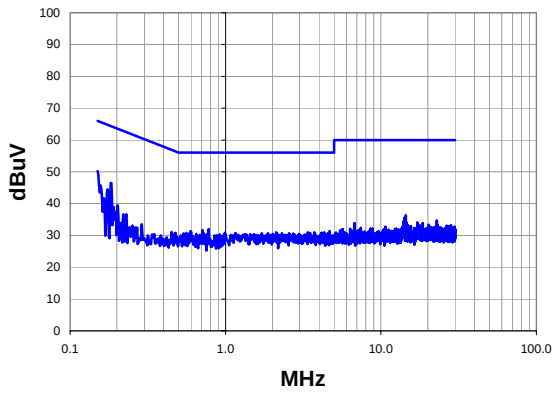
PSA-ESCI 2011.07.26
PSA-ESCI Version 2011.06.23

Work Order:	FOCU0115	**Date:**	09/15/11		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	EV07	**Humidity:**	44% RH		
Serial Number:	02 EA 12 00 5A 67	**Barometric Pres.:**	1015.9 mbar	**Tested by:**	Rod Peloquin
EUT:	Ice Axe - Slave Module				
Configuration:	4 - Powerline Conducted Emissions				
Customer:	Summit Semiconductor				
Attendees:	None				
EUT Power:	3.3 VDC via 120VAC/60Hz				
Operating Mode:	Transmitting Channel 157 (32) 5785 MHz				
Deviations:	No deviations.				
Comments:	Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs				

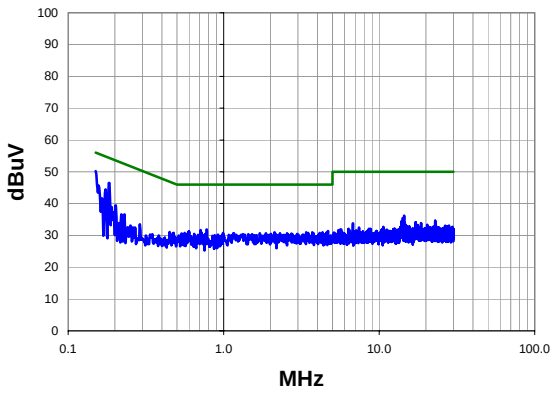
Test Specifications	**Test Method**
FCC 15.207:2011	ANSI C63.10:2009

Run #	4	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

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	30.1	20.1	50.2	66.0	-15.8
0.182	26.4	20.1	46.5	64.4	-17.9
0.174	24.4	20.1	44.5	64.8	-20.3
0.165	21.6	20.1	41.7	65.2	-23.5
14.440	15.6	20.6	36.2	60.0	-23.8
0.203	19.3	20.1	39.4	63.5	-24.1
0.779	11.8	20.1	31.9	56.0	-24.1
0.709	11.6	20.1	31.7	56.0	-24.3
4.680	11.2	20.2	31.4	56.0	-24.6
14.180	14.8	20.6	35.4	60.0	-24.6
0.595	11.2	20.1	31.3	56.0	-24.7
2.120	10.9	20.1	31.0	56.0	-25.0
3.392	10.8	20.2	31.0	56.0	-25.0
3.720	10.8	20.2	31.0	56.0	-25.0
4.320	10.8	20.2	31.0	56.0	-25.0
4.600	10.7	20.2	30.9	56.0	-25.1
0.191	18.8	20.1	38.9	64.0	-25.1
0.561	10.7	20.1	30.8	56.0	-25.2
0.991	10.7	20.1	30.8	56.0	-25.2
4.152	10.6	20.2	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	30.1	20.1	50.2	56.0	-5.8
0.182	26.4	20.1	46.5	54.4	-7.9
0.174	24.4	20.1	44.5	54.8	-10.3
0.165	21.6	20.1	41.7	55.2	-13.5
14.440	15.6	20.6	36.2	50.0	-13.8
0.203	19.3	20.1	39.4	53.5	-14.1
0.779	11.8	20.1	31.9	46.0	-14.1
0.709	11.6	20.1	31.7	46.0	-14.3
4.680	11.2	20.2	31.4	46.0	-14.6
14.180	14.8	20.6	35.4	50.0	-14.6
0.595	11.2	20.1	31.3	46.0	-14.7
2.120	10.9	20.1	31.0	46.0	-15.0
3.392	10.8	20.2	31.0	46.0	-15.0
3.720	10.8	20.2	31.0	46.0	-15.0
4.320	10.8	20.2	31.0	46.0	-15.0
4.600	10.7	20.2	30.9	46.0	-15.1
0.191	18.8	20.1	38.9	54.0	-15.1
0.561	10.7	20.1	30.8	46.0	-15.2
0.991	10.7	20.1	30.8	46.0	-15.2
4.152	10.6	20.2	30.8	46.0	-15.2

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2011.07.26
PSA-ESCI Version 2011.06.23

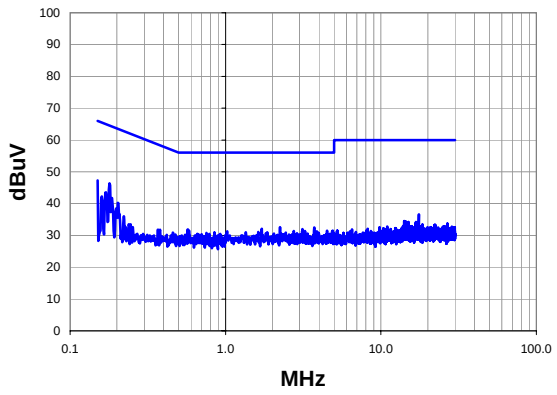
Work Order:	FOCU0115	**Date:**	09/15/11		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	EV07	**Humidity:**	44% RH		
Serial Number:	02 EA 12 00 5A 67	**Barometric Pres.:**	1015.9 mbar	**Tested by:**	Rod Peloquin

EUT:	Ice Axe - Slave Module
Configuration:	4 - Powerline Conducted Emissions
Customer:	Summit Semiconductor
Attendees:	None
EUT Power:	3.3 VDC via 120VAC/60Hz
Operating Mode:	Transmitting Channel 165 (34) 5825 MHz
Deviations:	No deviations.
Comments:	Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs

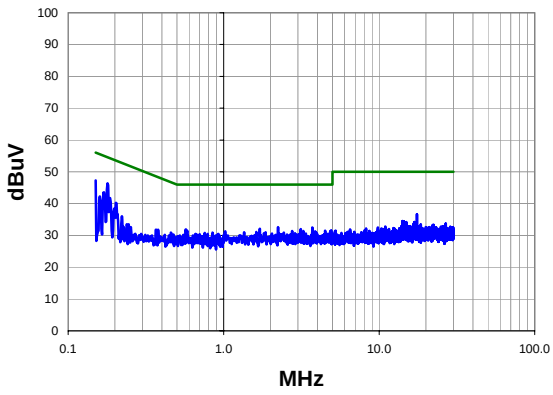
Test Specifications	**Test Method**
FCC 15.207:2011	ANSI C63.10:2009

Run #	5	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

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)
0.179	26.3	20.1	46.4	64.5	-18.1
0.150	27.2	20.1	47.3	66.0	-18.7
0.170	23.5	20.1	43.6	64.9	-21.3
0.186	21.7	20.1	41.8	64.2	-22.4
0.160	22.2	20.1	42.3	65.5	-23.2
0.203	20.1	20.1	40.2	63.5	-23.3
17.520	15.9	20.7	36.6	60.0	-23.4
2.240	12.5	20.1	32.6	56.0	-23.4
3.720	12.3	20.2	32.5	56.0	-23.5
1.712	12.0	20.1	32.1	56.0	-23.9
3.128	11.8	20.2	32.0	56.0	-24.0
0.572	11.8	20.1	31.9	56.0	-24.1
0.582	11.4	20.1	31.5	56.0	-24.5
4.496	11.3	20.2	31.5	56.0	-24.5
4.912	11.3	20.2	31.5	56.0	-24.5
2.752	11.3	20.1	31.4	56.0	-24.6
3.248	11.2	20.2	31.4	56.0	-24.6
4.848	11.2	20.2	31.4	56.0	-24.6
1.024	11.2	20.1	31.3	56.0	-24.7
3.872	11.1	20.2	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)
0.179	26.3	20.1	46.4	54.5	-8.1
0.150	27.2	20.1	47.3	56.0	-8.7
0.170	23.5	20.1	43.6	54.9	-11.3
0.186	21.7	20.1	41.8	54.2	-12.4
0.160	22.2	20.1	42.3	55.5	-13.2
0.203	20.1	20.1	40.2	53.5	-13.3
17.520	15.9	20.7	36.6	50.0	-13.4
2.240	12.5	20.1	32.6	46.0	-13.4
3.720	12.3	20.2	32.5	46.0	-13.5
1.712	12.0	20.1	32.1	46.0	-13.9
3.128	11.8	20.2	32.0	46.0	-14.0
0.572	11.8	20.1	31.9	46.0	-14.1
0.582	11.4	20.1	31.5	46.0	-14.5
4.496	11.3	20.2	31.5	46.0	-14.5
4.912	11.3	20.2	31.5	46.0	-14.5
2.752	11.3	20.1	31.4	46.0	-14.6
3.248	11.2	20.2	31.4	46.0	-14.6
4.848	11.2	20.2	31.4	46.0	-14.6
1.024	11.2	20.1	31.3	46.0	-14.7
3.872	11.1	20.2	31.3	46.0	-14.7

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2011.07.26
PSA-ESCI Version 2011.06.23

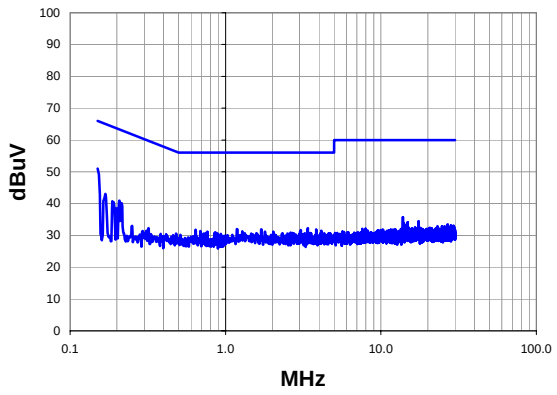
Work Order:	FOCU0115	**Date:**	09/15/11		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	EV07	**Humidity:**	44% RH		
Serial Number:	02 EA 12 00 5A 67	**Barometric Pres.:**	1015.9 mbar	**Tested by:**	Rod Peloquin

EUT:	Ice Axe - Slave Module
Configuration:	4 - Powerline Conducted Emissions
Customer:	Summit Semiconductor
Attendees:	None
EUT Power:	3.3 VDC via 120VAC/60Hz
Operating Mode:	Transmitting Channel 165 (34) 5825 MHz
Deviations:	No deviations.
Comments:	Operated per TPC power table, data randomization enabled. RF Shield soldered on 4 tabs

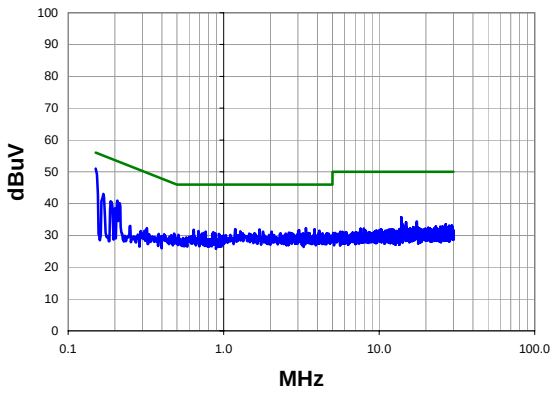
Test Specifications	**Test Method**
FCC 15.207:2011	ANSI C63.10:2009

Run #	6	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

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	30.9	20.1	51.0	66.0	-15.0
0.169	23.0	20.1	43.1	65.0	-21.9
0.208	20.8	20.1	40.9	63.3	-22.4
0.215	20.0	20.1	40.1	63.0	-22.9
0.187	20.6	20.1	40.7	64.2	-23.5
3.384	12.1	20.2	32.3	56.0	-23.7
1.184	11.9	20.1	32.0	56.0	-24.0
1.696	11.8	20.1	31.9	56.0	-24.1
3.840	11.7	20.2	31.9	56.0	-24.1
0.641	11.7	20.1	31.8	56.0	-24.2
13.850	15.1	20.6	35.7	60.0	-24.3
3.056	11.5	20.2	31.7	56.0	-24.3
4.128	11.3	20.2	31.5	56.0	-24.5
0.687	11.3	20.1	31.4	56.0	-24.6
1.280	11.2	20.1	31.3	56.0	-24.7
0.765	11.1	20.1	31.2	56.0	-24.8
1.792	11.1	20.1	31.2	56.0	-24.8
2.032	11.1	20.1	31.2	56.0	-24.8
0.857	10.9	20.1	31.0	56.0	-25.0
2.624	10.8	20.1	30.9	56.0	-25.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	30.9	20.1	51.0	56.0	-5.0
0.169	23.0	20.1	43.1	55.0	-11.9
0.208	20.8	20.1	40.9	53.3	-12.4
0.215	20.0	20.1	40.1	53.0	-12.9
0.187	20.6	20.1	40.7	54.2	-13.5
3.384	12.1	20.2	32.3	46.0	-13.7
1.184	11.9	20.1	32.0	46.0	-14.0
1.696	11.8	20.1	31.9	46.0	-14.1
3.840	11.7	20.2	31.9	46.0	-14.1
0.641	11.7	20.1	31.8	46.0	-14.2
13.850	15.1	20.6	35.7	50.0	-14.3
3.056	11.5	20.2	31.7	46.0	-14.3
4.128	11.3	20.2	31.5	46.0	-14.5
0.687	11.3	20.1	31.4	46.0	-14.6
1.280	11.2	20.1	31.3	46.0	-14.7
0.765	11.1	20.1	31.2	46.0	-14.8
1.792	11.1	20.1	31.2	46.0	-14.8
2.032	11.1	20.1	31.2	46.0	-14.8
0.857	10.9	20.1	31.0	46.0	-15.0
2.624	10.8	20.1	30.9	46.0	-15.1