Avnera

IRT
&
IRT AVMD7540
Radio Module

EMC Test Report

Report No. AVNE0071

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: April 17, 2010

Avnera

Model: IRT & IRT AVMD7540 Radio Module

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Spurious Radiated Emissions	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Occupied Bandwidth	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Output Power – Channel Power	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Band Edge Compliance	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Spurious Conducted Emissions	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Power Spectral Density	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
AC Powerline Conducted Emissions	FCC 15.209:2010	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 United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. 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.

NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0
NVLAP LAB CODE 200881-0

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.

NEMKO

Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

Accreditations and Authorizations

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).

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-1784, 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). License No.SL2-IN-E-1017.

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)*

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

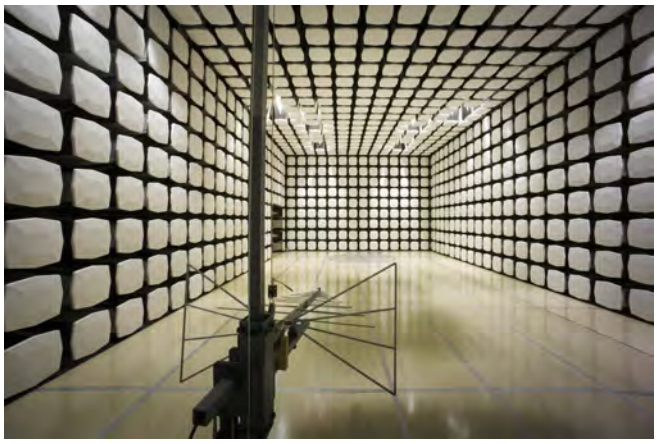
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

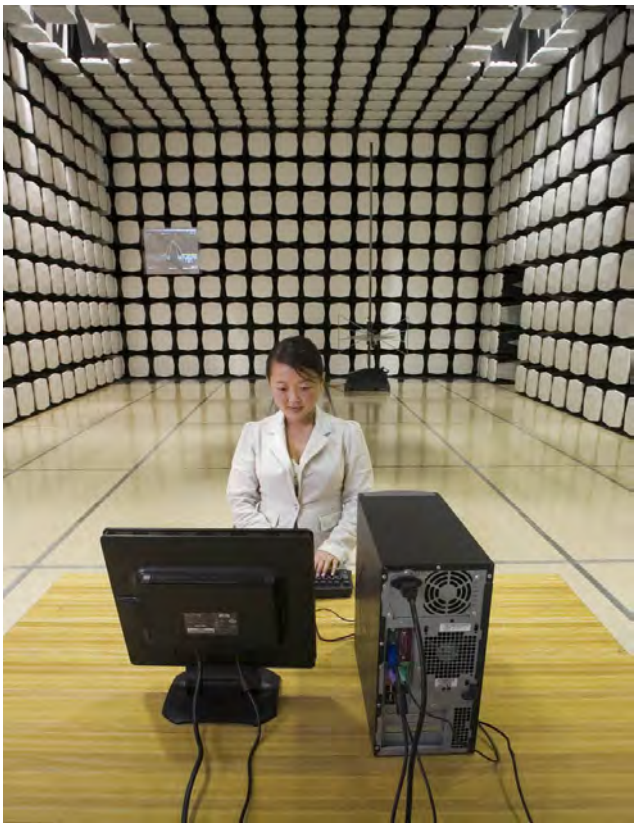
California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

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:	Avnera
Address:	16505 NW Bethany Ct, Suite 100
City, State, Zip:	Beaverton, OR 97006
Test Requested By:	Fred Weiss
Model:	IRT & IRT AVMD7540 Radio Module
First Date of Test:	April 15, 2010
Last Date of Test:	April 17, 2010
Receipt Date of Samples:	April 15, 2010
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
2.4 GHz ISM radio

Testing Objective:
Seeking approval by a TCB under FCC 15.247

CONFIGURATION 1 AVNE0071

Software/Firmware Running during test	
Description	**Version**
IRT_AV7540_PP	115.1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	Avnera	IRT	3
IRT Radio Module	Avnera	AVMD7540 WNC Lot NBYZ	10

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AVR	Insignia	NS-R5101AHD	2882DCPOO20600023

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power Cable	No	2 meters	No	AVR	AC Mains
Subwoofer Cable	No	4 meters bundled to 1.2m	No	PRE on AVR	EUT
Uport Cable	No	1.2 meters	No	PORT on AVR	EUT
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 AVNE0071

Software/Firmware Running during test	
Description	**Version**
AV7540_Client_REL113_B	113.1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
IRT Radio Module	Avnera	AVMD7540 WNC Lot NBYZ	1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Test Fixture	Avnera	AVTF-70	3

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB-SPY convertor	Avnera	Anteater	74
Control PC	Dell	Inspiron 6400	Unknown

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power Cable	No	2 meters	No	AVTF-70	AC Mains
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	4/15/2010	Spurious Radiated Emissions	Modified from delivered configuration. Initial or No Modification	Transmit Power reduced to 143, Antenna Port 1 shunt inductor removed. Modification authorized by Fred Weiss of Avnera.	EUT remained at Northwest EMC following the test.
2	4/17/2010	Output Power – Channel 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.
3	4/17/2010	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.
4	4/17/2010	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	4/17/2010	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	4/17/2010	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.
7	4/17/2010	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.

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	6/1/2009	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13

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 2010.01.14

EUT:	IRT AVMD7540 Radio Module			**Work Order:**	AVNE0071
Serial Number:	1			**Date:**	04/17/10
Customer:	Avnera			**Temperature:**	22°C
Attendees:	Fred Weiss			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	29.95 in
Tested by:	Rod Peloquin	**Power:**	5VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

Target Power setting 143. Antenna 1 (port 0)

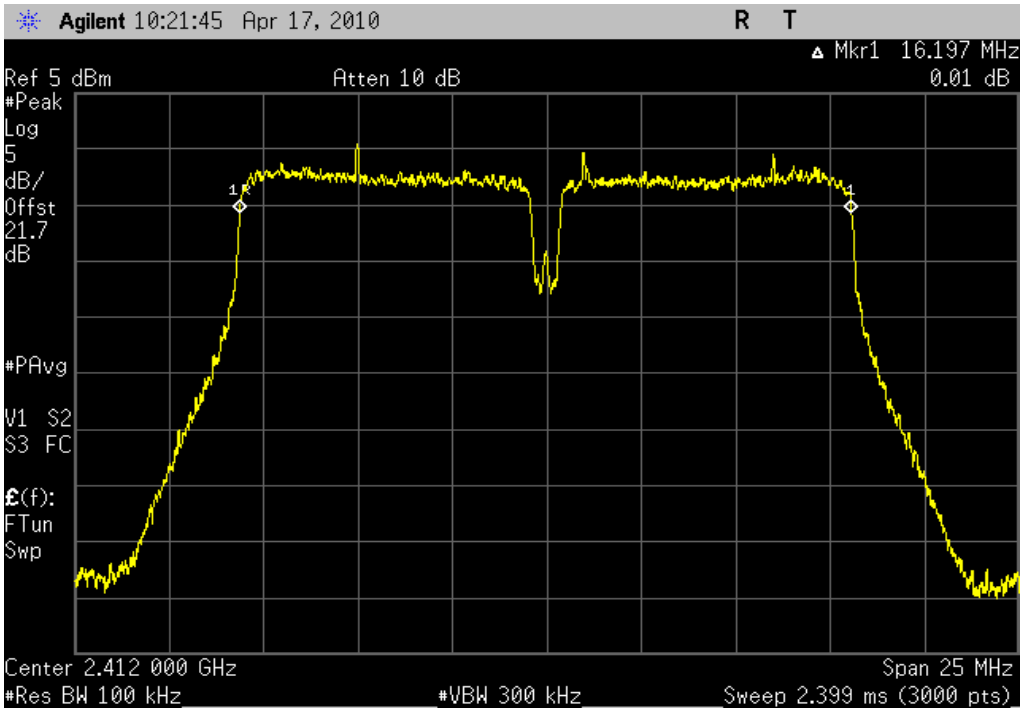
DEVIATIONS FROM TEST STANDARD

No Deviations

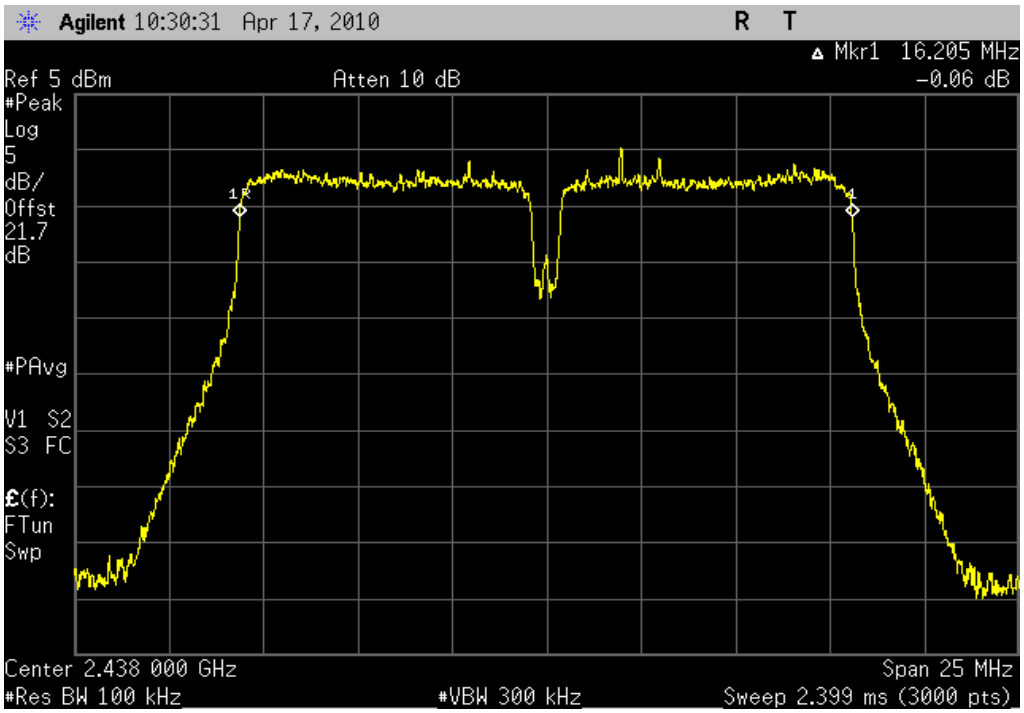
Configuration #	2	Signature

	Value	Limit	Results
Low Channel	16.197 MHz	> 500 kHz	Pass
Mid Channel	16.205 MHz	> 500 kHz	Pass
High Channel	16.214 MHz	> 500 kHz	Pass

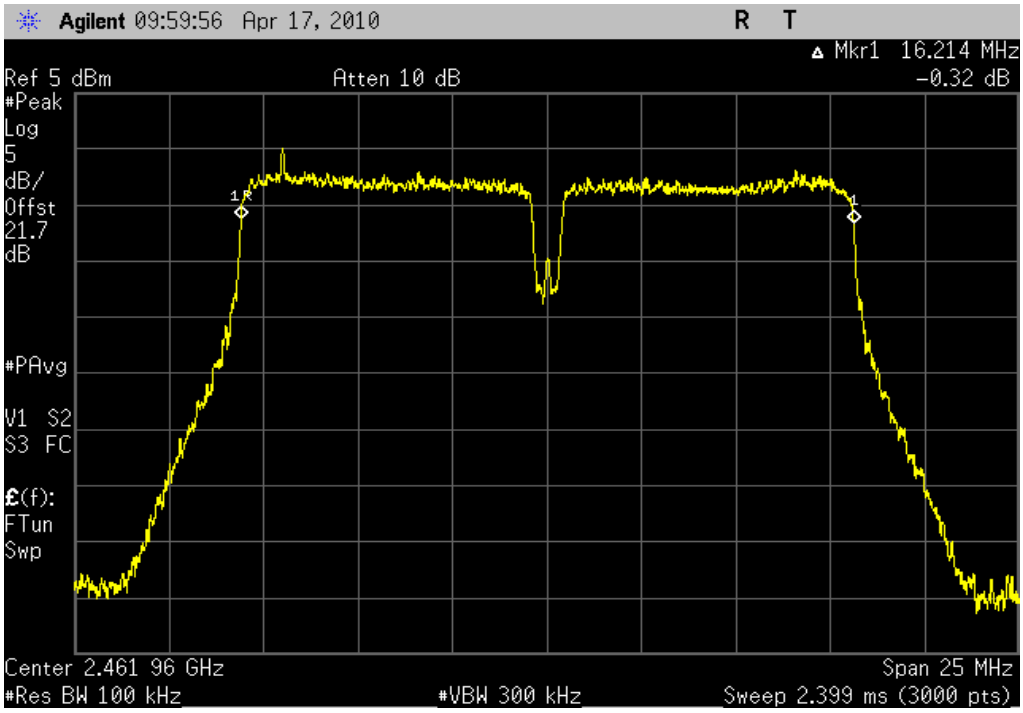
Low Channel					
Result:	Pass	**Value:**	16.197 MHz	**Limit:**	> 500 kHz



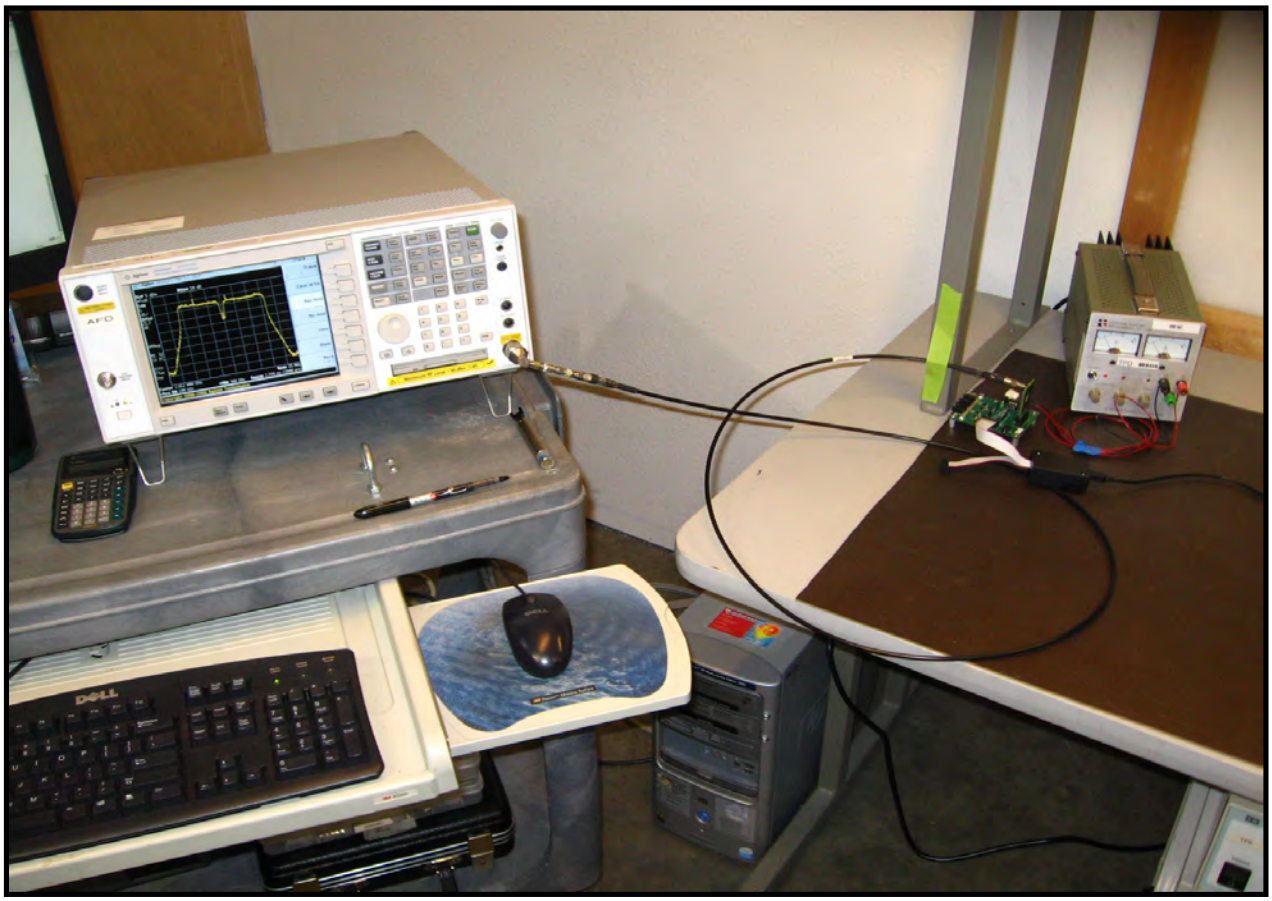
Mid Channel					
Result:	Pass	**Value:**	16.205 MHz	**Limit:**	> 500 kHz

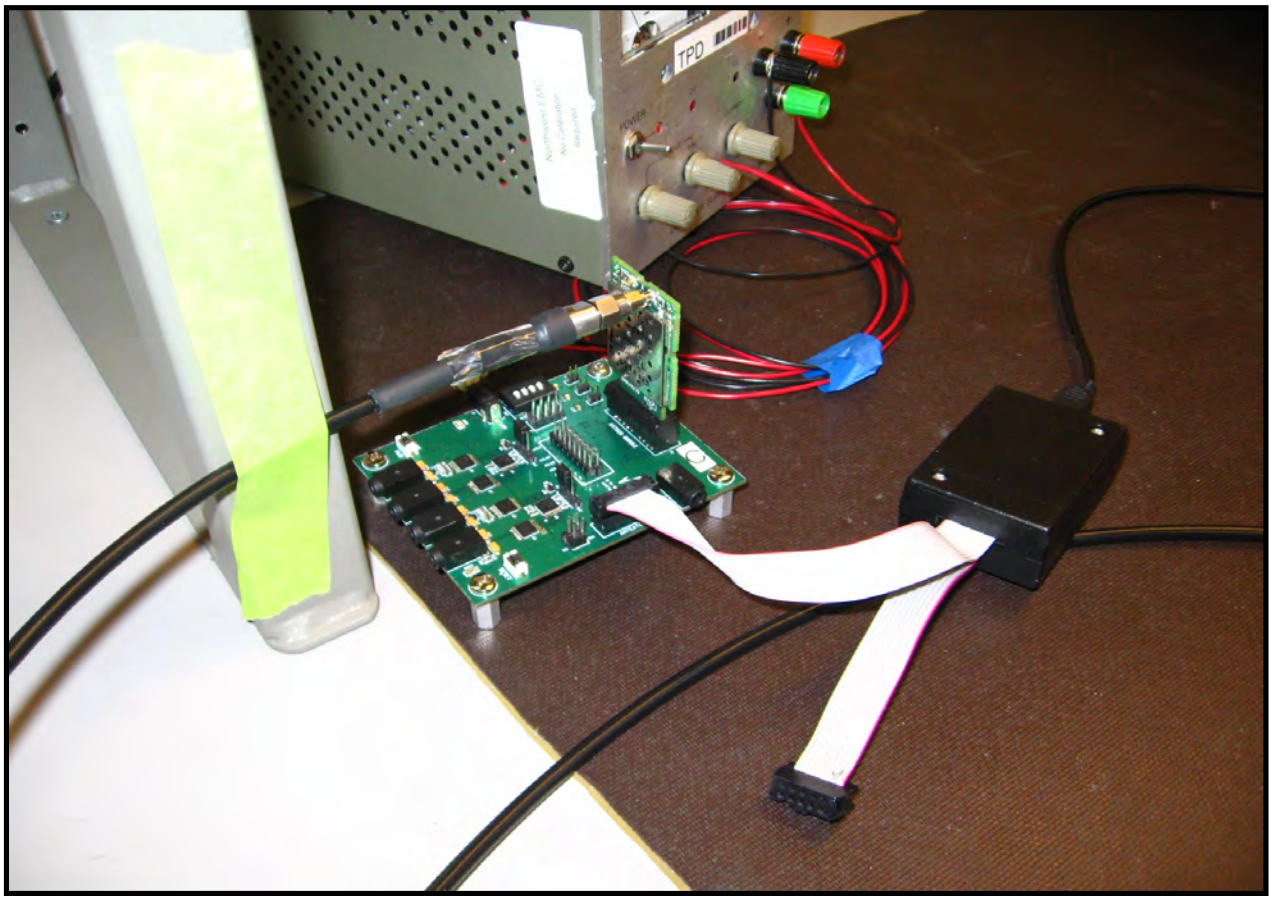


High Channel					
Result:	Pass	**Value:**	16.214 MHz	**Limit:**	> 500 kHz



> 500 kHz




TPD

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	6/1/2009	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
Power Meter	Gigatronics	8651A	SPM	1/7/2010	13
Power Sensor	Gigatronics	80701A	SPL	1/7/2010	13
Signal Generator	Agilent	E8257D	TGX	12/10/2008	24

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. The transmit power was set to that shown on the data sheet. 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.
- .The settings used were those called out in ANSI C63.10: 2009, Section 6.10.3.1. Method 1

NORTHWEST EMC

OUTPUT POWER - CHANNEL POWER

XMit 2010.01.14

EUT:	IRT AVMD7540 Radio Module			**Work Order:**	AVNE0071
Serial Number:	9			**Date:**	04/17/10
Customer:	Avnera			**Temperature:**	22°C
Attendees:	Fred Weiss			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	29.95 in
Tested by:	Rod Peloquin	**Power:**	5VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

Target Power setting 143

DEVIATIONS FROM TEST STANDARD

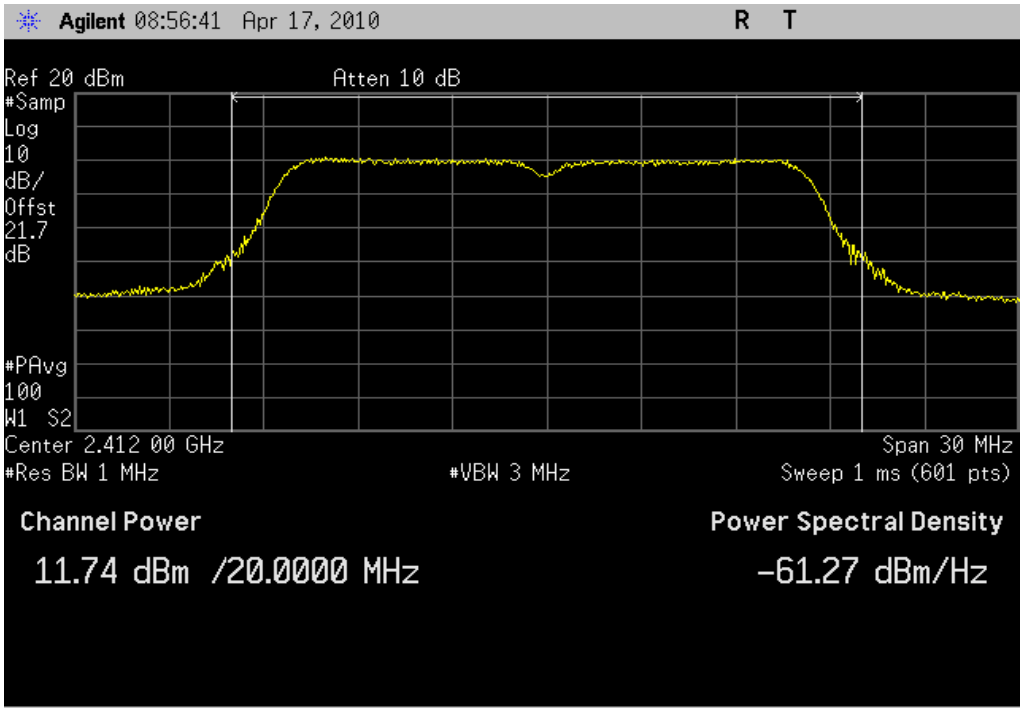
No Deviations

Configuration #	2	Signature

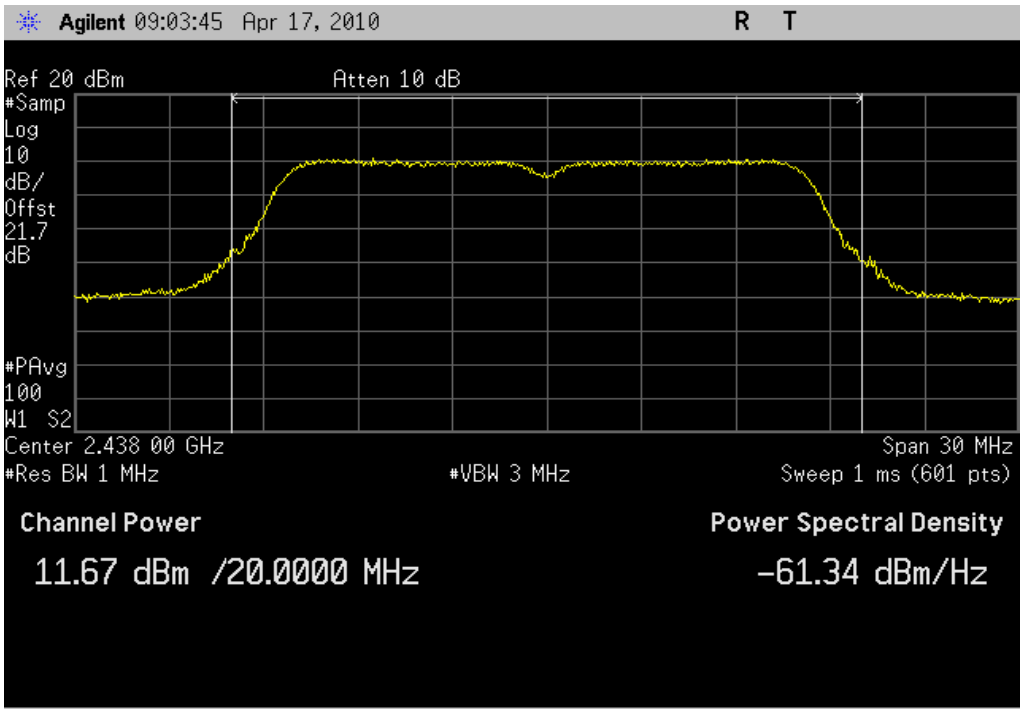
		Value	Limit	Results
Antenna 1 (port 0)				
	Low Channel	11.74 dBm	30 dBm	Pass
	Mid Channel	11.67 dBm	30 dBm	Pass
	High Channel	11.42 dBm	30 dBm	Pass
Antenna 2 (port 1)				
	Low Channel	11.15 dBm	30 dBm	Pass
	Mid Channel	11.00 dBm	30 dBm	Pass
	High Channel	11.24 dBm	30 dBm	Pass

OUTPUT POWER - CHANNEL POWER

Antenna Port 1, Low Channel					
Result:	Pass	**Value:**	11.74 dBm	**Limit:**	30 dBm

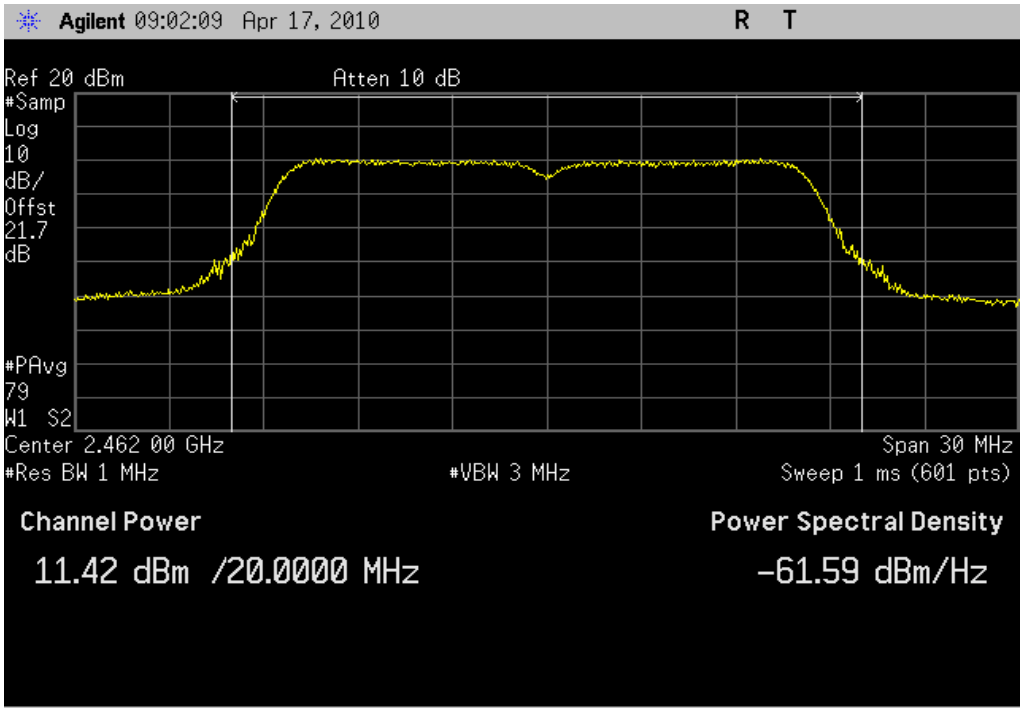


Antenna Port 1, Mid Channel					
Result:	Pass	**Value:**	11.67 dBm	**Limit:**	30 dBm

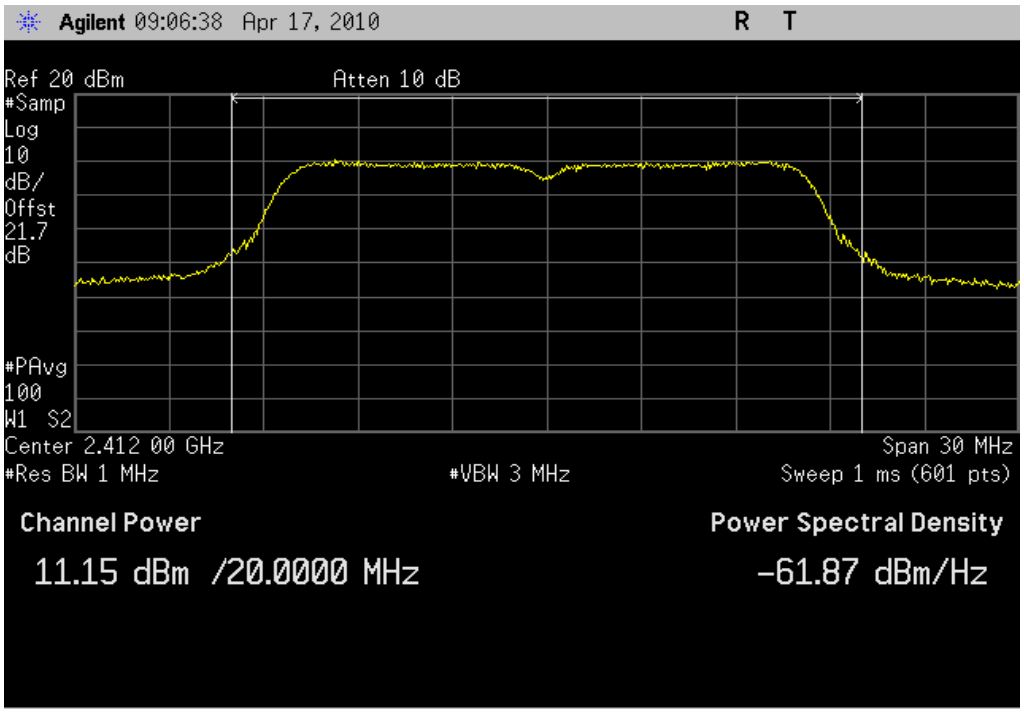


OUTPUT POWER - CHANNEL POWER

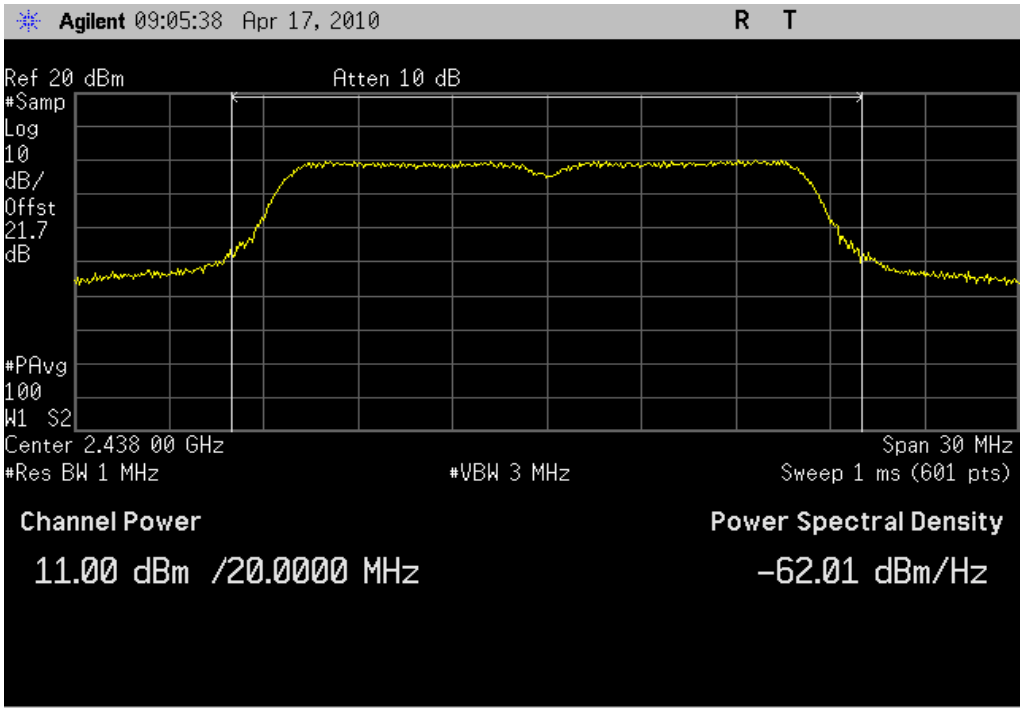
Antenna Port 1, High Channel					
Result:	Pass	**Value:**	11.42 dBm	**Limit:**	30 dBm



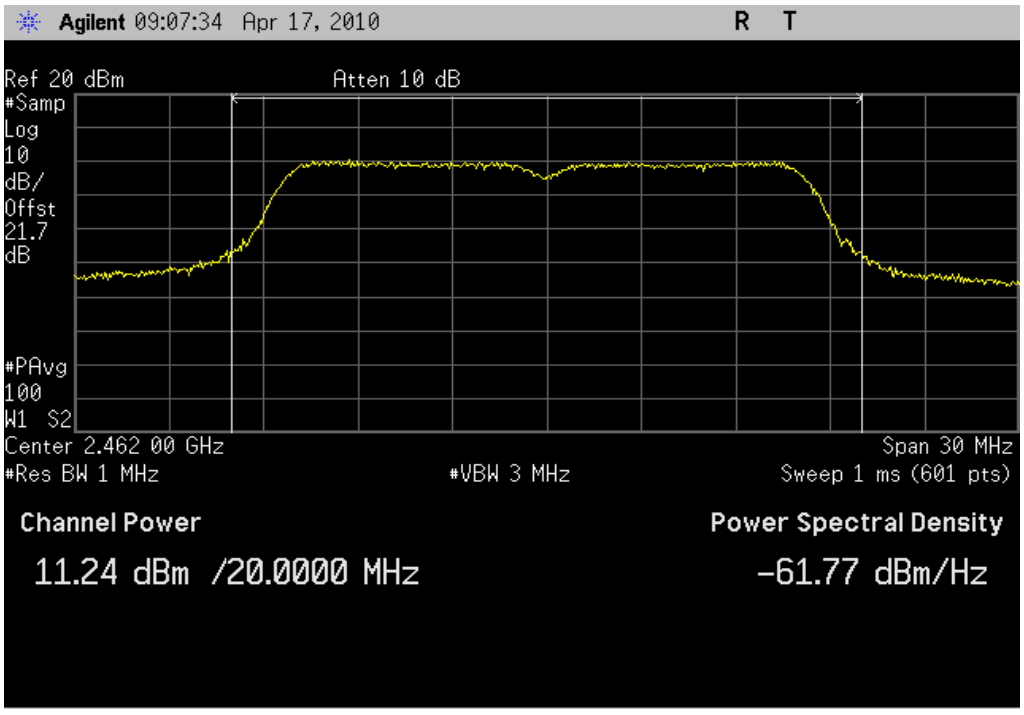
Antenna Port 2, Low Channel					
Result:	Pass	**Value:**	11.15 dBm	**Limit:**	30 dBm

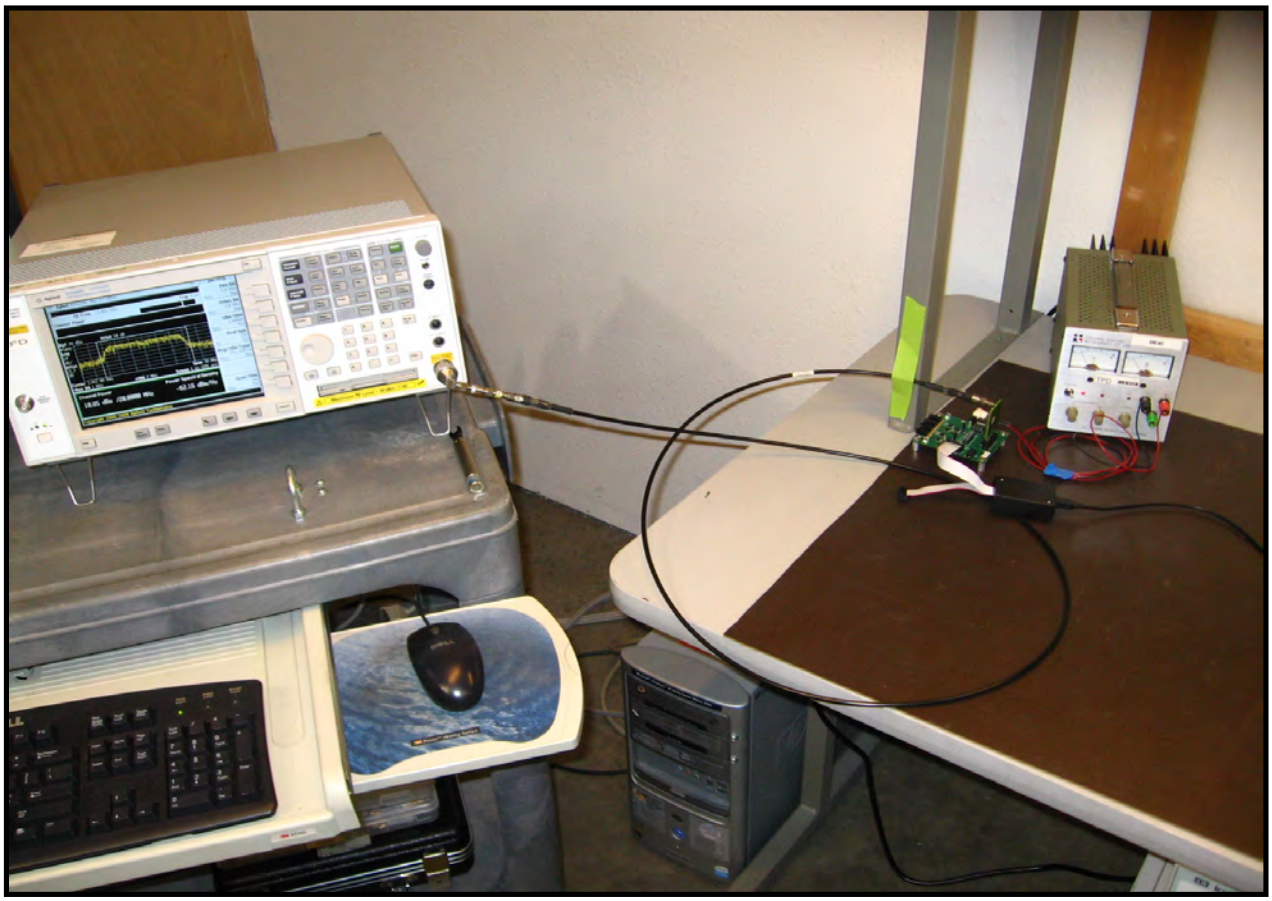


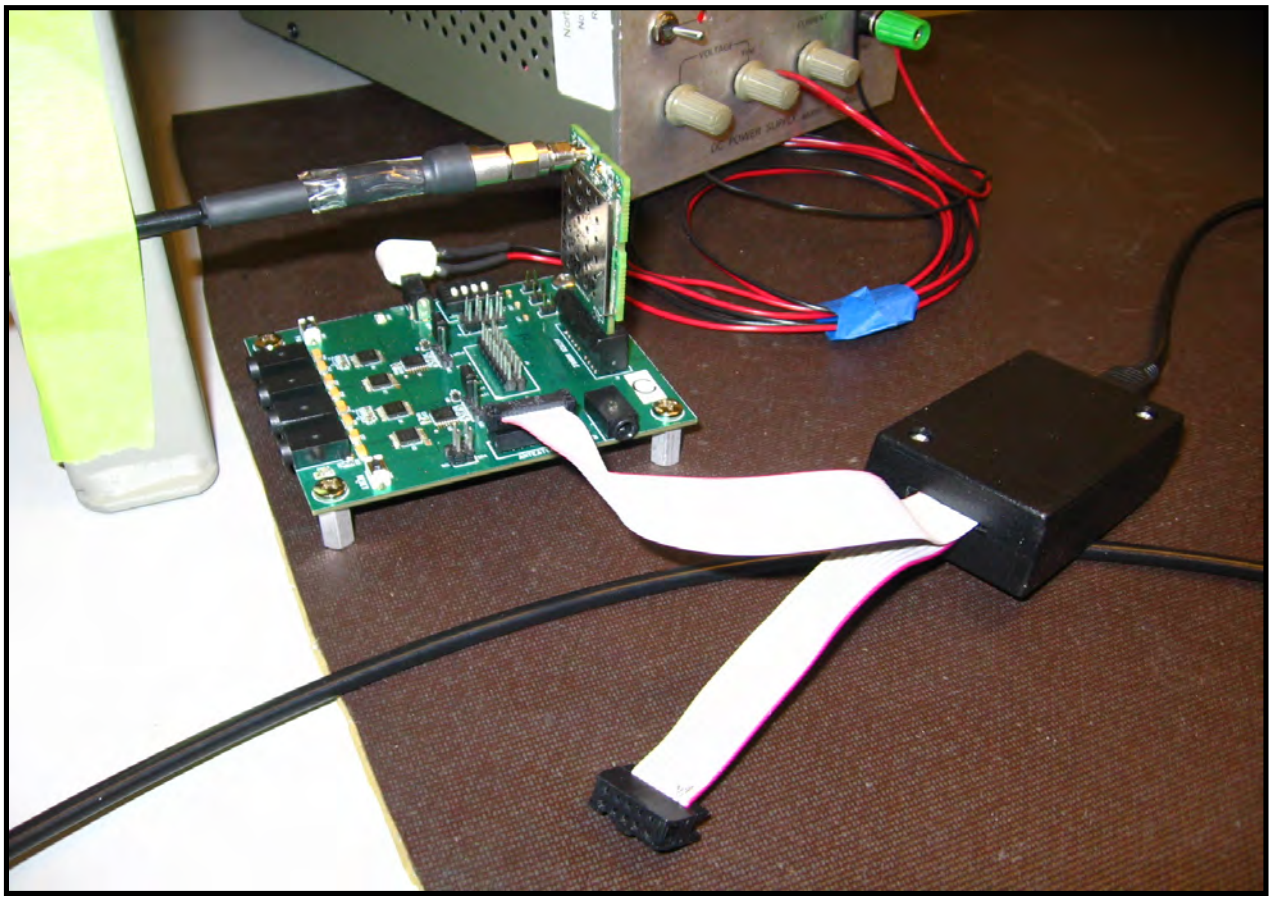
Antenna Port 2, Mid Channel					
Result:	Pass	**Value:**	11.00 dBm	**Limit:**	30 dBm



Antenna Port 2, High Channel					
Result:	Pass	**Value:**	11.24 dBm	**Limit:**	30 dBm







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
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EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13

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 2010.01.14

EUT:	IRT AVMD7540 Radio Module			Work Order:	AVNE0071
Serial Number:	1			Date:	04/17/10
Customer:	Avnera			Temperature:	22°C
Attendees:	Fred Weiss			Humidity:	38%
Project:	None			Barometric Pres.:	29.95 in
Tested by:	Rod Peloquin	Power:	5VDC	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

Target Power setting 143. Antenna 1 (port 0)

DEVIATIONS FROM TEST STANDARD

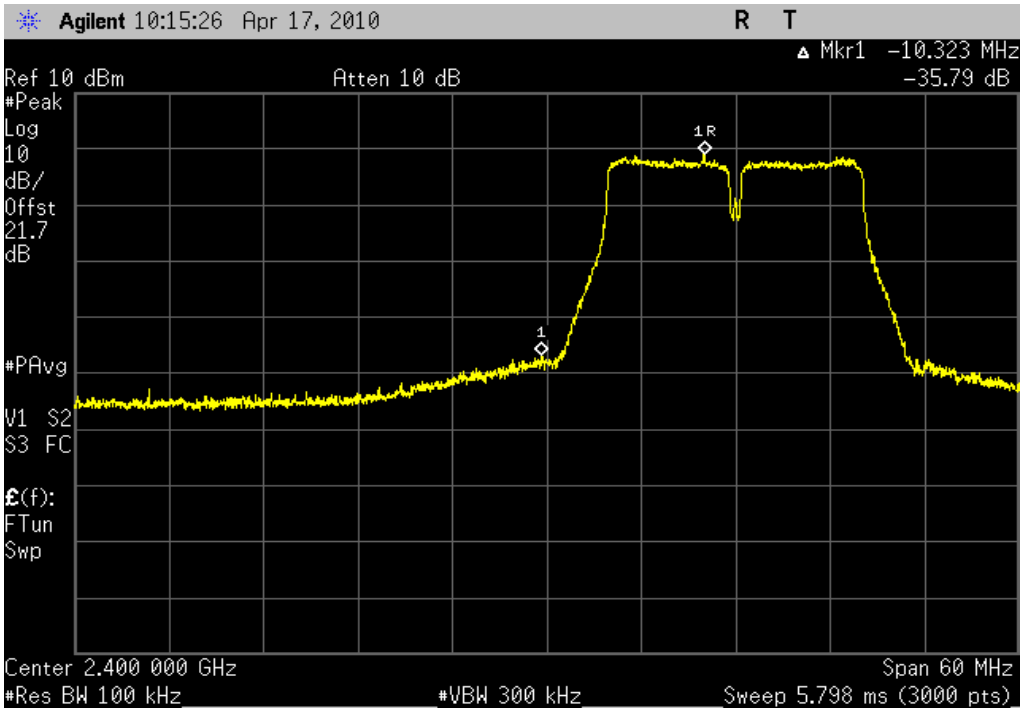
No Deviations

Configuration #	2	Signature

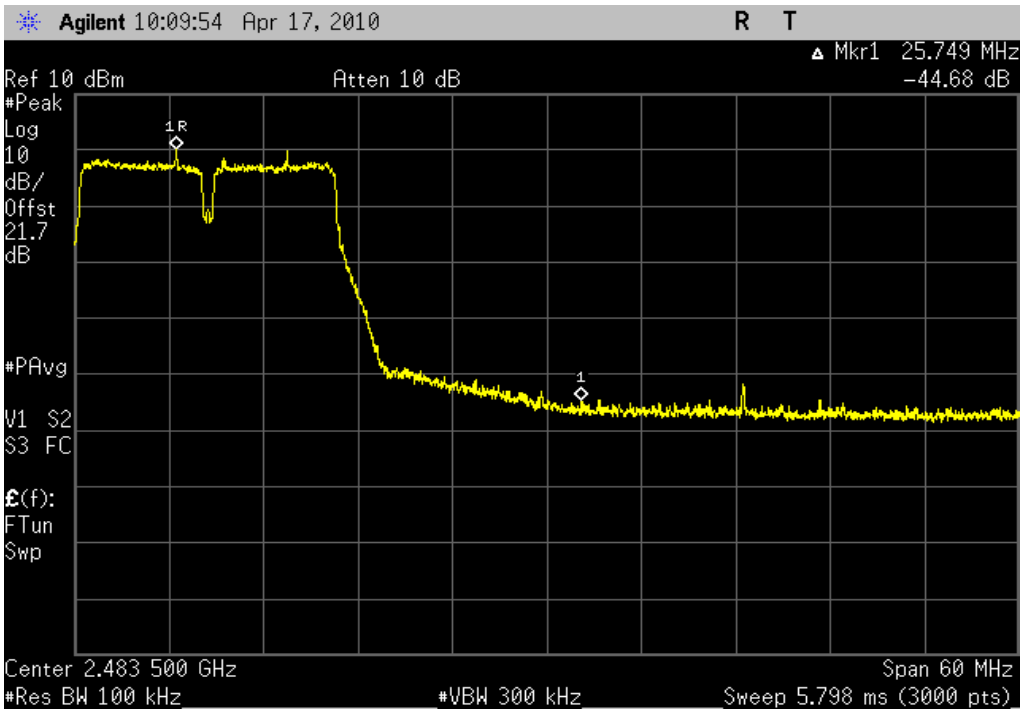
	Value	Limit	Results
Low Channel	-35.8 dBc	≤ -20 dBc	Pass
High Channel	-44.7 dBc	≤ -20 dBc	Pass

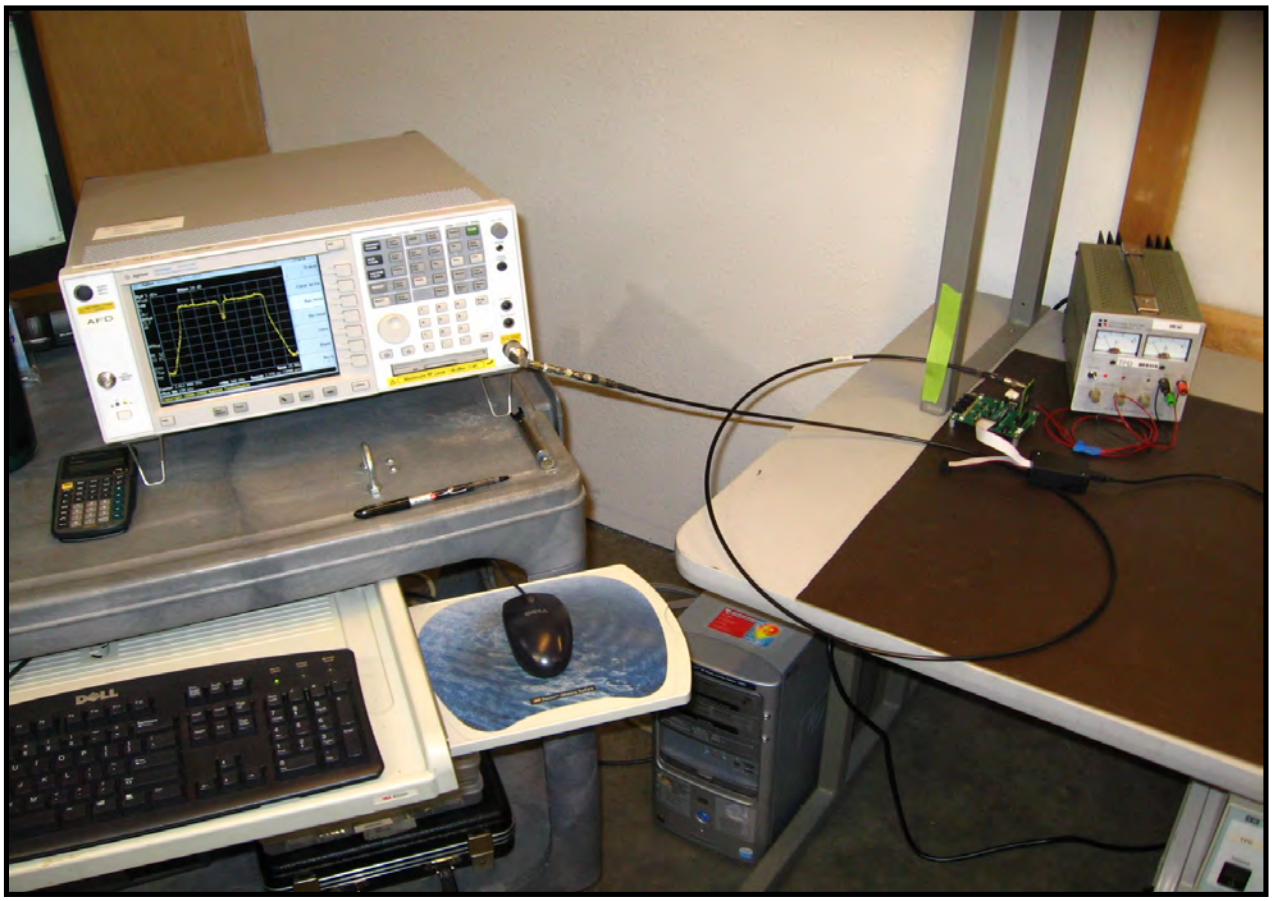
BAND EDGE COMPLIANCE

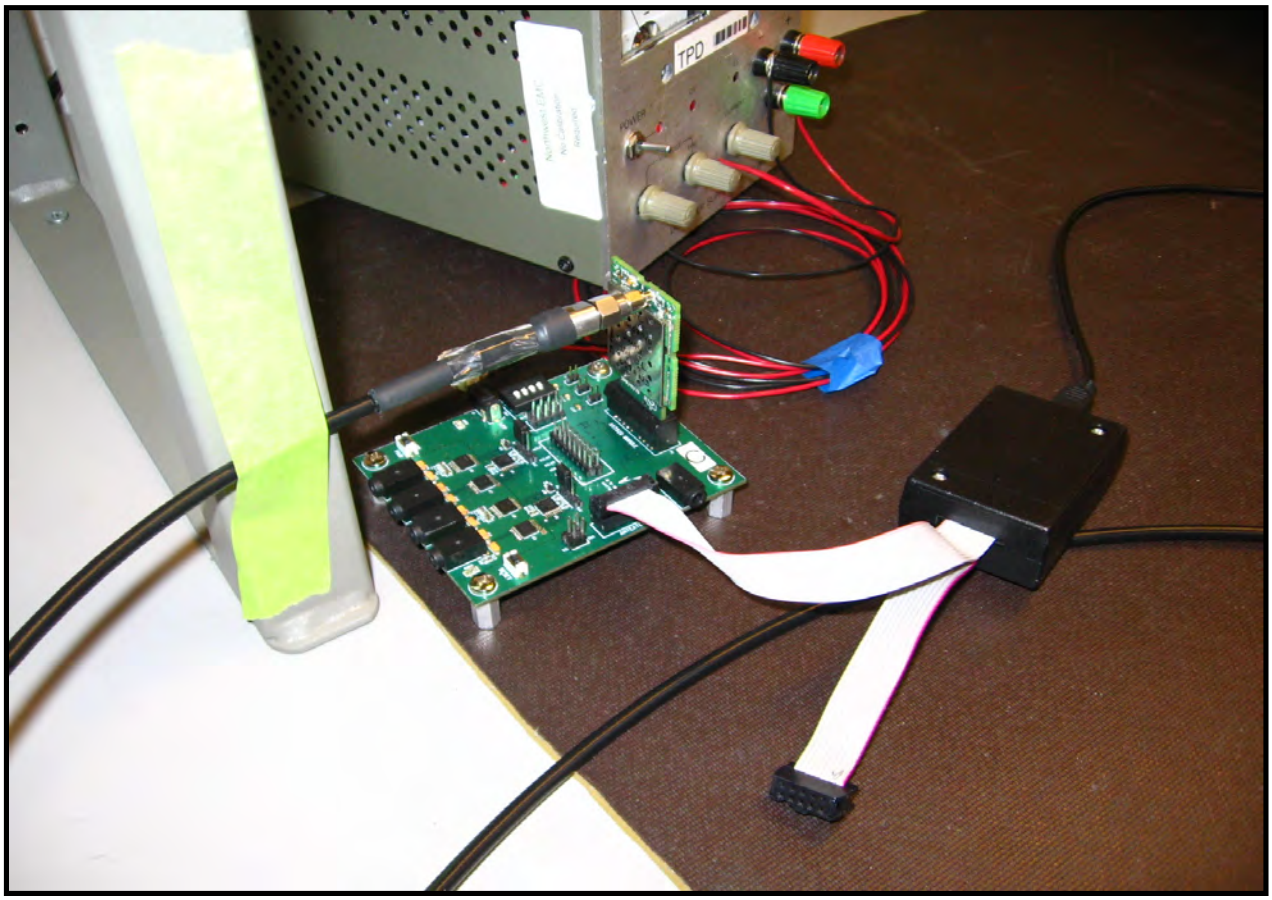
Low Channel					
Result:	Pass	**Value:**	-35.8 dBc	**Limit:**	≤ -20 dBc



High Channel					
Result:	Pass	**Value:**	-44.7 dBc	**Limit:**	≤ -20 dBc






TPD

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	AFD	6/1/2009	24
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
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. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

NORTHWEST EMC

SPURIOUS CONDUCTED EMISSIONS

XMit 2010.01.14

EUT:	IRT AVMD7540 Radio Module			**Work Order:**	AVNE0071
Serial Number:	1			**Date:**	04/17/10
Customer:	Avnera			**Temperature:**	22°C
Attendees:	Fred Weiss			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	29.95 in
Tested by:	Rod Peloquin	**Power:**	5VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

Target Power setting 143. Antenna 1 (port 0)

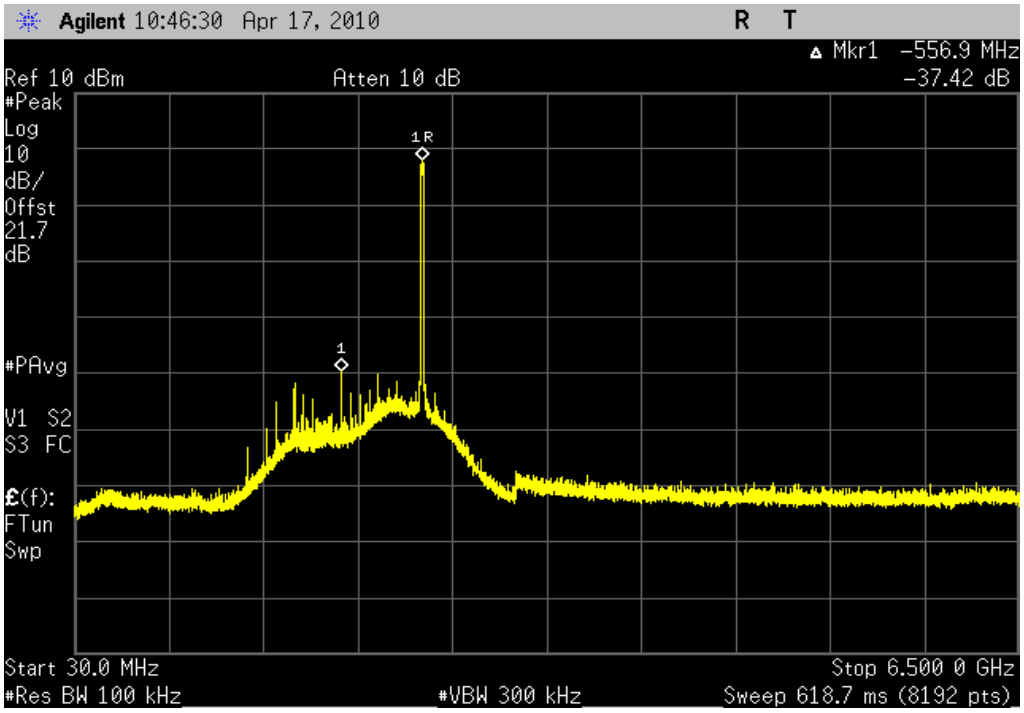
DEVIATIONS FROM TEST STANDARD

No Deviations

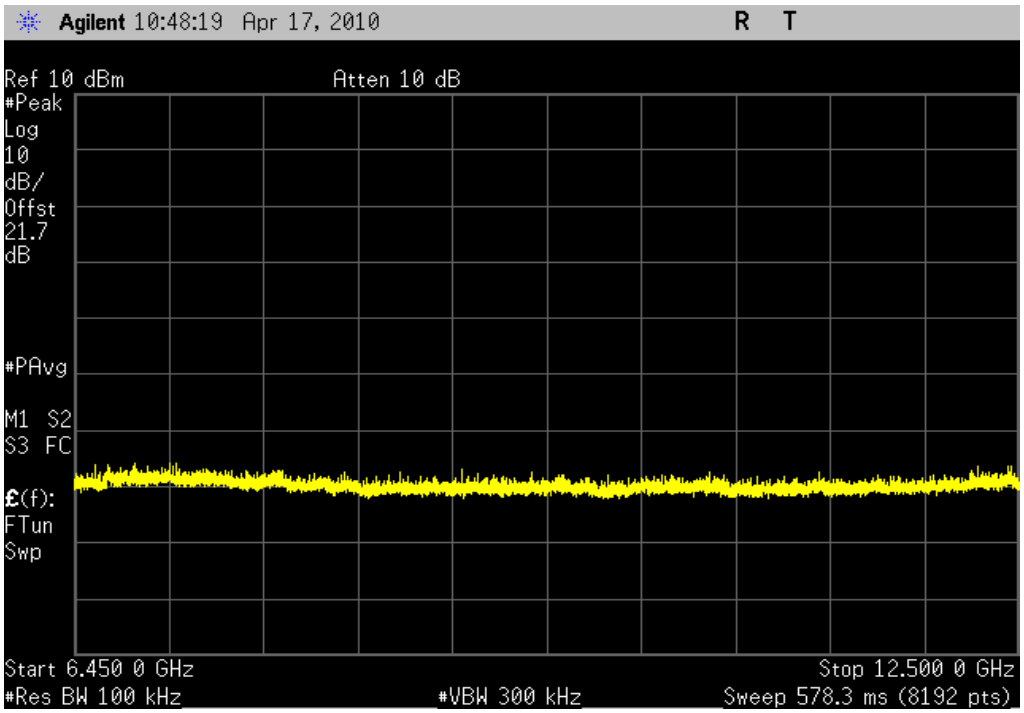
Configuration #	2	Signature

		Value	Limit	Results
Low Channel				
	30 MHz - 6.5 GHz	-37.4 dBc	≤ -20 dBc	Pass
	6.45 GHz - 12.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.5 GHz - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
Mid Channel				
	30 MHz - 6.5 GHz	-37.2 dBc	≤ -20 dBc	Pass
	6.45 GHz - 12.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.5 GHz - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
High Channel				
	30 MHz - 6.5 GHz	-37.7 dBm	≤ -20 dBc	Pass
	6.45 GHz - 12.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.5 GHz - 25 GHz	< -40 dBc	≤ -20 dBc	Pass

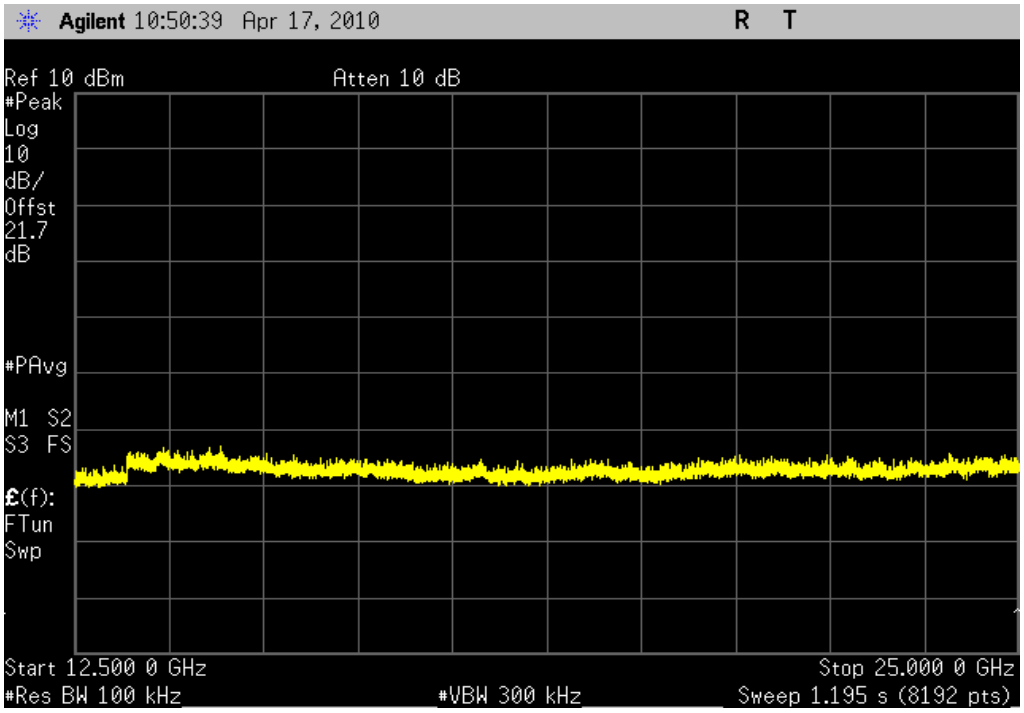
Low Channel, 30 MHz - 6.5 GHz					
Result:	Pass	**Value:**	-37.4 dBc	**Limit:**	≤ -20 dBc



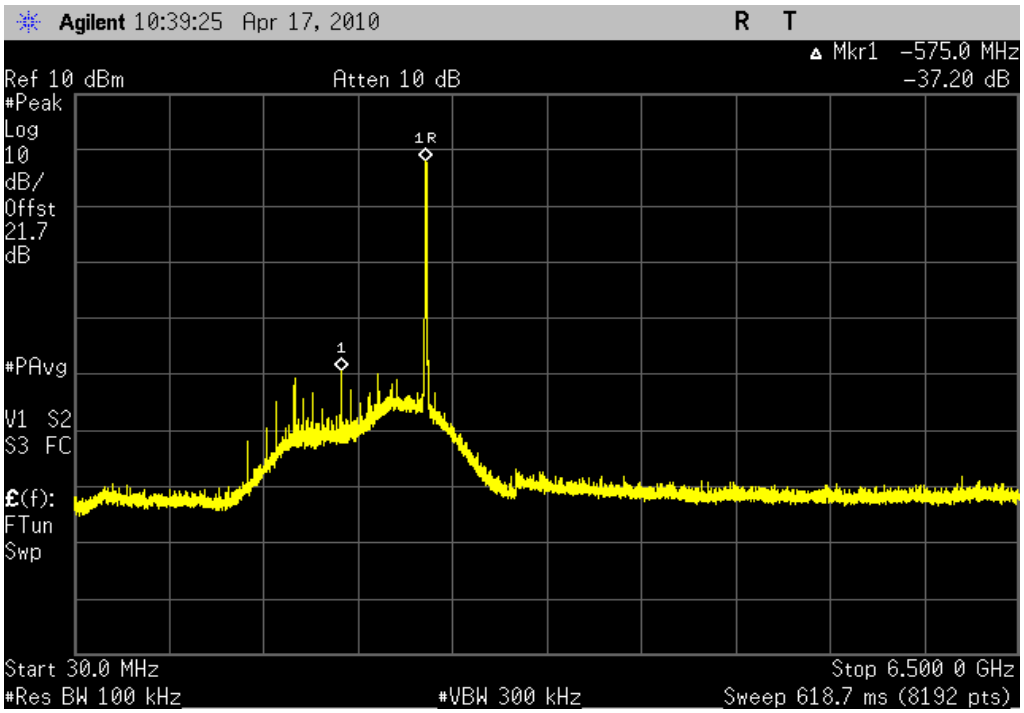
Low Channel, 6.45 GHz - 12.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



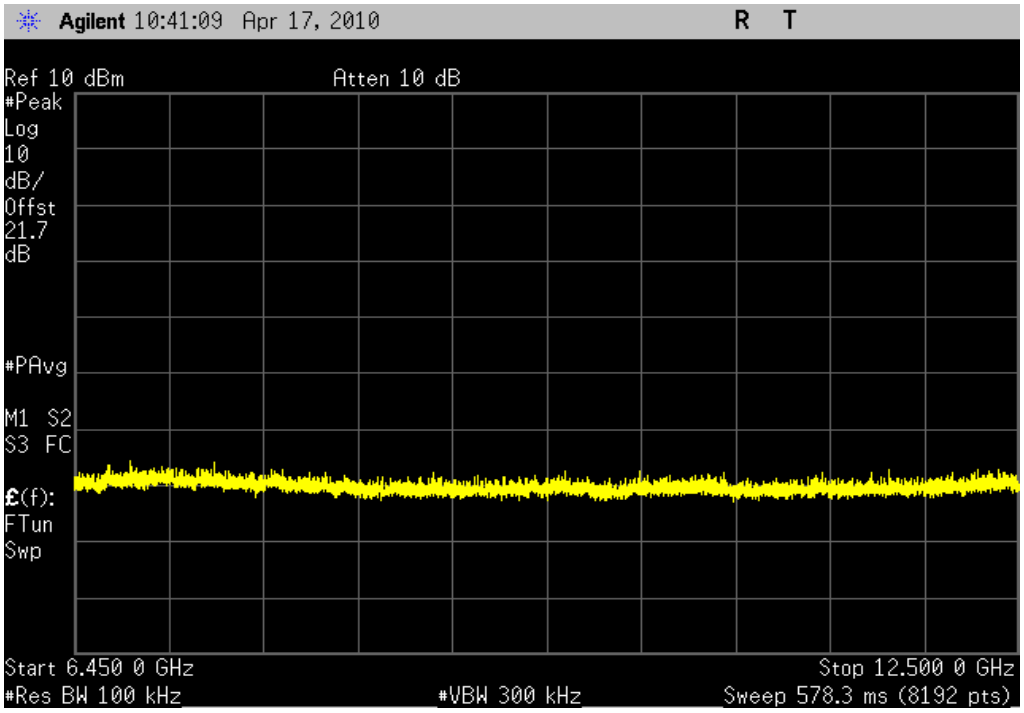
Low Channel, 12.5 GHz - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



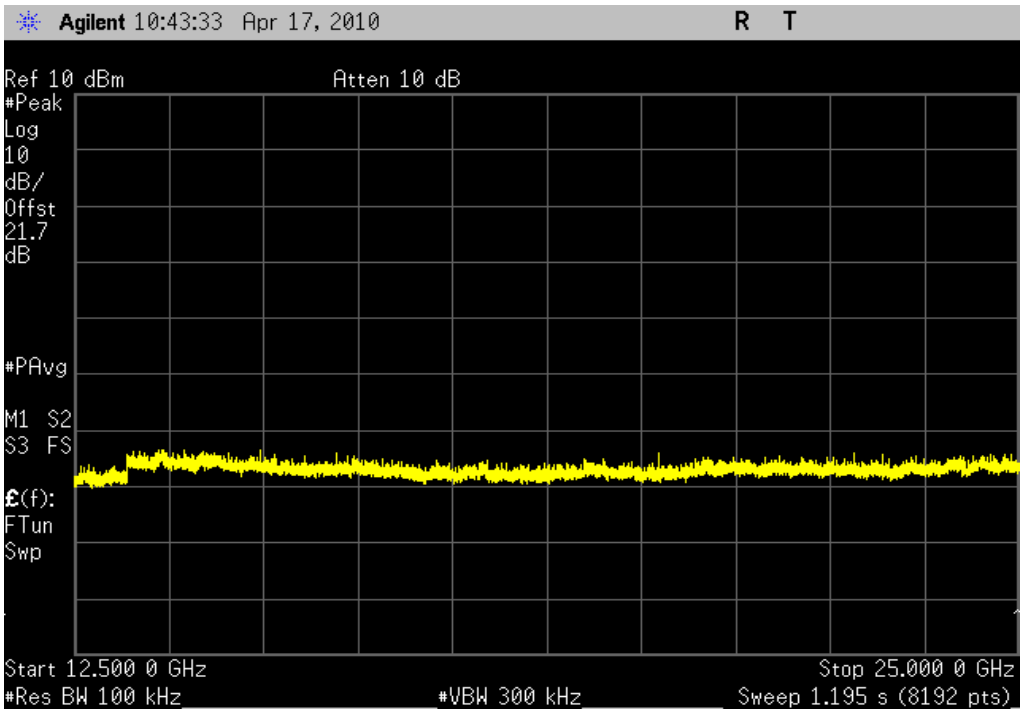
Mid Channel, 30 MHz - 6.5 GHz					
Result:	Pass	**Value:**	-37.2 dBc	**Limit:**	≤ -20 dBc



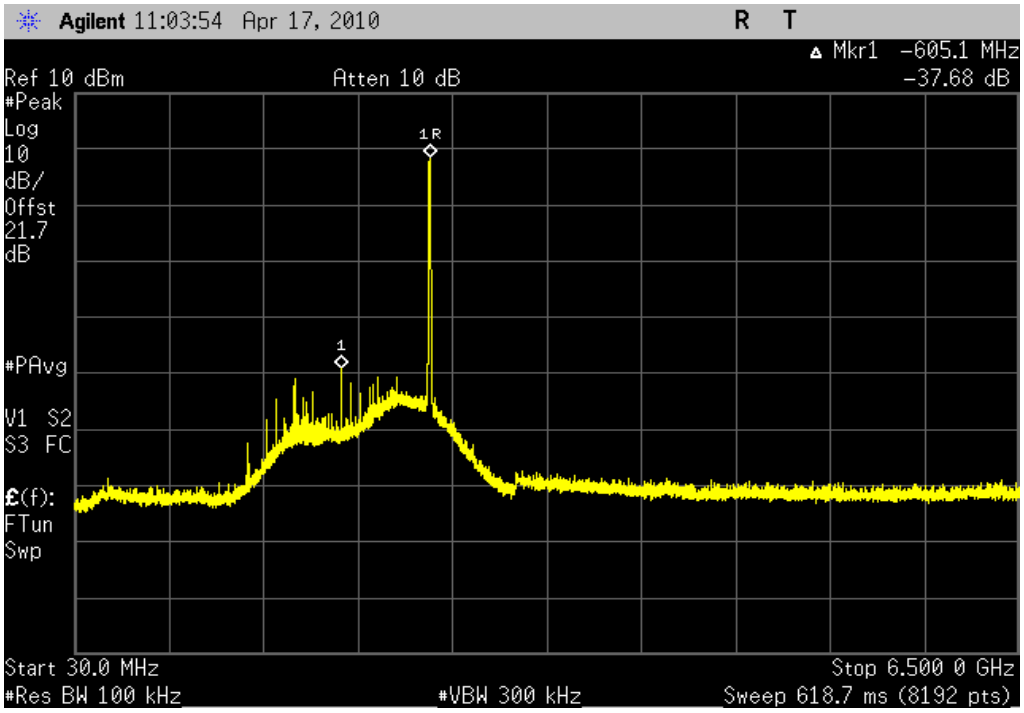
Mid Channel, 6.45 GHz - 12.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



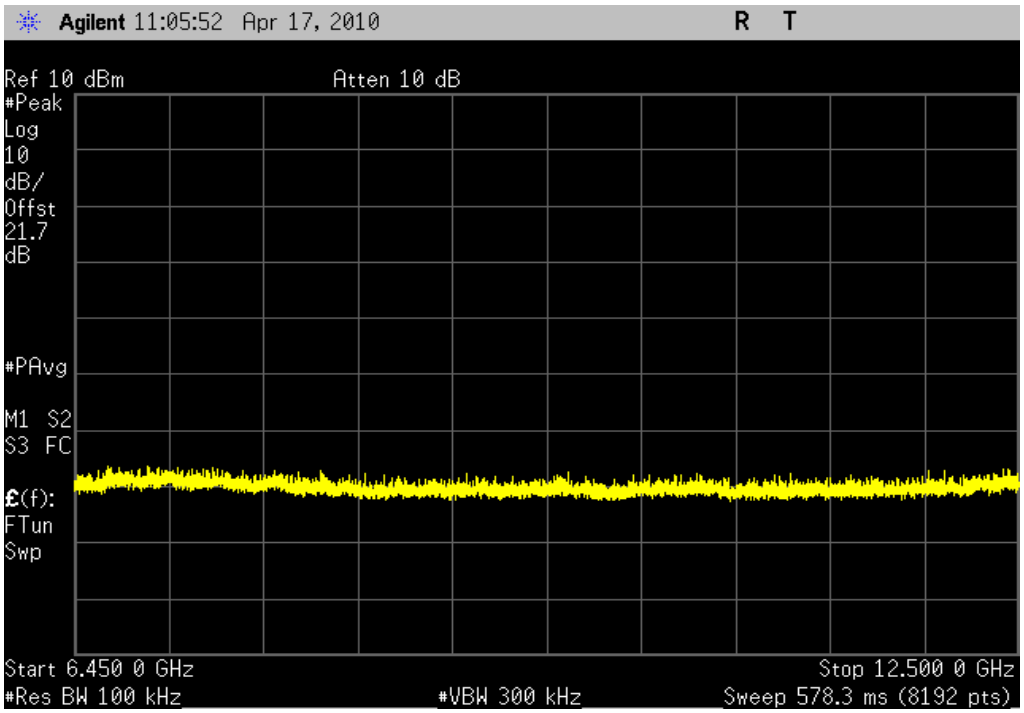
Mid Channel, 12.5 GHz - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



High Channel, 30 MHz - 6.5 GHz					
Result:	Pass	**Value:**	-37.7 dBm	**Limit:**	≤ -20 dBc

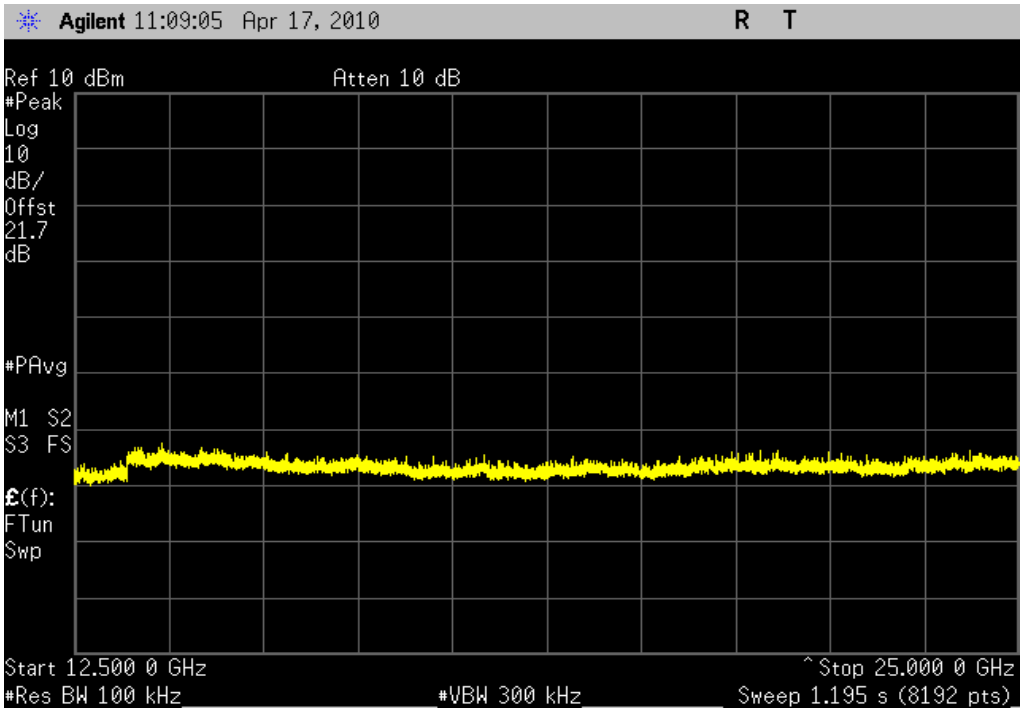


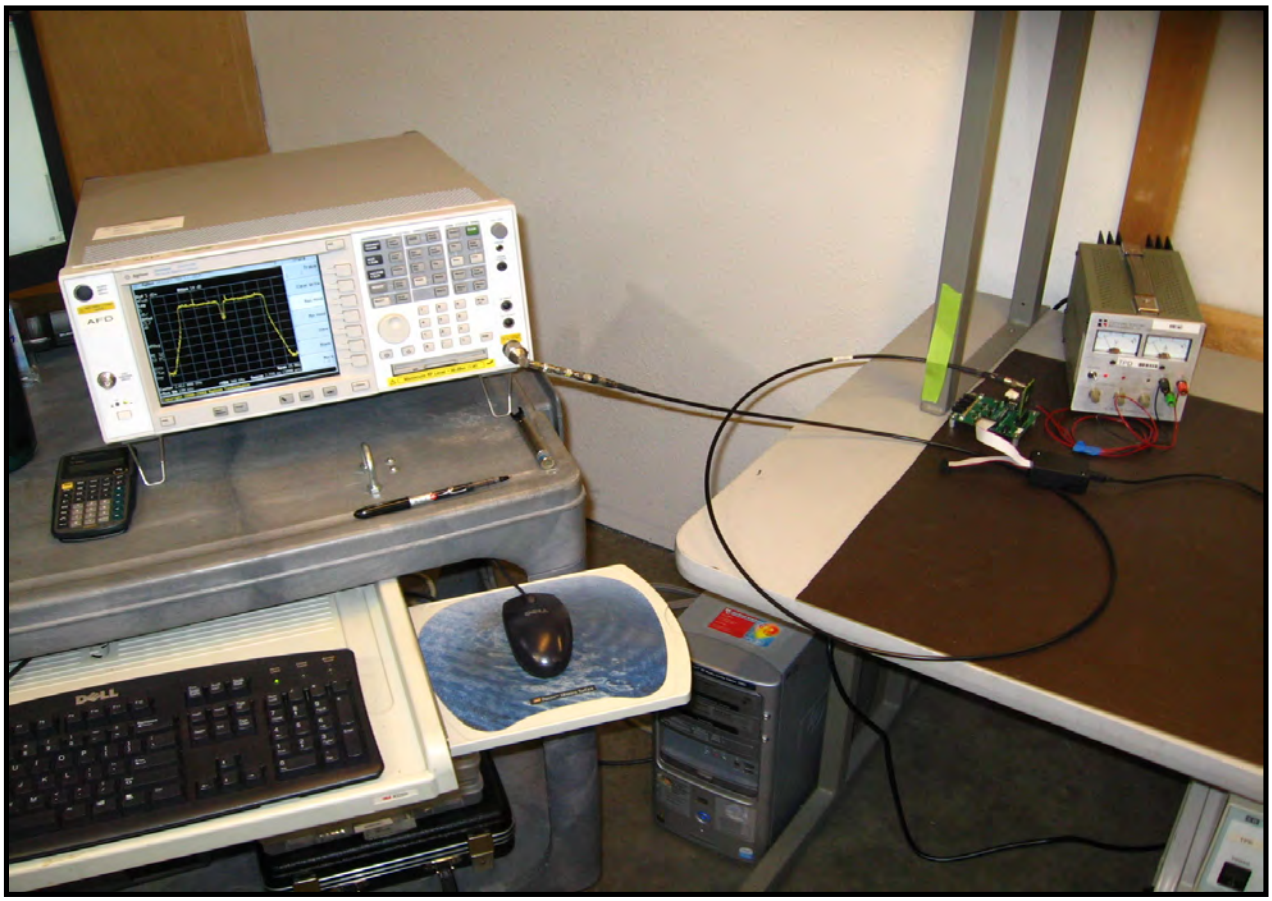
High Channel, 6.45 GHz - 12.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc

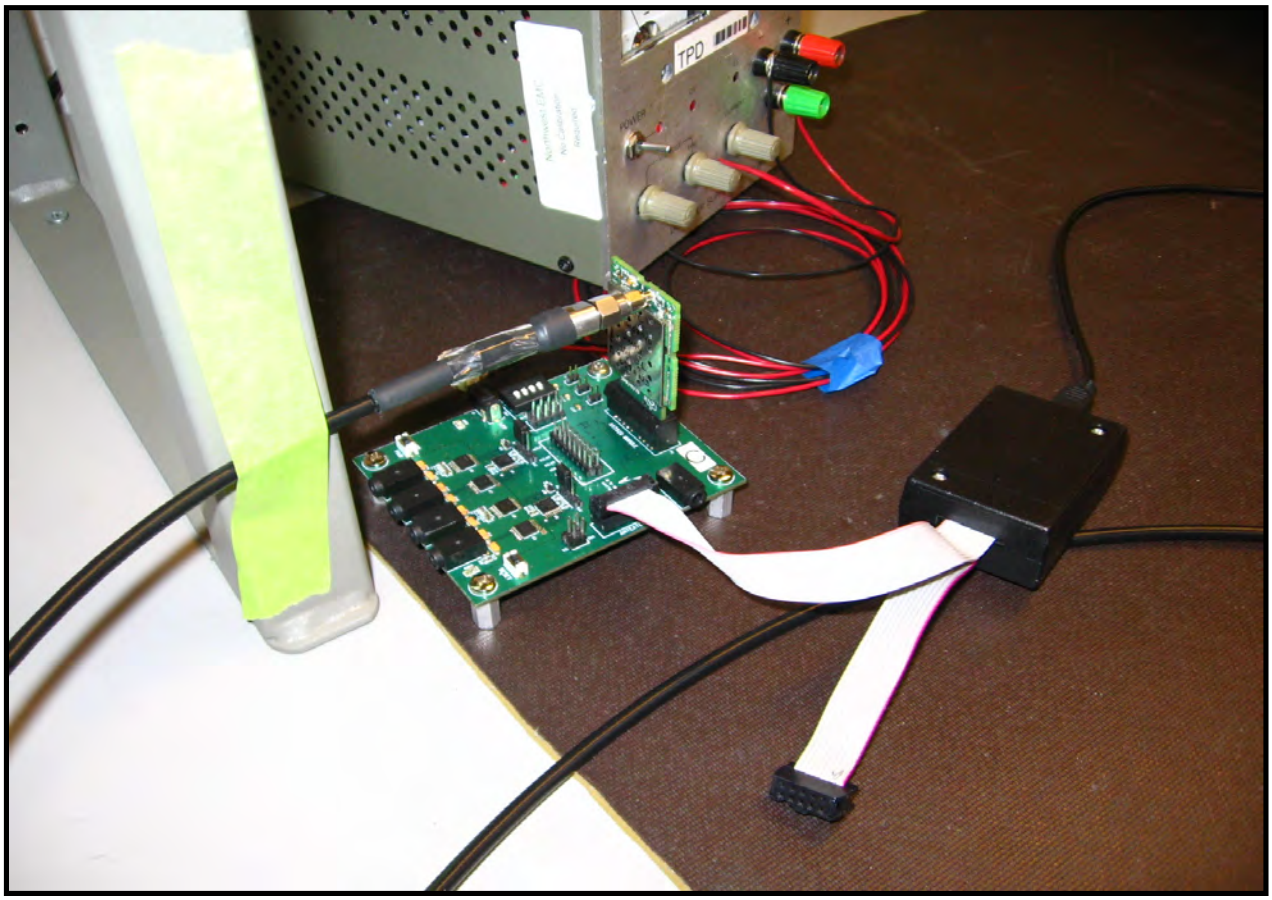


SPURIOUS CONDUCTED EMISSIONS

High Channel, 12.5 GHz - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc




DELL


TPD

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	6/1/2009	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
Power Meter	Gigatronics	8651A	SPM	1/7/2010	13
Power Sensor	Gigatronics	80701A	SPL	1/7/2010	13
Signal Generator	Agilent	E8257D	TGX	12/10/2008	24

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. Since the average output power was measured as defined in section ANSI C63.10:2009, section 6.10.3.1, the procedure outlined in section 6.11.2.4 was used. The spectrum analyzer was set as follows:

Locate and zoom in on emission peak(s) within the passband.

a) Set RBW = 3 kHz

b) Set VBW = 9 kHz

c) Set Sweep time to Automatic

d) Use a peak detector. A sample detector mode can be used only if the following conditions can be achieved with automatic sweep time and adjusting the bin width.

1) Bin width (i.e., span/number of points in spectrum display) < 0.5 RBW.

2) The transmission pulse or sequence of pulses remains at maximum transmit power throughout each of the 100 sweeps of averaging.

e) The device transmits continuously, with no off intervals or reduced power intervals, so the trigger may be set to “free run.”

f) Trace average 100 traces in power averaging mode.

NORTHWEST EMC

POWER SPECTRAL DENSITY

XMit 2010.01.14

EUT:	IRT AVMD7540 Radio Module			**Work Order:**	AVNE0071
Serial Number:	1			**Date:**	04/17/10
Customer:	Avnera			**Temperature:**	22°C
Attendees:	Fred Weiss			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	29.95 in
Tested by:	Rod Peloquin	**Power:**	5VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

Target Power setting 143. Antenna 1 (port 0)

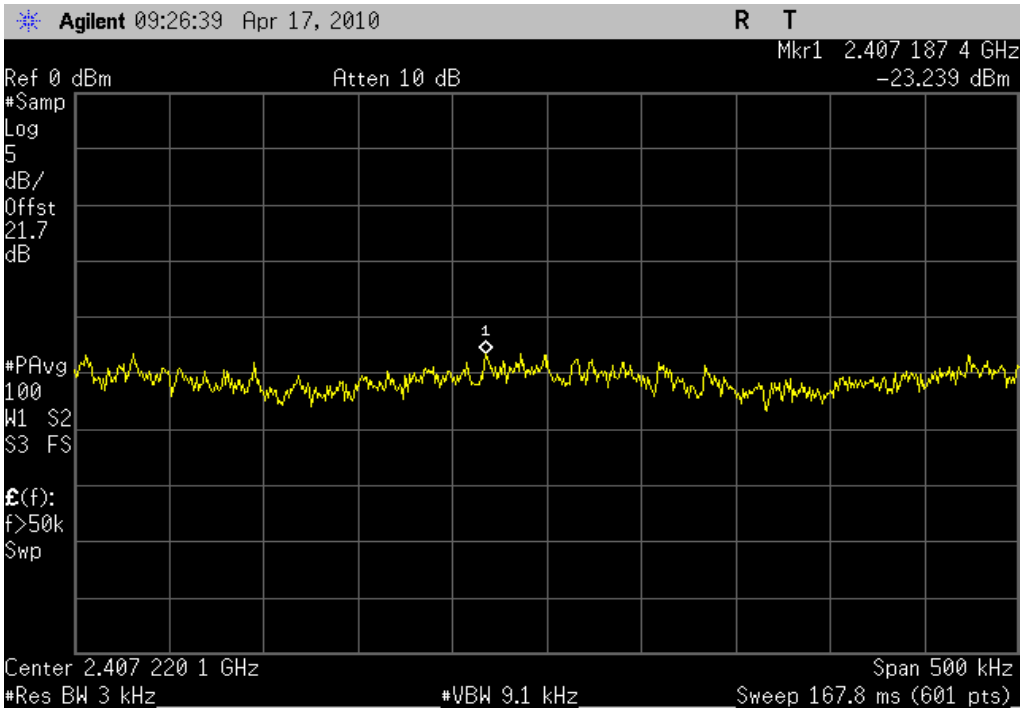
DEVIATIONS FROM TEST STANDARD

No Deviations

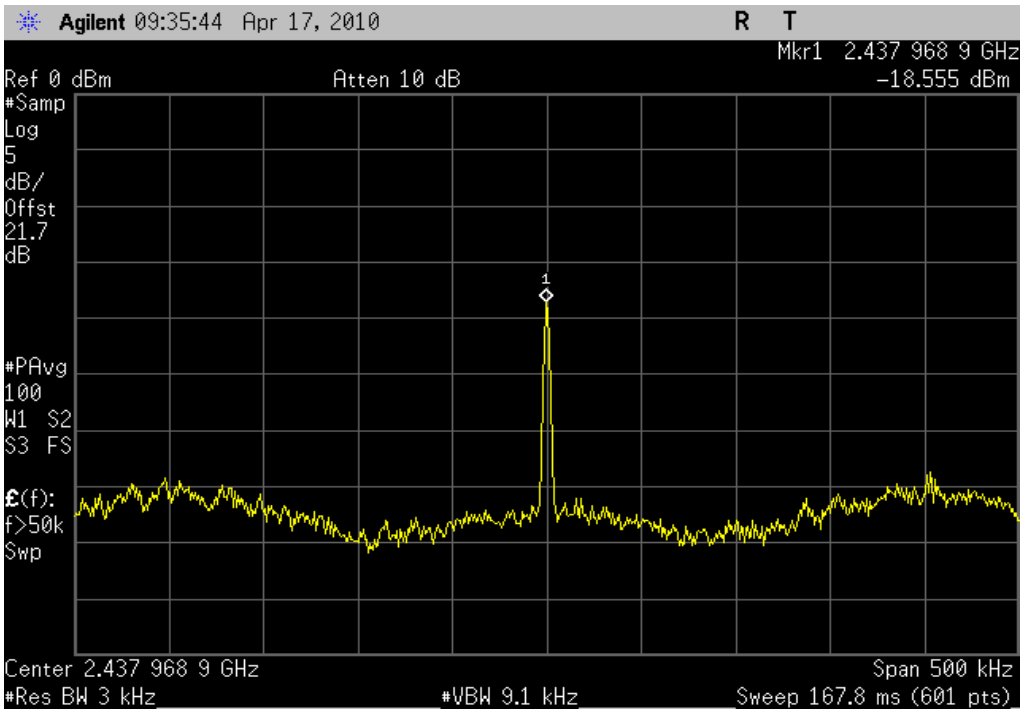
Configuration #	2	Signature

	Value	Limit	Results
Low Channel	-23.2 dBm / 3 kHz	8 dBm / 3 kHz	Pass
Mid Channel	-18.6 dBm / 3 kHz	8 dBm / 3 kHz	Pass
High Channel	-22.3 dBm / 3 kHz	8 dBm / 3 kHz	Pass

Low Channel					
Result:	Pass	**Value:**	-23.2 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

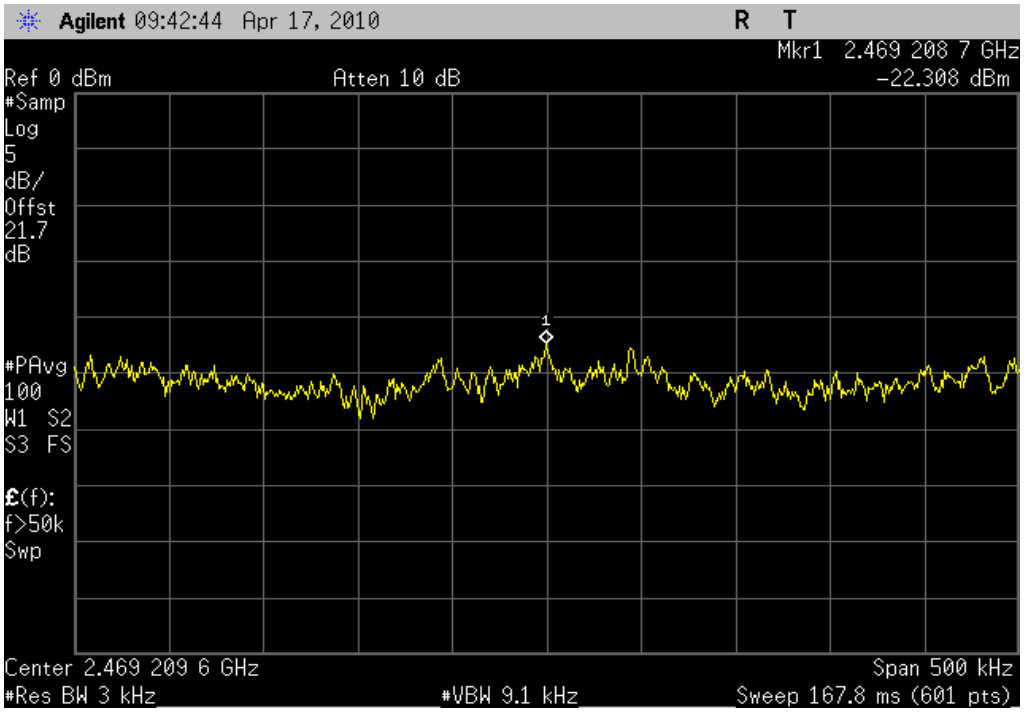


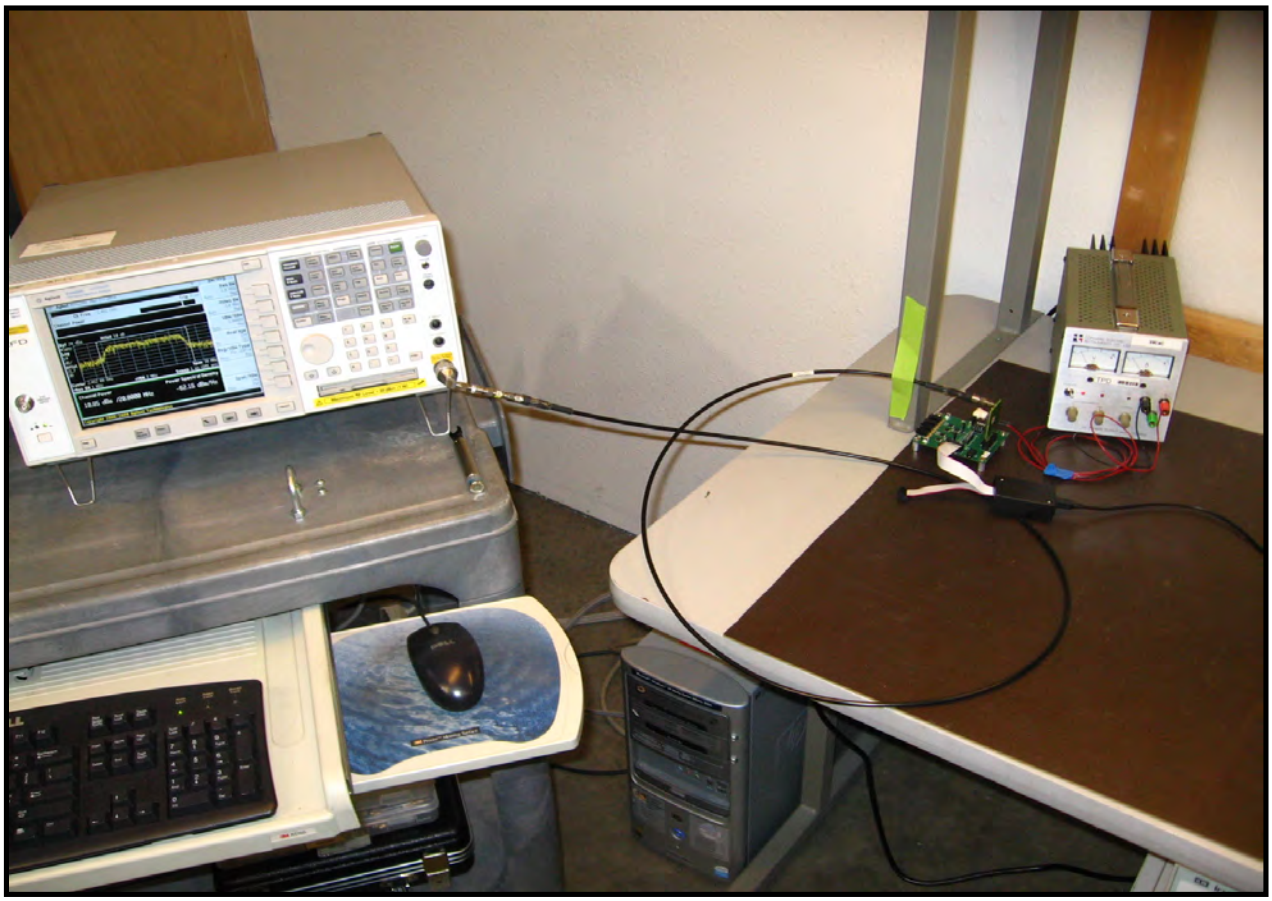
Mid Channel					
Result:	Pass	**Value:**	-18.6 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

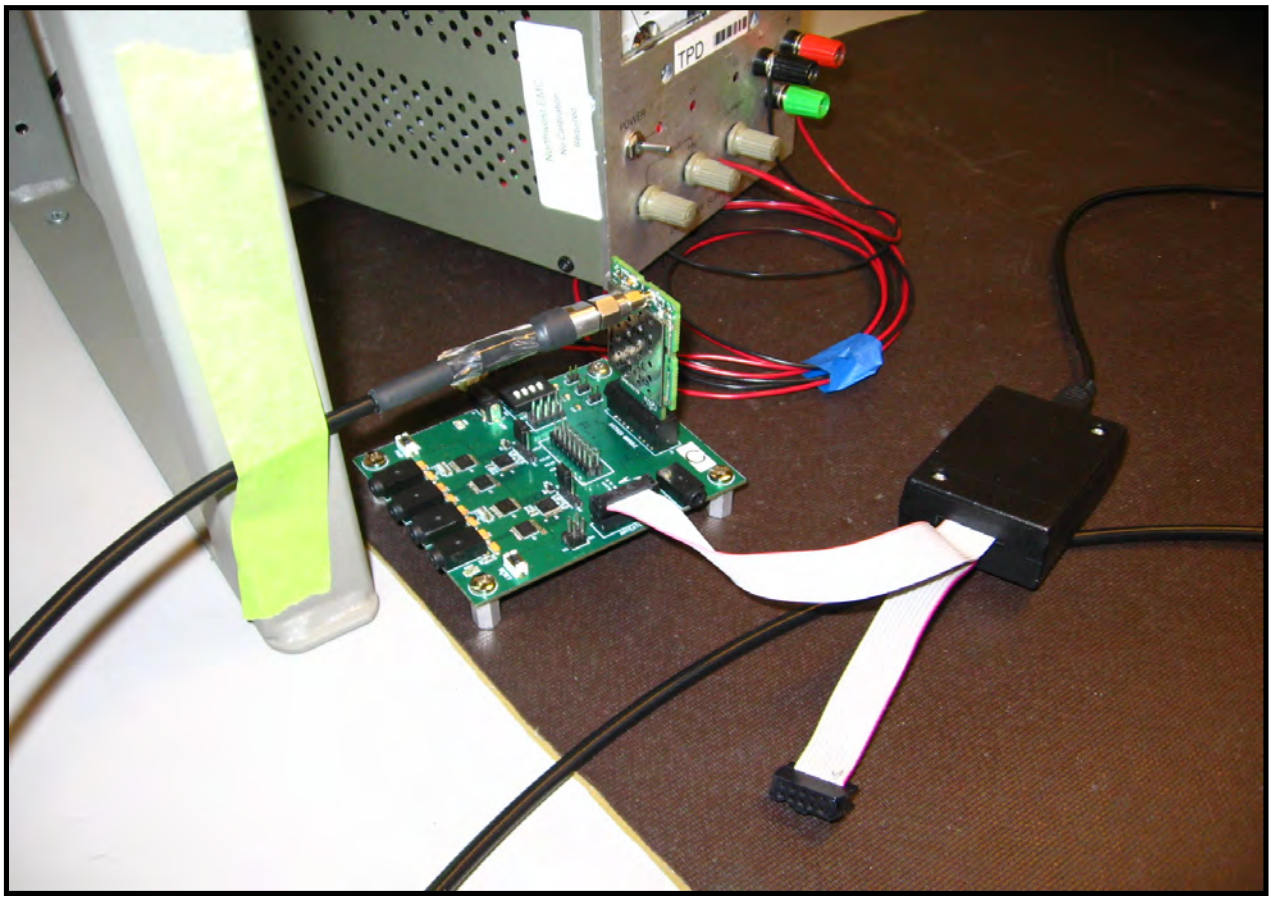


POWER SPECTRAL DENSITY

High Channel					
Result:	Pass	**Value:**	-22.3 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz






TPD

SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION
Transmitting typical mode
Transmitting continous, antenna 0
Transmitting continous, antenna 1

CHANNELS INVESTIGATED
Low, Mid, and High channels

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	26 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
Attenuator	Pasternack	PE7005-20	AUN	6/25/2009	13
High Pass Filter	Micro-Tronics	50111	HGE	1/13/2010	13
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Cable	ESM Cable Corp.	KMKM-72	EVY	11/3/2009	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	5/19/2009	13
Antenna, Horn	ETS	3160-08	AIA	NCR	0
EV12 Cables		Standard Gain Horn Cables	EVU	6/25/2009	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVI	6/26/2009	13
Antenna, Horn	ETS	3160.07	AHZ	10/14/2008	24
EV12 Cables		Standard Gain Horn Cables	EVU	6/25/2009	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVH	6/26/2009	13
Antenna, Horn	ETS	3115	AIB	8/25/2008	24
EV12 Cables		Double Ridge Horn Cables	EVT	10/23/2009	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	6/25/2009	13
Antenna, Biconilog	EMCO	3141	AXG	2/15/2010	13
EV12 Cables		Bilog Cables	EVS	6/25/2009	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	6/25/2009	13
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	24

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

SPURIOUS RADIATED EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	IRT	Work Order:	AVNE0071
Serial Number:	10	Date:	04/16/10
Customer:	Avnera	Temperature:	20.5
Attendees:	Fred Weiss, Ward Ramsdell	Humidity:	41%
Project:	None	Barometric Pres.:	29.99
Tested by:	Greg Kiemel	Power: 120VAC/60Hz	Job Site: EV12

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

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

COMMENTS

AVMD7540 WNC S/N 10, IRT S/N 3, Transmit Power 143, Original feedline routing, Ant 1 shunt L removed

EUT OPERATING MODES

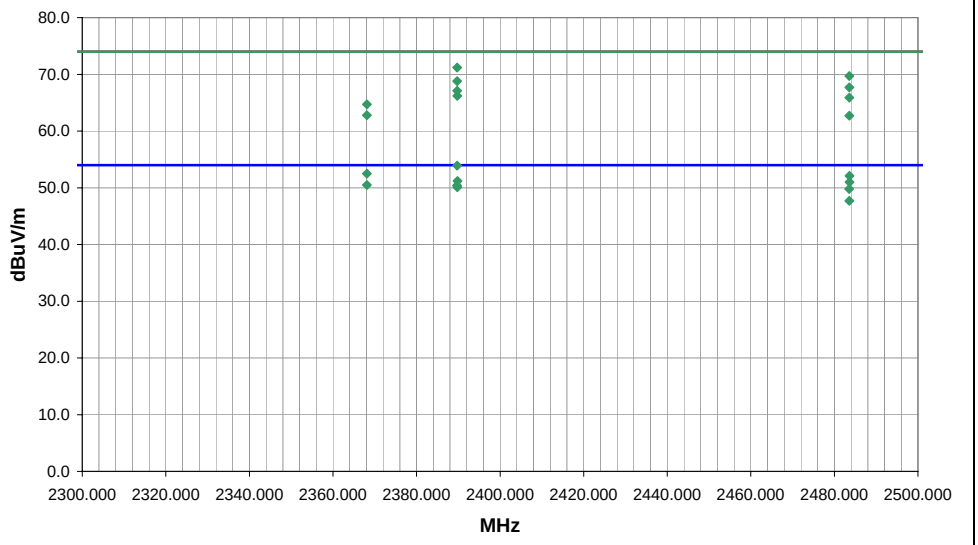
Transmitting continous, antenna 1

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
2389.700	35.2	-1.3	103.0	1.3	3.0	20.0	H-Horn	AV	0.0	53.9	54.0	-0.1	IRT Vertical Facing, low channel
2368.104	33.7	-1.2	135.0	1.3	3.0	20.0	H-Horn	AV	0.0	52.5	54.0	-1.5	IRT Vertical Facing, low channel
2483.600	33.1	-1.0	293.0	1.0	3.0	20.0	H-Horn	AV	0.0	52.1	54.0	-1.9	IRT Vertical Facing, high channel
2389.793	32.5	-1.3	69.0	1.0	3.0	20.0	H-Horn	AV	0.0	51.2	54.0	-2.8	IRT Vertical Edge, low channel
2389.700	52.5	-1.3	103.0	1.3	3.0	20.0	H-Horn	PK	0.0	71.2	74.0	-2.8	IRT Vertical Facing, low channel
2483.603	32.0	-1.0	57.0	1.5	3.0	20.0	H-Horn	AV	0.0	51.0	54.0	-3.0	IRT Vertical Edge, high channel
2368.104	31.7	-1.2	337.0	1.0	3.0	20.0	V-Horn	AV	0.0	50.5	54.0	-3.5	IRT Vertical Edge, low channel
2389.690	31.7	-1.3	13.0	1.0	3.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	IRT Vertical Edge, low channel
2389.752	31.4	-1.3	173.0	1.1	3.0	20.0	H-Horn	AV	0.0	50.1	54.0	-3.9	IRT Horizontal, low channel
2483.540	30.8	-1.0	191.0	1.7	3.0	20.0	V-Horn	AV	0.0	49.8	54.0	-4.2	IRT Vertical Edge, high channel
2483.565	50.7	-1.0	293.0	1.0	3.0	20.0	H-Horn	PK	0.0	69.7	74.0	-4.3	IRT Vertical Facing, high channel
2389.717	50.1	-1.3	69.0	1.0	3.0	20.0	H-Horn	PK	0.0	68.8	74.0	-5.2	IRT Vertical Edge, low channel
2483.576	28.7	-1.0	150.0	1.0	3.0	20.0	V-Horn	AV	0.0	47.7	54.0	-6.3	IRT Vertical Facing, high channel
2483.560	48.7	-1.0	57.0	1.5	3.0	20.0	H-Horn	PK	0.0	67.7	74.0	-6.3	IRT Vertical Edge, high channel
2389.726	48.4	-1.3	13.0	1.0	3.0	20.0	V-Horn	PK	0.0	67.1	74.0	-6.9	IRT Vertical Edge, low channel
2389.747	47.5	-1.3	173.0	1.1	3.0	20.0	H-Horn	PK	0.0	66.2	74.0	-7.8	IRT Horizontal, low channel
2483.562	46.9	-1.0	191.0	1.7	3.0	20.0	V-Horn	PK	0.0	65.9	74.0	-8.1	IRT Vertical Edge, high channel
2368.104	45.9	-1.2	135.0	1.3	3.0	20.0	H-Horn	PK	0.0	64.7	74.0	-9.3	IRT Vertical Facing, low channel
2368.104	44.0	-1.2	337.0	1.0	3.0	20.0	V-Horn	PK	0.0	62.8	74.0	-11.2	IRT Vertical Edge, low channel
2483.580	43.7	-1.0	150.0	1.0	3.0	20.0	V-Horn	PK	0.0	62.7	74.0	-11.3	IRT Vertical Facing, high channel

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	IRT	Work Order:	AVNE0071
Serial Number:	10	Date:	04/16/10
Customer:	Avnera	Temperature:	20.5
Attendees:	Fred Weiss, Ward Ramsdell	Humidity:	41%
Project:	None	Barometric Pres.:	29.99
Tested by:	Greg Kiemel	Power: 120VAC/60Hz	Job Site: EV12

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

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

COMMENTS

AVMD7540 WNC S/N 10, IRT S/N 3, Transmit Power 143, Original feedline routing, Ant 1 shunt L removed

EUT OPERATING MODES

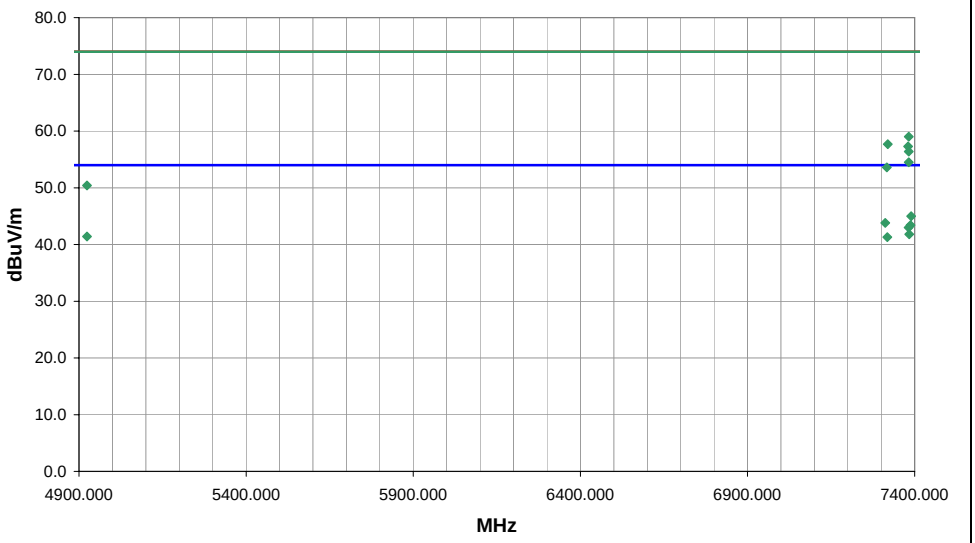
Transmitting continous, antenna 1

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6
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
7389.321	29.6	15.4	242.0	1.6	3.0	0.0	V-Horn	AV	0.0	45.0	54.0	-9.0	IRT Horizontal, High Channel
7311.862	28.5	15.3	232.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.8	54.0	-10.2	IRT Horizontal, Mid Channel
7387.685	28.0	15.4	154.0	1.6	3.0	0.0	V-Horn	AV	0.0	43.4	54.0	-10.6	IRT Vertical Facing, High Channel
7381.799	27.6	15.4	0.0	1.6	3.0	0.0	V-Horn	AV	0.0	43.0	54.0	-11.0	IRT Vertical Edge, High Channel
7383.938	26.4	15.4	163.0	1.4	3.0	0.0	H-Horn	AV	0.0	41.8	54.0	-12.2	IRT Horizontal, High Channel
4923.925	32.9	8.5	360.0	1.5	3.0	0.0	V-Horn	AV	0.0	41.4	54.0	-12.6	IRT Vertical Edge, High Channel
7318.002	26.0	15.3	191.0	1.0	3.0	0.0	H-Horn	AV	0.0	41.3	54.0	-12.7	IRT Horizontal, Mid Channel
7382.088	43.6	15.4	242.0	1.6	3.0	0.0	V-Horn	PK	0.0	59.0	74.0	-15.0	IRT Horizontal, High Channel
7319.750	42.4	15.3	232.0	1.0	3.0	0.0	V-Horn	PK	0.0	57.7	74.0	-16.3	IRT Horizontal, Mid Channel
7380.605	41.9	15.4	154.0	1.6	3.0	0.0	V-Horn	PK	0.0	57.3	74.0	-16.7	IRT Vertical Facing, High Channel
7382.221	41.0	15.4	0.0	1.6	3.0	0.0	V-Horn	PK	0.0	56.4	74.0	-17.6	IRT Vertical Edge, High Channel
7382.188	39.1	15.4	163.0	1.4	3.0	0.0	H-Horn	PK	0.0	54.5	74.0	-19.5	IRT Horizontal, High Channel
7316.620	38.3	15.3	191.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.6	74.0	-20.4	IRT Horizontal, Mid Channel
4924.074	41.9	8.5	360.0	1.5	3.0	0.0	V-Horn	PK	0.0	50.4	74.0	-23.6	IRT Vertical Edge, High Channel

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	IRT	Work Order:	AVNE0071
Serial Number:	10	Date:	04/16/10
Customer:	Avnera	Temperature:	20.5
Attendees:	Fred Weiss, Ward Ramsdell	Humidity:	41%
Project:	None	Barometric Pres.:	29.99
Tested by:	Greg Kiemel	Power: 120VAC/60Hz	Job Site: EV12

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

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

COMMENTS

AVMD7540 WNC S/N 10, IRT S/N 3, Transmit Power 143, Original feedline routing, Ant 1 shunt L removed

EUT OPERATING MODES

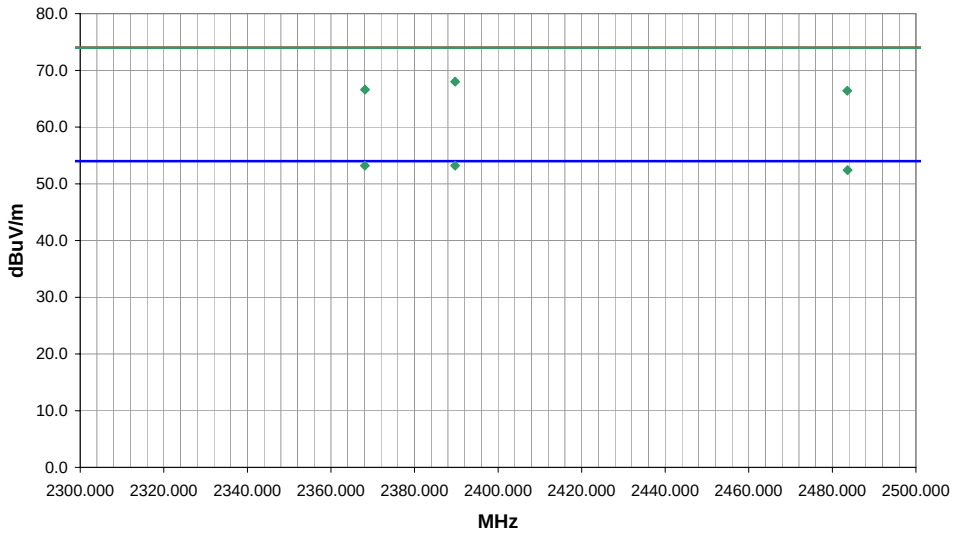
Transmitting continous, antenna 0

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	8
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
2368.104	34.4	-1.2	207.0	1.0	3.0	20.0	H-Horn	AV	0.0	53.2	54.0	-0.8	IRT Vertical Facing, low channel
2389.700	34.5	-1.3	201.0	1.0	3.0	20.0	H-Horn	AV	0.0	53.2	54.0	-0.8	IRT Vertical Facing, low channel
2483.661	33.4	-1.0	203.0	1.0	3.0	20.0	H-Horn	AV	0.0	52.4	54.0	-1.6	IRT Vertical Facing, high channel
2389.726	49.3	-1.3	201.0	1.0	3.0	20.0	H-Horn	PK	0.0	68.0	74.0	-6.0	IRT Vertical Facing, low channel
2368.143	47.8	-1.2	200.0	1.0	3.0	20.0	H-Horn	PK	0.0	66.6	74.0	-7.4	IRT Vertical Facing, low channel
2483.555	47.4	-1.0	203.0	1.0	3.0	20.0	H-Horn	PK	0.0	66.4	74.0	-7.6	IRT Vertical Facing, high channel

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	IRT			Work Order:	AVNE0071
Serial Number:	10			Date:	04/15/10
Customer:	Avnera			Temperature:	23.24
Attendees:	Fred Weiss, Ward Ramsdell			Humidity:	37%
Project:	None			Barometric Pres.:	30.15
Tested by:	Greg Kiemel	Power:	From DVR	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

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

COMMENTS

DVR on floor, Sub cable

EUT OPERATING MODES

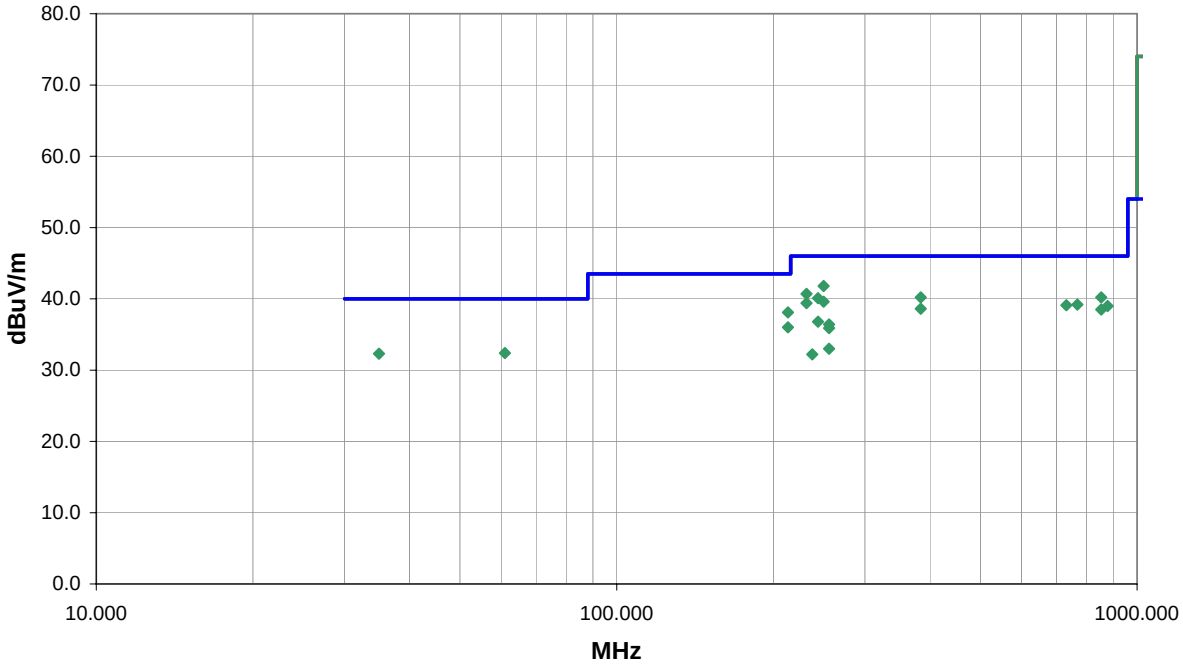
Transmitting typical mode

DEVIATIONS FROM TEST STANDARD

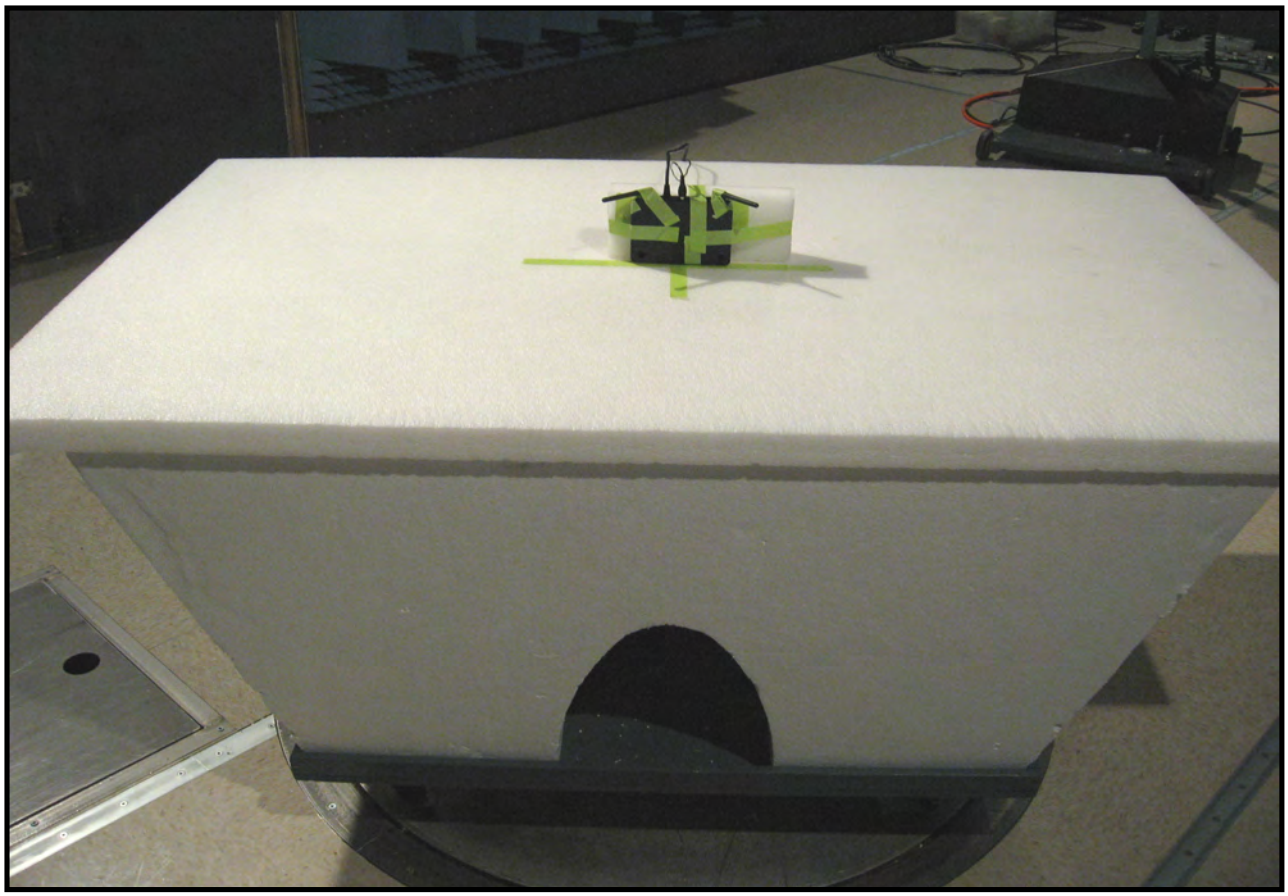
No deviations.

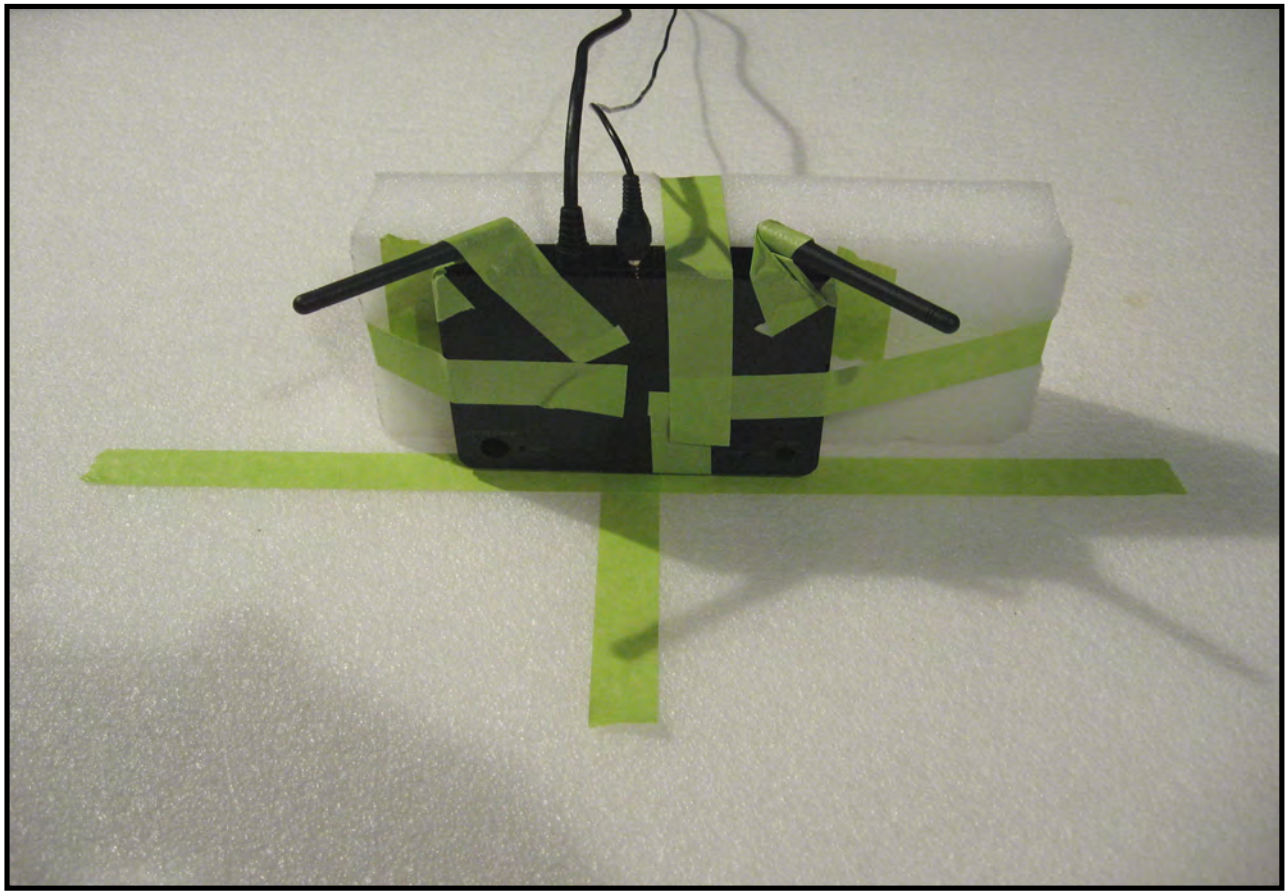
Run #	1
Configuration #	1
Results	Pass

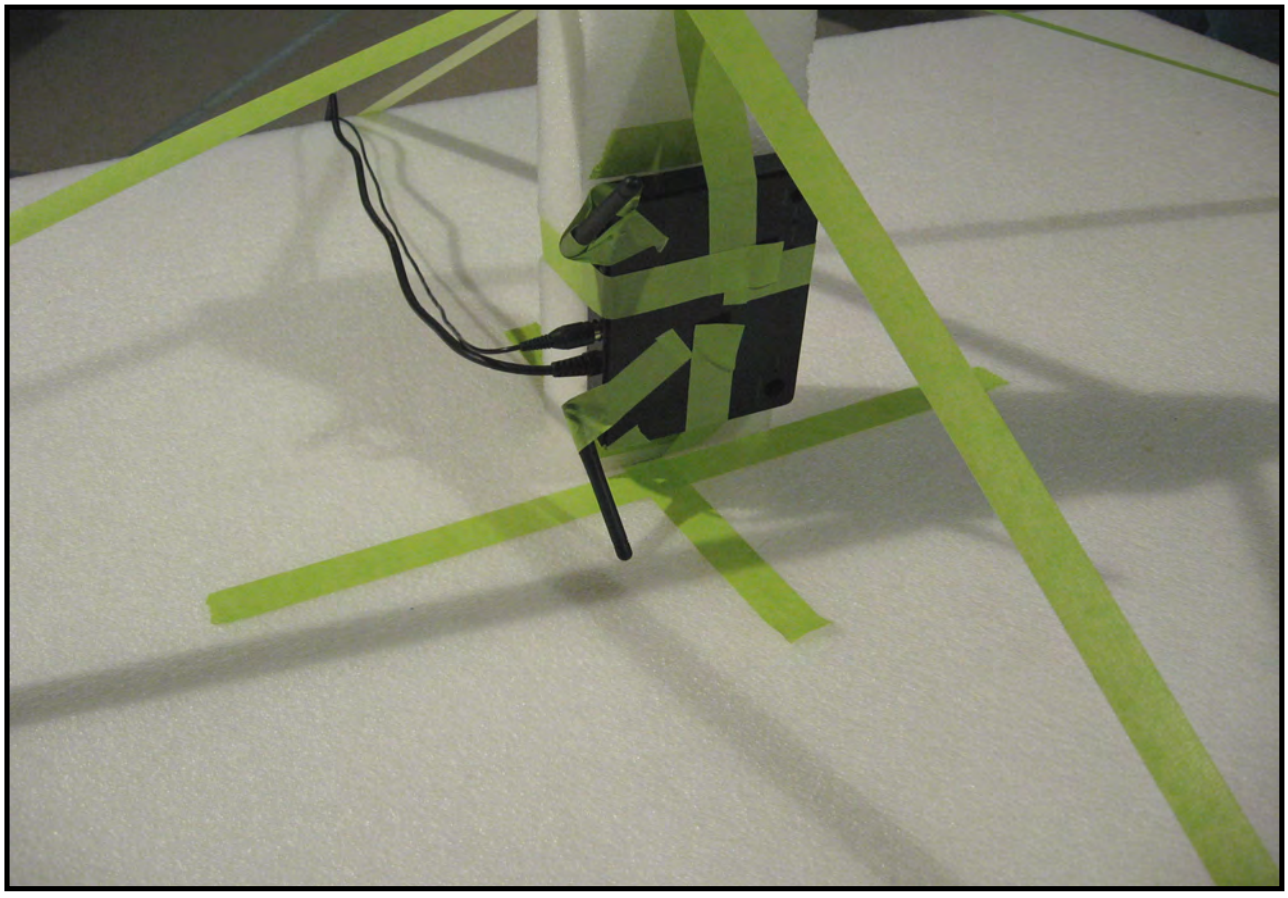
Signature

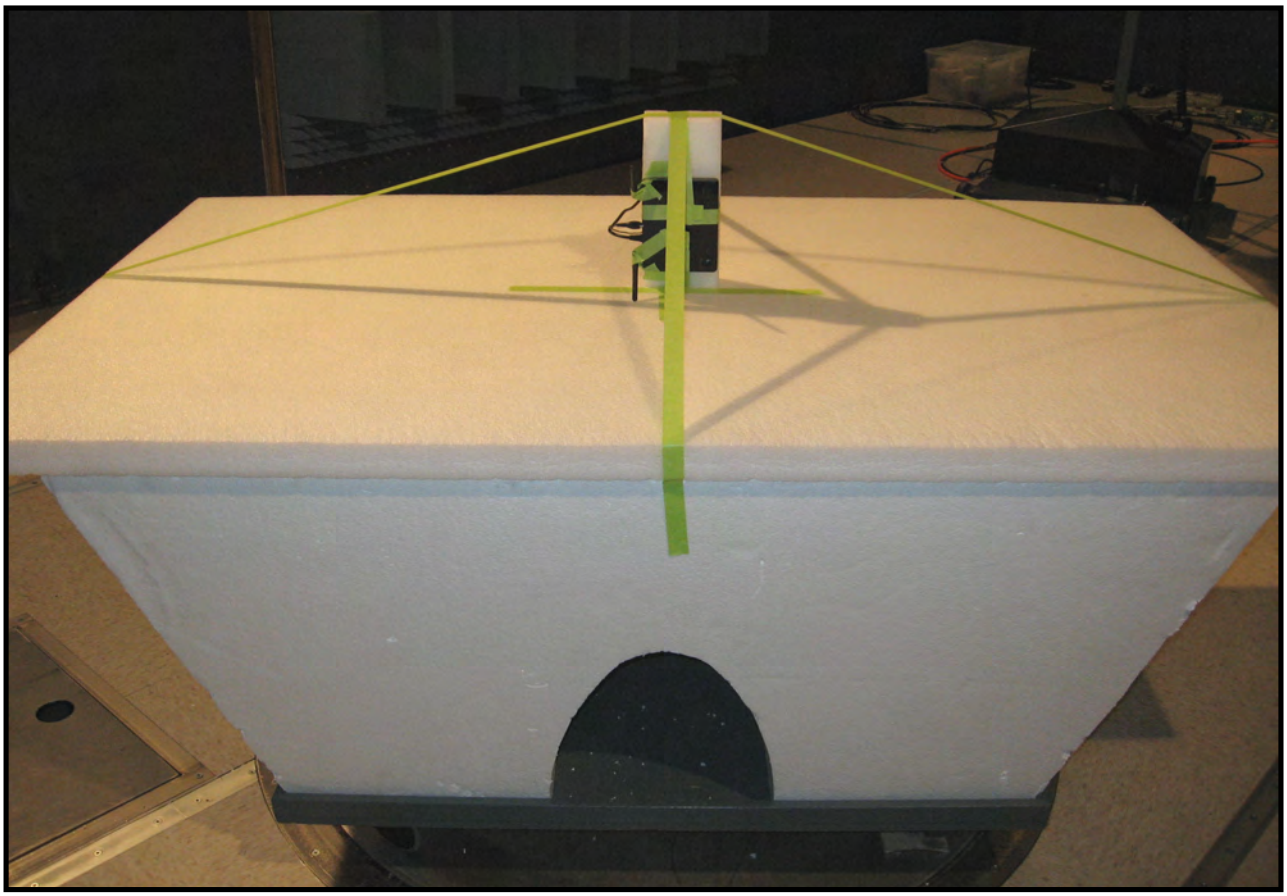


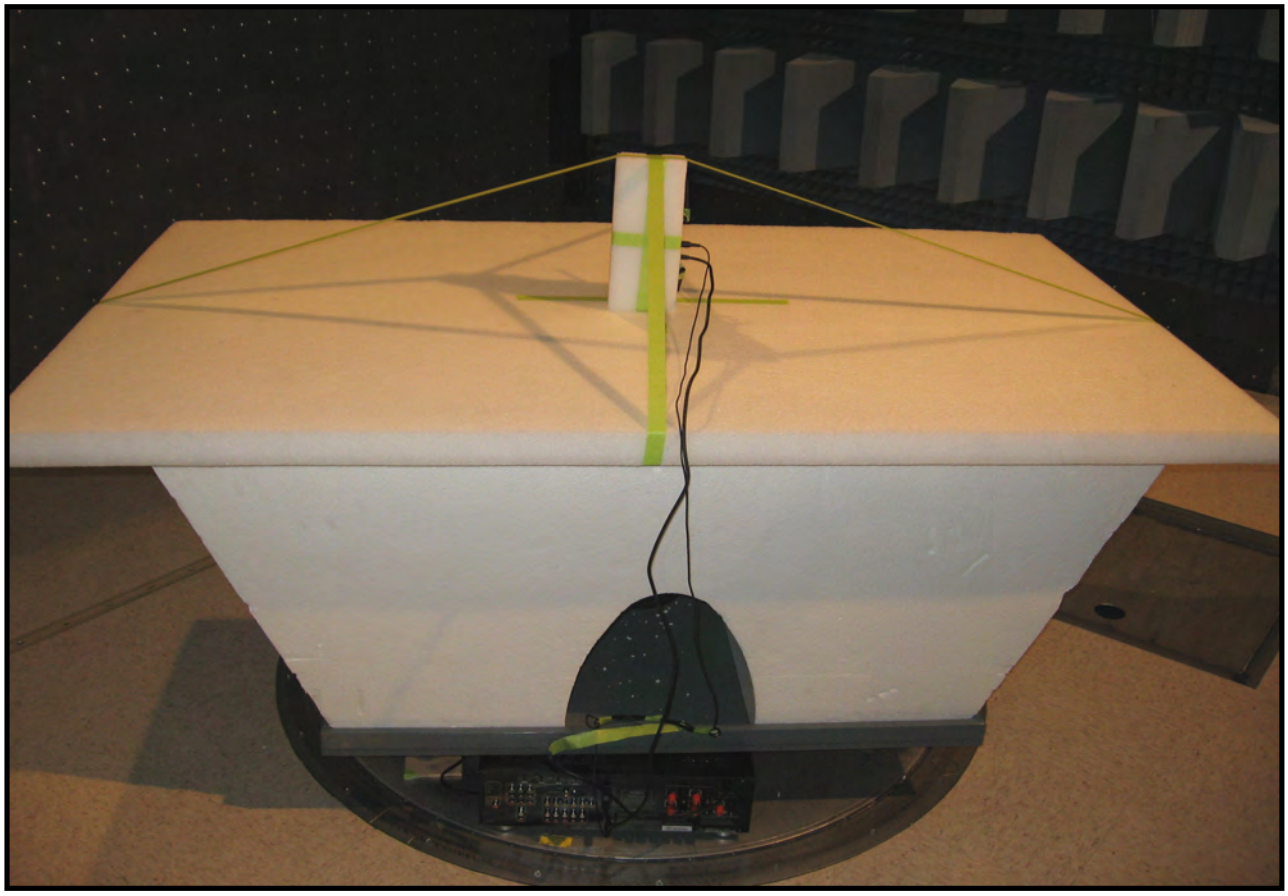
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
249.872	42.6	-0.8	223.0	1.2	3.0	0.0	H-Bilog	PK	0.0	41.8	46.0	-4.2
231.614	42.4	-1.7	127.0	1.0	3.0	0.0	V-Bilog	PK	0.0	40.7	46.0	-5.3
213.329	40.2	-2.1	242.0	1.5	3.0	0.0	H-Bilog	PK	0.0	38.1	43.5	-5.4
853.316	28.6	11.6	158.0	1.0	3.0	0.0	V-Bilog	PK	0.0	40.2	46.0	-5.8
384.015	36.8	3.4	190.0	1.0	3.0	0.0	H-Bilog	PK	0.0	40.2	46.0	-5.8
243.819	41.2	-1.1	262.0	1.0	3.0	0.0	H-Bilog	PK	0.0	40.1	46.0	-5.9
249.911	40.4	-0.8	223.0	1.2	3.0	0.0	H-Bilog	QP	0.0	39.6	46.0	-6.4
231.623	41.1	-1.7	127.0	1.0	3.0	0.0	V-Bilog	QP	0.0	39.4	46.0	-6.6
768.006	28.7	10.5	149.0	1.0	3.0	0.0	H-Bilog	PK	0.0	39.2	46.0	-6.8
731.442	28.6	10.5	145.0	1.0	3.0	0.0	H-Bilog	PK	0.0	39.1	46.0	-6.9
877.754	27.1	11.9	199.0	1.5	3.0	0.0	V-Bilog	PK	0.0	39.0	46.0	-7.0
384.002	35.2	3.4	190.0	1.0	3.0	0.0	H-Bilog	QP	0.0	38.6	46.0	-7.4
213.337	38.1	-2.1	242.0	1.5	3.0	0.0	H-Bilog	QP	0.0	36.0	43.5	-7.5
853.327	26.9	11.6	158.0	1.0	3.0	0.0	V-Bilog	QP	0.0	38.5	46.0	-7.5
60.976	38.7	-6.3	3.0	1.0	3.0	0.0	V-Bilog	PK	0.0	32.4	40.0	-7.6
34.930	30.7	1.6	161.0	1.5	3.0	0.0	V-Bilog	PK	0.0	32.3	40.0	-7.7
243.813	37.9	-1.1	262.0	1.0	3.0	0.0	H-Bilog	QP	0.0	36.8	46.0	-9.2
255.985	37.1	-0.7	178.0	1.3	3.0	0.0	H-Bilog	PK	0.0	36.4	46.0	-9.6
255.996	36.6	-0.7	223.0	1.8	3.0	0.0	V-Bilog	PK	0.0	35.9	46.0	-10.1
256.014	33.7	-0.7	118.0	1.3	3.0	0.0	V-Bilog	PK	0.0	33.0	46.0	-13.0
237.687	33.5	-1.3	179.0	1.4	3.0	0.0	H-Bilog	PK	0.0	32.2	46.0	-13.8

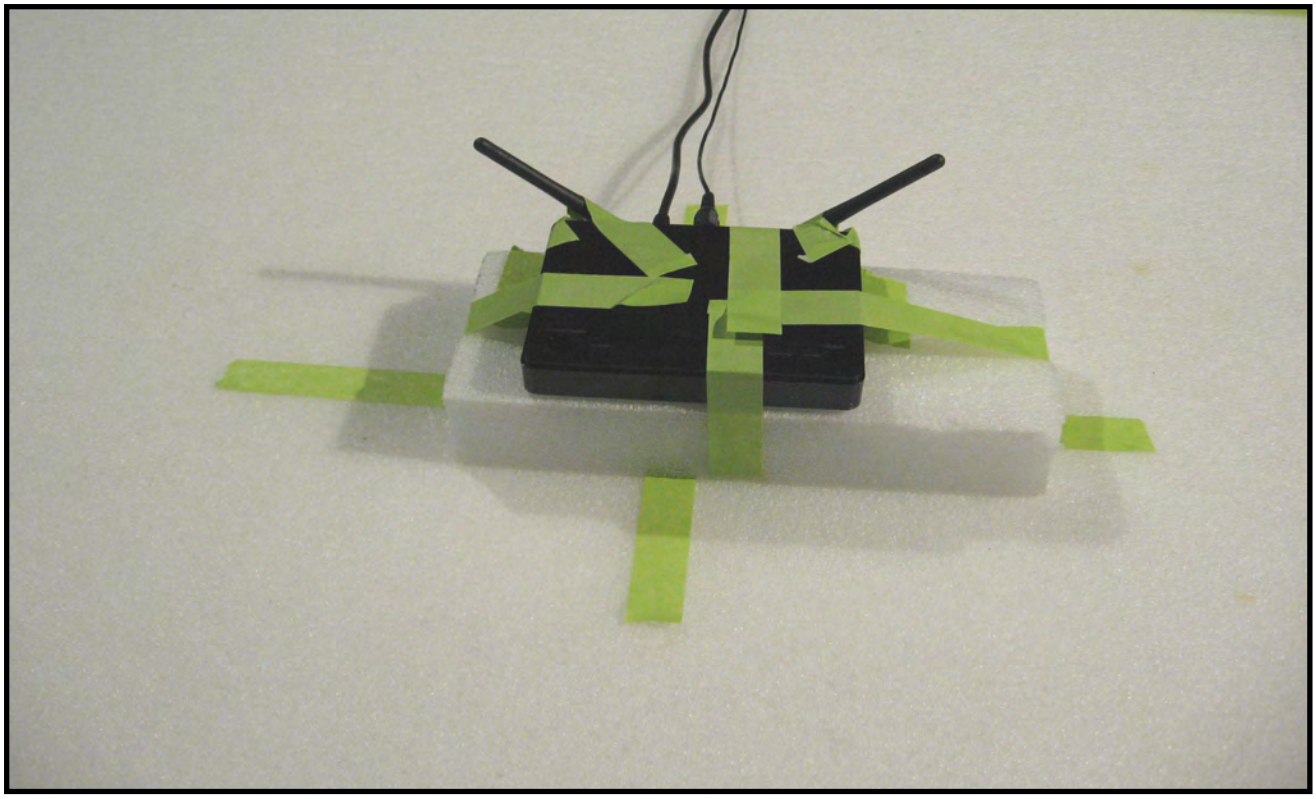












AC POWERLINE CONDUCTED EMISSIONS

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
Transmit mode, continous high channel, Antenna 1 (port 0)
Transmit mode, continous mid channel, Antenna 1 (port 0)
Transmit mode, continous low channel, Antenna 1 (port 0)

POWER SETTINGS INVESTIGATED
120VAC/60Hz

CONFIGURATIONS INVESTIGATED
AVNE0071 - 1

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	9/25/2009	13 mo
High Pass Filter	TTE	H97-100K-50-720B	HFX	2/16/2010	13 mo
Attenuator	Coaxicom	66702 2910-20	ATO	7/21/2009	13 mo
LISN	Solar	9252-50-R-24-BNC	LIP	3/2/2010	13 mo
EV07 Cables		Conducted Cables	EVG	6/1/2009	13 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

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm.

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

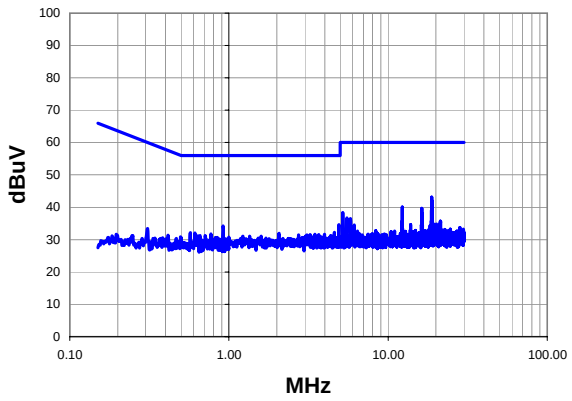
PSA-ESCI 2010.02.16
Version 2010.3.17

Work Order:	AVNE0071	**Date:**	04/17/10		
Project:	None	**Temperature:**	22C		
Job Site:	EV07	**Humidity:**	38%		
Serial Number:	10	**Barometric Pres.:**	29.95 in	**Tested by:**	Rod Peloquin
EUT:	IRT				
Configuration:	1 - Basic Configuration				
Customer:	Avnera				
Attendees:	Fred Weiss				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmit mode, continous low channel, Antenna 1 (port 0)				
Deviations:	No Deviations				
Comments:	Powered through DVR				

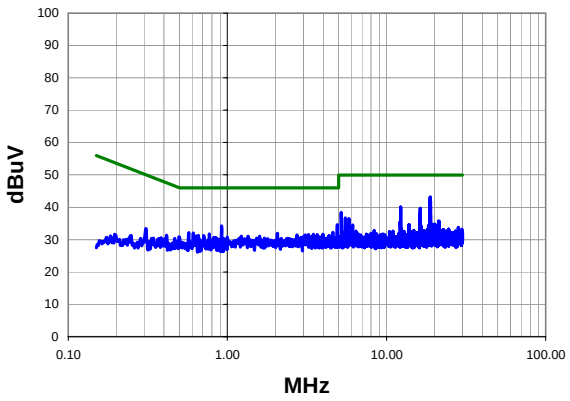
Test Specifications	**Test Method**
FCC 15.209:2010	ANSI C63.10:2009

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)
18.790	22.2	20.9	43.1	60.0	-16.9
18.880	21.0	20.9	41.9	60.0	-18.1
18.850	19.2	20.9	40.1	60.0	-19.9
18.820	19.2	20.9	40.1	60.0	-19.9
12.290	19.4	20.6	40.0	60.0	-20.0
16.310	18.9	20.8	39.7	60.0	-20.3
18.760	18.2	20.9	39.1	60.0	-20.9
4.904	14.3	20.4	34.7	56.0	-21.3
5.200	18.0	20.4	38.4	60.0	-21.6
16.270	17.4	20.8	38.2	60.0	-21.8
0.918	14.0	20.2	34.2	56.0	-21.8
18.920	16.8	20.9	37.7	60.0	-22.3
5.510	16.3	20.4	36.7	60.0	-23.3
5.810	16.1	20.4	36.5	60.0	-23.5
4.592	11.9	20.4	32.3	56.0	-23.8
0.572	12.0	20.2	32.2	56.0	-23.8
0.611	11.9	20.2	32.1	56.0	-23.9
2.064	11.7	20.3	32.0	56.0	-24.0
18.730	14.9	20.9	35.8	60.0	-24.2
0.770	11.6	20.2	31.8	56.0	-24.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
18.790	22.2	20.9	43.1	50.0	-6.9
18.880	21.0	20.9	41.9	50.0	-8.1
18.850	19.2	20.9	40.1	50.0	-9.9
18.820	19.2	20.9	40.1	50.0	-9.9
12.290	19.4	20.6	40.0	50.0	-10.0
16.310	18.9	20.8	39.7	50.0	-10.3
18.760	18.2	20.9	39.1	50.0	-10.9
4.904	14.3	20.4	34.7	46.0	-11.3
5.200	18.0	20.4	38.4	50.0	-11.6
16.270	17.4	20.8	38.2	50.0	-11.8
0.918	14.0	20.2	34.2	46.0	-11.8
18.920	16.8	20.9	37.7	50.0	-12.3
5.510	16.3	20.4	36.7	50.0	-13.3
5.810	16.1	20.4	36.5	50.0	-13.5
4.592	11.9	20.4	32.3	46.0	-13.8
0.572	12.0	20.2	32.2	46.0	-13.8
0.611	11.9	20.2	32.1	46.0	-13.9
2.064	11.7	20.3	32.0	46.0	-14.0
18.730	14.9	20.9	35.8	50.0	-14.2
0.770	11.6	20.2	31.8	46.0	-14.2

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

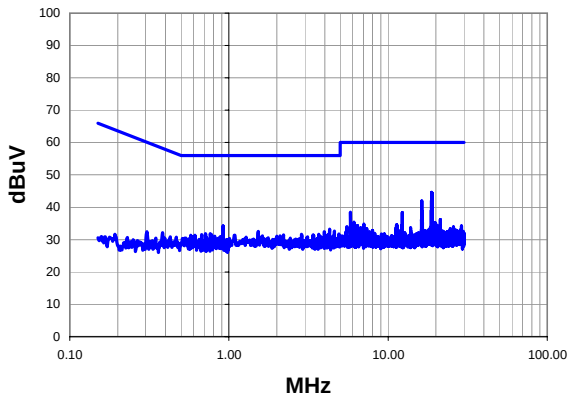
PSA-ESCI 2010.02.16
Version 2010.3.17

Work Order:	AVNE0071	**Date:**	04/17/10		
Project:	None	**Temperature:**	22C		
Job Site:	EV07	**Humidity:**	38%		
Serial Number:	10	**Barometric Pres.:**	29.95 in	**Tested by:**	Rod Peloquin
EUT:	IRT				
Configuration:	1 - Basic Configuration				
Customer:	Avnera				
Attendees:	Fred Weiss				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmit mode, continous low channel, Antenna 1 (port 0)				
Deviations:	No Deviations				
Comments:	Powered through DVR				

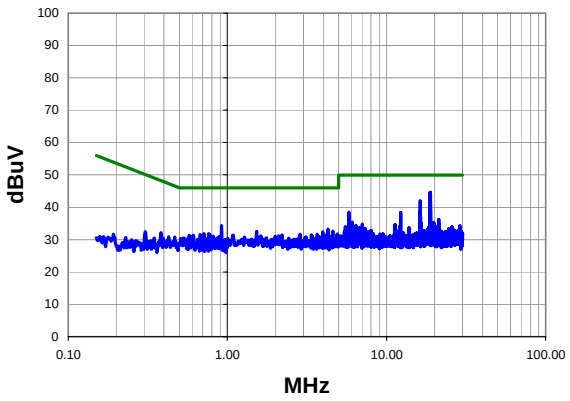
Test Specifications	**Test Method**
FCC 15.209:2010	ANSI C63.10:2009

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)
18.790	23.7	20.9	44.6	60.0	-15.4
18.820	23.6	20.9	44.5	60.0	-15.5
18.850	22.9	20.9	43.8	60.0	-16.2
18.760	21.4	20.9	42.3	60.0	-17.7
16.310	21.1	20.8	41.9	60.0	-18.1
18.880	20.8	20.9	41.7	60.0	-18.3
18.920	18.3	20.9	39.2	60.0	-20.8
18.730	18.1	20.9	39.0	60.0	-21.0
16.270	18.1	20.8	38.9	60.0	-21.1
5.810	18.1	20.4	38.5	60.0	-21.5
12.290	17.7	20.6	38.3	60.0	-21.7
0.918	14.0	20.2	34.2	56.0	-21.8
4.288	12.9	20.3	33.2	56.0	-22.8
16.370	16.1	20.8	36.9	60.0	-23.1
4.592	12.3	20.4	32.7	56.0	-23.4
1.528	12.3	20.2	32.5	56.0	-23.5
3.976	12.1	20.3	32.4	56.0	-23.6
21.290	15.2	21.0	36.2	60.0	-23.8
16.240	15.4	20.8	36.2	60.0	-23.8
0.713	11.7	20.2	31.9	56.0	-24.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
18.790	23.7	20.9	44.6	50.0	-5.4
18.820	23.6	20.9	44.5	50.0	-5.5
18.850	22.9	20.9	43.8	50.0	-6.2
18.760	21.4	20.9	42.3	50.0	-7.7
16.310	21.1	20.8	41.9	50.0	-8.1
18.880	20.8	20.9	41.7	50.0	-8.3
18.920	18.3	20.9	39.2	50.0	-10.8
18.730	18.1	20.9	39.0	50.0	-11.0
16.270	18.1	20.8	38.9	50.0	-11.1
5.810	18.1	20.4	38.5	50.0	-11.5
12.290	17.7	20.6	38.3	50.0	-11.7
0.918	14.0	20.2	34.2	46.0	-11.8
4.288	12.9	20.3	33.2	46.0	-12.8
16.370	16.1	20.8	36.9	50.0	-13.1
4.592	12.3	20.4	32.7	46.0	-13.4
1.528	12.3	20.2	32.5	46.0	-13.5
3.976	12.1	20.3	32.4	46.0	-13.6
21.290	15.2	21.0	36.2	50.0	-13.8
16.240	15.4	20.8	36.2	50.0	-13.8
0.713	11.7	20.2	31.9	46.0	-14.1

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

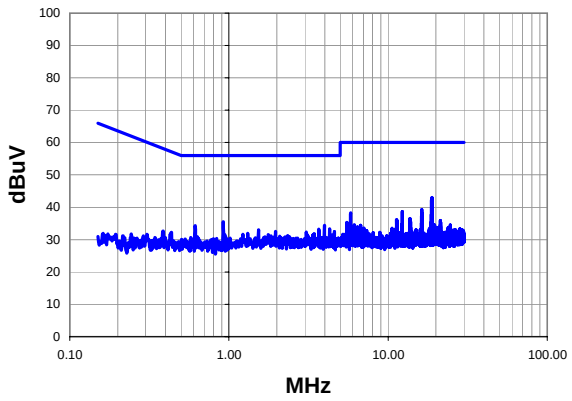
PSA-ESCI 2010.02.16
Version 2010.3.17

Work Order:	AVNE0071	**Date:**	04/17/10		
Project:	None	**Temperature:**	22C		
Job Site:	EV07	**Humidity:**	38%		
Serial Number:	10	**Barometric Pres.:**	29.95 in	**Tested by:**	Rod Peloquin
EUT:	IRT				
Configuration:	1 - Basic Configuration				
Customer:	Avnera				
Attendees:	Fred Weiss				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmit mode, continous mid channel, Antenna 1 (port 0)				
Deviations:	No Deviations				
Comments:	Powered through DVR				

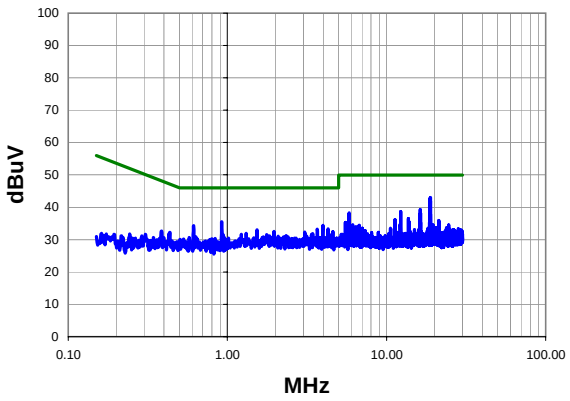
Test Specifications	**Test Method**
FCC 15.209:2010	ANSI C63.10:2009

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)
18.850	22.1	20.9	43.0	60.0	-17.0
18.790	21.9	20.9	42.8	60.0	-17.2
18.760	21.7	20.9	42.6	60.0	-17.4
18.880	21.0	20.9	41.9	60.0	-18.1
18.820	20.7	20.9	41.6	60.0	-18.4
0.920	15.3	20.2	35.5	56.0	-20.5
16.310	18.5	20.8	39.3	60.0	-20.7
12.290	18.0	20.6	38.6	60.0	-21.4
3.984	14.1	20.3	34.4	56.0	-21.6
5.820	17.9	20.4	38.3	60.0	-21.7
0.614	14.1	20.2	34.3	56.0	-21.7
16.340	17.4	20.8	38.2	60.0	-21.8
16.270	17.3	20.8	38.1	60.0	-21.9
18.920	17.0	20.9	37.9	60.0	-22.1
18.730	16.9	20.9	37.8	60.0	-22.2
4.296	13.0	20.3	33.3	56.0	-22.7
16.240	16.5	20.8	37.3	60.0	-22.7
3.672	12.9	20.3	33.2	56.0	-22.8
1.536	12.8	20.2	33.0	56.0	-23.0
1.960	12.3	20.3	32.6	56.0	-23.4

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
18.850	22.1	20.9	43.0	50.0	-7.0
18.790	21.9	20.9	42.8	50.0	-7.2
18.760	21.7	20.9	42.6	50.0	-7.4
18.880	21.0	20.9	41.9	50.0	-8.1
18.820	20.7	20.9	41.6	50.0	-8.4
0.920	15.3	20.2	35.5	46.0	-10.5
16.310	18.5	20.8	39.3	50.0	-10.7
12.290	18.0	20.6	38.6	50.0	-11.4
3.984	14.1	20.3	34.4	46.0	-11.6
5.820	17.9	20.4	38.3	50.0	-11.7
0.614	14.1	20.2	34.3	46.0	-11.7
16.340	17.4	20.8	38.2	50.0	-11.8
16.270	17.3	20.8	38.1	50.0	-11.9
18.920	17.0	20.9	37.9	50.0	-12.1
18.730	16.9	20.9	37.8	50.0	-12.2
4.296	13.0	20.3	33.3	46.0	-12.7
16.240	16.5	20.8	37.3	50.0	-12.7
3.672	12.9	20.3	33.2	46.0	-12.8
1.536	12.8	20.2	33.0	46.0	-13.0
1.960	12.3	20.3	32.6	46.0	-13.4

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

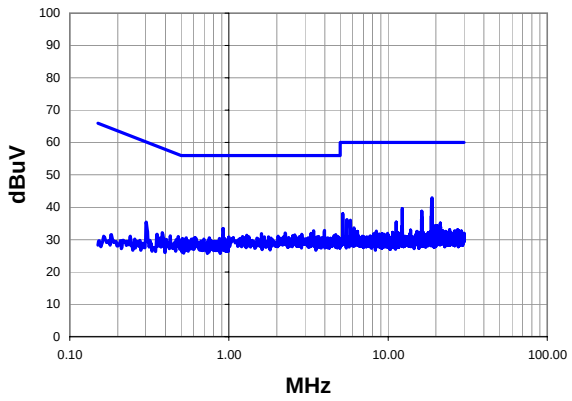
PSA-ESCI 2010.02.16
Version 2010.3.17

Work Order:	AVNE0071	**Date:**	04/17/10		
Project:	None	**Temperature:**	22C		
Job Site:	EV07	**Humidity:**	38%		
Serial Number:	10	**Barometric Pres.:**	29.95 in	**Tested by:**	Rod Peloquin
EUT:	IRT				
Configuration:	1 - Basic Configuration				
Customer:	Avnera				
Attendees:	Fred Weiss				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmit mode, continous mid channel, Antenna 1 (port 0)				
Deviations:	No Deviations				
Comments:	Powered through DVR				

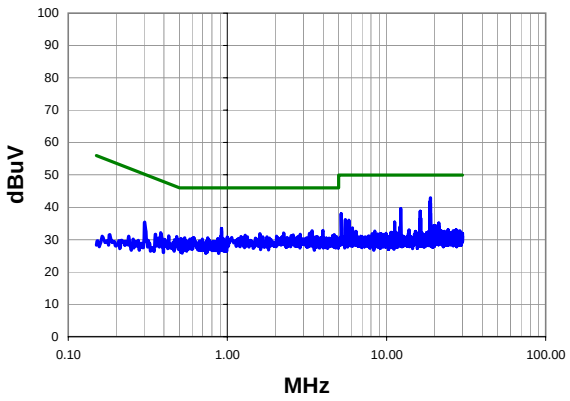
Test Specifications	**Test Method**
FCC 15.209:2010	ANSI C63.10:2009

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)
18.850	22.0	20.9	42.9	60.0	-17.1
18.820	20.9	20.9	41.8	60.0	-18.2
18.790	20.4	20.9	41.3	60.0	-18.7
18.880	20.3	20.9	41.2	60.0	-18.8
18.760	20.3	20.9	41.2	60.0	-18.8
12.290	18.9	20.6	39.5	60.0	-20.5
16.310	18.0	20.8	38.8	60.0	-21.2
18.920	17.3	20.9	38.2	60.0	-21.8
5.190	17.6	20.4	38.0	60.0	-22.0
0.918	13.3	20.2	33.5	56.0	-22.5
18.730	16.4	20.9	37.3	60.0	-22.7
3.984	12.5	20.3	32.8	56.0	-23.2
3.400	12.4	20.3	32.7	56.0	-23.3
16.340	15.9	20.8	36.7	60.0	-23.3
16.370	15.8	20.8	36.6	60.0	-23.4
16.240	15.5	20.8	36.3	60.0	-23.7
5.500	15.8	20.4	36.2	60.0	-23.8
2.256	11.8	20.3	32.1	56.0	-23.9
5.810	15.6	20.4	36.0	60.0	-24.0
3.280	11.6	20.3	31.9	56.0	-24.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
18.850	22.0	20.9	42.9	50.0	-7.1
18.820	20.9	20.9	41.8	50.0	-8.2
18.790	20.4	20.9	41.3	50.0	-8.7
18.880	20.3	20.9	41.2	50.0	-8.8
18.760	20.3	20.9	41.2	50.0	-8.8
12.290	18.9	20.6	39.5	50.0	-10.5
16.310	18.0	20.8	38.8	50.0	-11.2
18.920	17.3	20.9	38.2	50.0	-11.8
5.190	17.6	20.4	38.0	50.0	-12.0
0.918	13.3	20.2	33.5	46.0	-12.5
18.730	16.4	20.9	37.3	50.0	-12.7
3.984	12.5	20.3	32.8	46.0	-13.2
3.400	12.4	20.3	32.7	46.0	-13.3
16.340	15.9	20.8	36.7	50.0	-13.3
16.370	15.8	20.8	36.6	50.0	-13.4
16.240	15.5	20.8	36.3	50.0	-13.7
5.500	15.8	20.4	36.2	50.0	-13.8
2.256	11.8	20.3	32.1	46.0	-13.9
5.810	15.6	20.4	36.0	50.0	-14.0
3.280	11.6	20.3	31.9	46.0	-14.1

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

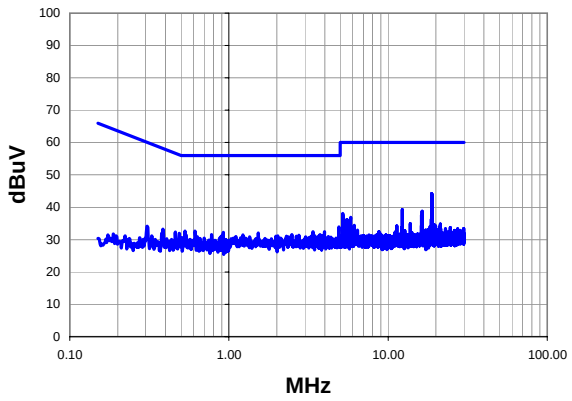
PSA-ESCI 2010.02.16
Version 2010.3.17

Work Order:	AVNE0071	**Date:**	04/17/10		
Project:	None	**Temperature:**	22C		
Job Site:	EV07	**Humidity:**	38%		
Serial Number:	10	**Barometric Pres.:**	29.95 in	**Tested by:**	Rod Peloquin
EUT:	IRT				
Configuration:	1 - Basic Configuration				
Customer:	Avnera				
Attendees:	Fred Weiss				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmit mode, continous high channel, Antenna 1 (port 0)				
Deviations:	No Deviations				
Comments:	Powered through DVR				

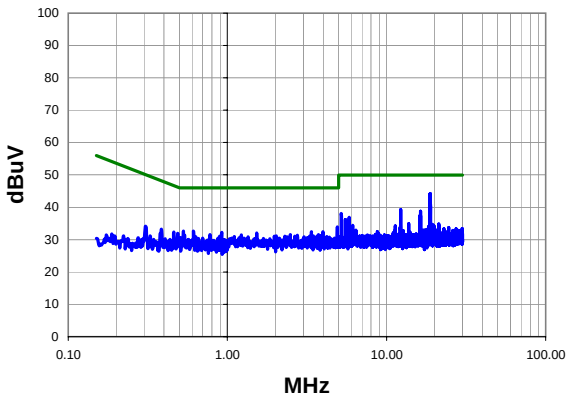
Test Specifications	**Test Method**
FCC 15.209:2010	ANSI C63.10:2009

Run #	7	**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)
18.790	23.3	20.9	44.2	60.0	-15.8
18.820	23.2	20.9	44.1	60.0	-15.9
18.880	19.9	20.9	40.8	60.0	-19.2
18.850	19.4	20.9	40.3	60.0	-19.7
12.290	18.6	20.6	39.2	60.0	-20.8
16.340	18.0	20.8	38.8	60.0	-21.2
18.760	17.7	20.9	38.6	60.0	-21.4
5.200	17.7	20.4	38.1	60.0	-21.9
4.904	13.6	20.4	34.0	56.0	-22.0
16.240	16.7	20.8	37.5	60.0	-22.5
16.370	16.6	20.8	37.4	60.0	-22.6
5.820	16.5	20.4	36.9	60.0	-23.1
0.529	12.5	20.2	32.7	56.0	-23.3
0.612	12.5	20.2	32.7	56.0	-23.3
3.984	12.1	20.3	32.4	56.0	-23.6
3.368	12.1	20.3	32.4	56.0	-23.6
18.730	15.4	20.9	36.3	60.0	-23.7
0.922	12.1	20.2	32.3	56.0	-23.7
5.510	15.8	20.4	36.2	60.0	-23.8
1.528	11.8	20.2	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)
18.790	23.3	20.9	44.2	50.0	-5.8
18.820	23.2	20.9	44.1	50.0	-5.9
18.880	19.9	20.9	40.8	50.0	-9.2
18.850	19.4	20.9	40.3	50.0	-9.7
12.290	18.6	20.6	39.2	50.0	-10.8
16.340	18.0	20.8	38.8	50.0	-11.2
18.760	17.7	20.9	38.6	50.0	-11.4
5.200	17.7	20.4	38.1	50.0	-11.9
4.904	13.6	20.4	34.0	46.0	-12.0
16.240	16.7	20.8	37.5	50.0	-12.5
16.370	16.6	20.8	37.4	50.0	-12.6
5.820	16.5	20.4	36.9	50.0	-13.1
0.529	12.5	20.2	32.7	46.0	-13.3
0.612	12.5	20.2	32.7	46.0	-13.3
3.984	12.1	20.3	32.4	46.0	-13.6
3.368	12.1	20.3	32.4	46.0	-13.6
18.730	15.4	20.9	36.3	50.0	-13.7
0.922	12.1	20.2	32.3	46.0	-13.7
5.510	15.8	20.4	36.2	50.0	-13.8
1.528	11.8	20.2	32.0	46.0	-14.0

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

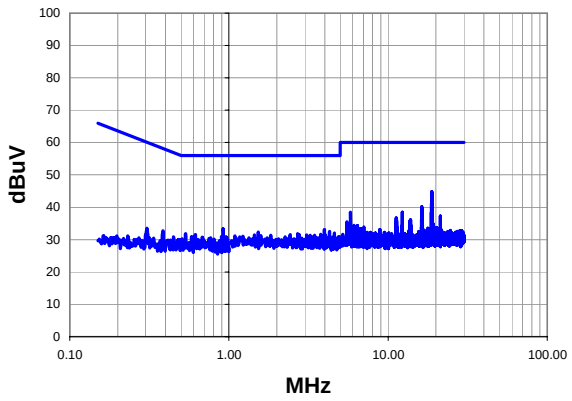
PSA-ESCI 2010.02.16
Version 2010.3.17

Work Order:	AVNE0071	**Date:**	04/17/10		
Project:	None	**Temperature:**	22C		
Job Site:	EV07	**Humidity:**	38%		
Serial Number:	10	**Barometric Pres.:**	29.95 in	**Tested by:**	Rod Peloquin
EUT:	IRT				
Configuration:	1 - Basic Configuration				
Customer:	Avnera				
Attendees:	Fred Weiss				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmit mode, continous high channel, Antenna 1 (port 0)				
Deviations:	No Deviations				
Comments:	Powered through DVR				

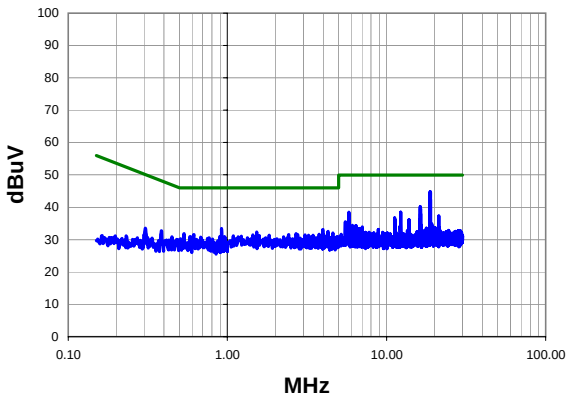
Test Specifications	**Test Method**
FCC 15.209:2010	ANSI C63.10:2009

Run #	8	**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)
18.820	23.9	20.9	44.8	60.0	-15.2
18.850	23.7	20.9	44.6	60.0	-15.4
18.790	23.6	20.9	44.5	60.0	-15.5
18.880	21.5	20.9	42.4	60.0	-17.6
18.760	20.8	20.9	41.7	60.0	-18.3
16.310	19.4	20.8	40.2	60.0	-19.8
16.340	18.8	20.8	39.6	60.0	-20.4
5.810	18.1	20.4	38.5	60.0	-21.5
12.290	17.8	20.6	38.4	60.0	-21.6
18.730	17.5	20.9	38.4	60.0	-21.6
16.370	17.2	20.8	38.0	60.0	-22.0
0.918	13.2	20.2	33.4	56.0	-22.6
21.330	16.2	21.0	37.2	60.0	-22.8
3.984	12.8	20.3	33.1	56.0	-22.9
11.260	16.1	20.6	36.7	60.0	-23.3
4.288	12.2	20.3	32.5	56.0	-23.5
1.528	12.1	20.2	32.3	56.0	-23.7
16.240	15.4	20.8	36.2	60.0	-23.8
11.320	15.6	20.6	36.2	60.0	-23.8
13.840	15.4	20.7	36.1	60.0	-23.9

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
18.820	23.9	20.9	44.8	50.0	-5.2
18.850	23.7	20.9	44.6	50.0	-5.4
18.790	23.6	20.9	44.5	50.0	-5.5
18.880	21.5	20.9	42.4	50.0	-7.6
18.760	20.8	20.9	41.7	50.0	-8.3
16.310	19.4	20.8	40.2	50.0	-9.8
16.340	18.8	20.8	39.6	50.0	-10.4
5.810	18.1	20.4	38.5	50.0	-11.5
12.290	17.8	20.6	38.4	50.0	-11.6
18.730	17.5	20.9	38.4	50.0	-11.6
16.370	17.2	20.8	38.0	50.0	-12.0
0.918	13.2	20.2	33.4	46.0	-12.6
21.330	16.2	21.0	37.2	50.0	-12.8
3.984	12.8	20.3	33.1	46.0	-12.9
11.260	16.1	20.6	36.7	50.0	-13.3
4.288	12.2	20.3	32.5	46.0	-13.5
1.528	12.1	20.2	32.3	46.0	-13.7
16.240	15.4	20.8	36.2	50.0	-13.8
11.320	15.6	20.6	36.2	50.0	-13.8
13.840	15.4	20.7	36.1	50.0	-13.9