Radioframe Networks, Inc.

MCRB

July 19, 2006

Report No. RAFN0063.1

Report Prepared By

ENC

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Certificate of Test

Issue Date: July 19, 2006 Radioframe Networks, Inc.

Model: MCRB

Emissions					
Test Description	Specification	Test Method	Pass	Fail	
Radiated Emissions	FCC 15.109:2006	ANSI C63.4:2003	\boxtimes		
Conducted Emissions	FCC 15.107:2006	ANSI C63.4:2003	\boxtimes		
Frequency Stability	FCC 90.213:2005	ANSI/TIA/EIA-603:2002	\square		
Output Power	FCC 90.691:2005	ANSI/TIA/EIA-603:2002	\square		
Emission Mask	FCC 90.691:2005	ANSI/TIA/EIA-603:2002	\square		
Spurious Conducted Emissions- Receive	FCC 15.111:2006	ANSI C63.4:2003			
Spurious Conducted Emissions- Transmit	FCC 90.691:2005	ANSI/TIA/EIA-603:2002			
Spurious Radiated Emissions	FCC 90.691:2005	ANSI/TIA/EIA-603:2002	\boxtimes		

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

Test Facilities

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.

Additional antenna port direct connect measurements were made in-situ at the client's facility:

Radioframe Networks, Inc. 9461 Willows Road NE, Suite 100 Redmond, WA 98052

Approved By:
ADU.K.P
Grea Kiemel. Director of Engineering

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		



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 89/336/EEC, ANSI C63.4, MIL-STD 461E, DO-160D and SAE J1113. 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 212, Issue 1 (Provisional) 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.

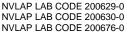
CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

TÜV Product Service: Included in TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV's CARAT Program requirements. Certificate No. USA0401C.

TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.













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).

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, and R-2318, Irvine: C-2094 and R-1943, Sultan: R-871, C-1784 and R-1761).

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. 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

> SCOPE For details on the Scopes of our Accreditations, please visit: http://www.nwemc.com/scope.asp

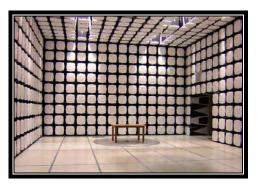












California – Orange County Facility Labs OC01 – OC13

41 Tesla Ave. Irvine, CA 92618 (888) 364-2378 Fax: (503) 844-3826





Oregon – Evergreen Facility Labs EV01 – EV11

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124 (503) 844-4066 Fax: (503) 844-3826





Washington – Sultan Facility Labs SU01 – SU07

14128 339th Ave. SE Sultan, WA 98294 (888) 364-2378



Product Description

Party Requesting the Test	
Company Name:	Radioframe Networks, Inc.
Address:	9461 Willows Road NE, Suite 100
City, State, Zip:	Redmond, WA 98052
Test Requested By:	Dean Busch
Model:	MCRB
First Date of Test:	May 18, 2006
Last Date of Test:	June 29, 2006
Receipt Date of Samples:	May 18, 2006
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

The Multi-Channel Radio Blade (MCRB) transceiver duplicates the RF functions of up to 6 simultaneously operational iDEN radio transceivers. The blades are installed in a standard 7-foot-tall, 19- inch-wide rack.

Testing Objective:

To meet the EMC requirements for certification under FCC Part 90.691

Configurations

CONFIGURATION 1

Software/Firmware Running during test				
Description	Version			
VxWorks	RFN_14.0.225			
Software Script	idencric.gz			

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
EUT- Multi-Channel RadioBlades (MCRB)	Radioframe Networks, Inc.	176-0860-00	Various
MC-15 SERIES DUAL BAND SYSTEM (3 SECTOR)	Radioframe Networks, Inc.	176-7970-xx	Unknown

Remote Equipment Outside of Test Setup Boundary							
Description	Manufacturer	Model/Part Number	Serial Number				
Site Simulator	Radioframe Networks, Inc.	N/a	N/a				
Site Controller	Motorola, Inc.	CCN1008N	CAF030LTC4				
GPS Antenna	Hewlett-Packard	8532A	901				
DC Power Supply	Sorensen	DCR 60-45B	0144				

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	8.0	No	MC-15 SERIES DUAL BAND SYSTEM	DC Supply
BNC	Yes	30.0	No	ERTM	Site Simulator
BNC	Yes	30.0	No	Site Controller	Site Simulator
BNC	Yes	3.0	No	GPS Antenna	Site Controller
Ethernet	No	3.0	No	Site Controller	ERTM
PA = C	able is per	manently attache	d to the dev	vice. Shielding and/or presence of ferrite may be	unknown.



Modifications

	Equipment modifications						
Item	Date	Test	Modification	Note	Disposition of EUT		
1	5/18/2006	Spurious Conducted Limits Xmit Mode	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.		
2	5/19/2006	Spurious Emissions at Antenna Terminals	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.		
3	5/19/2006	Field Strength of Spurious radiation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.		
4	5/19/2006	Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.		
5	5/23/2006	RF Power Output	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.		
6	5/23/2006	Emission Mask	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.		
7	5/23/2006	Spurious Conducted Limits Receive Mode	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.		
8	6/29/2006	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.		
9	6/29/2006	3 Tone Inter Mod	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.

tion	Manufacturer	Model	ID	Last Cal.	Interval
nalyzer	Agilent	E4446A	AAT	4/4/2006	12
ſ	tion malyzer	tion Manufacturer	tion Manufacturer Model	tion Manufacturer Model ID	tion Manufacturer Model ID Last Cal.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

NORTHWEST EMC

EMISSION MASK

Configuration: The peak measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The occupied bandwidth / emission mask was measured with the EUT set to low; medium, and high transmit frequencies. At each channel, measurements were made at the highest output settings

FCC Interpretation Regarding Emission Mask and 90.691

----Original Message----From: Andrew Leimer [mailto:ALEIMER@fcc.gov] Sent: Wednesday, May 14, 2003 12:21 PM To: rwacs@att.net Subject: Re: Part 90 rules

Hello Dean,

How are you doing? I have not heard from you in a while! The following explanation is from the archives. The basic question was if emissions mask g would ever be used. I hope it answers your question:

I found that footnote 3 was added to Section 90.210 as a result of the First R&O, Eighth R&O and 2nd FNPRM in PR Docket 93-144 (FCC 95-501), adopted 12/15/95. Footnote 3 initially said "Equipment in this band licensed to EA systems shall comply with the emission mask provisions of Section 90.691." Note here that this R&O dealt principally with the upper 200 MHz SMR channels which were auctioned in contiguous segments/blocks. Consequently, providing more flexibility in the emission mask that required protection of the "outer"channels in those blocks and to any interior channels in those blocks used byincumbents made sense.

When the Commission subsequently dealt with auctioning the lower 80 channels (non-contiguous channels in each block) and the General Category channels (contiguously allocated channels by block for auction purposes but originally allocated on a single channel basis for site-specific licensing purposes), the consideration of emission mask caused footnote 3 to be modified as it exists today. Specifically, the Second R&O in PR Docket 93-144 (FCC 97-223), adopted 6/23/97 @ para 80 reasons that applying the same emission mask standards to the lower 230 channels (lower 80 channels and 150 General Category channels) as to the upper 200 channels facilitates the use of common equipment and the combining of all such It further states that Section 90.691 (the emission mask) would apply to "outer" channels channels. used by a licensee "that create out-of-band emissions that affect another licensee". The MO&O on reconsideration of the 800 MHz 1st R&O (FCC 97-224, adopted 6/23/97) at para 76 agreed with Erricson's recommendation to expand the emission mask provision of Section 90.691 to "non-EA 800 MHz Part 90 CMRS systems". The decision was based ostensibly on extending the flexibility of the 90.691 emission mask to incumbent licensees (non-EA licensees or non-auction winners) and to those non-SMR channels used by CMRS operators. The paragraph closes by stating that neither Ericsson or Motorola believe that such relaxation will increase the amount of interference to adjacent channel licensees.

You'll note that there is some similarity between emission mask G (applicable to equipment without audio low pass filters) under Section 90.210 and the emission mask required by Section 90.691. It is my interpretation that footnote 3 under Section 90.210 (the applicability of the emission mask under Section 90.691) was intended principally for Part 90 CMRS systems in the 800 MHz band to provide flexbility and consistency to those operators. As Section 90.210 is written, however, I don't see how we could legally prevent any 800 MHz licensee from using the more flexibile emission mask under Section 90.691.

Bottom line: As the rule is written, it is possible that the "G" mask would never be used by 800 MHz licensees.

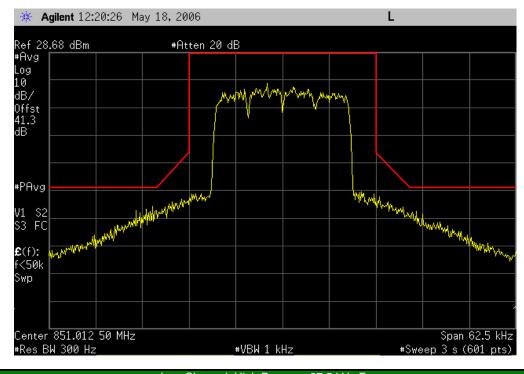
>>> Dean Busch 05/14/03 01:22PM >>> Andy;

NORTHWEST EMC		EMISSI	ON MA	SK		XMit 2006.03.01
EUT:	MCRB				Work Order:	RAFN0062
Serial Number:	Various				Date:	05/18/06
Customer:	Radioframe Networks, I	nc.			Temperature:	23°C
Attendees:	Dean Busch				Humidity:	
Project:					Barometric Pres.:	
	Rod Peloquin		Power:		Job Site:	EV06
TEST SPECIFICATI	ONS			Test Method		
FCC 90.691:2005				ANSI/TIA/EIA-603	-B:2002	
COMMENTS						
800MHz Band						
DEVIATIONS FROM	I TEST STANDARD					
				0		
Configuration #	1	Signature	he Rely	رلا د		

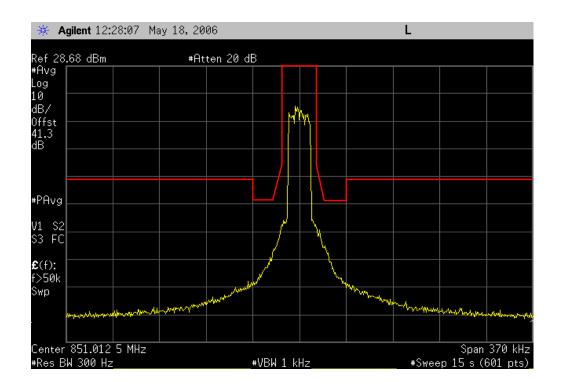
Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, High Power, < 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, High Power, > 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Mid Power, < 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Mid Power, > 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Low Power, < 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Low Power, > 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, High Power, < 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, High Power, > 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Mid Power, < 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Mid Power, > 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Low Power, < 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Low Power, > 37.5 kHz Fc	N/A	See Table	Pass
High Channel, High Power, < 37.5 kHz Fc	N/A	See Table	Pass
High Channel, High Power, > 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Mid Power, < 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Mid Power, > 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Low Power, < 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Low Power, > 37.5 kHz Fc	N/A	See Table	Pass

Result:

	Low Channel, High Power	, < 37.5 kHz Fc	
Result: Pass	Value: N/A	Limit:	See Table

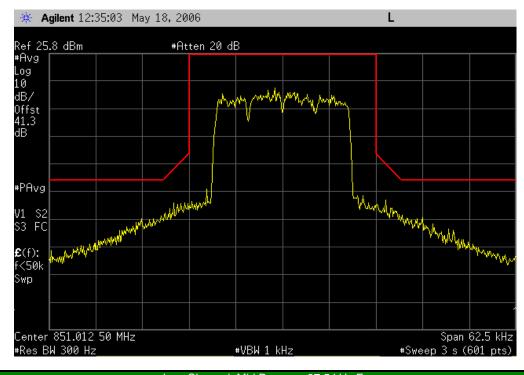


	Low Channel, High Power, > 37	.5 kHz Fc	
: Pass	Value: N/A	Limit: See Table	

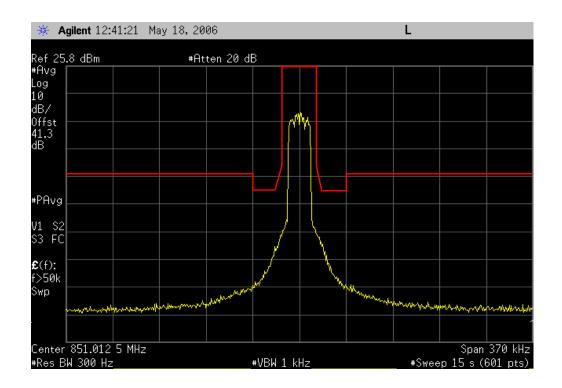


Result:

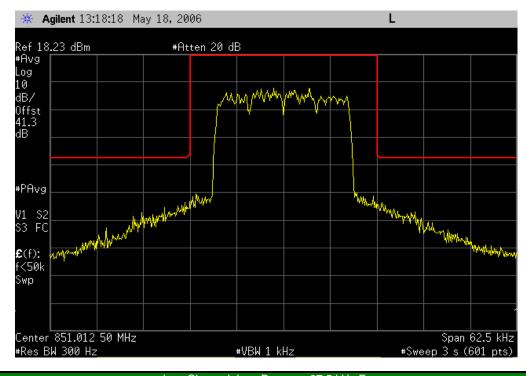
	Low Channel, Mid Power, < 37.5	kHz Fc
Result: Pass	Value: N/A	Limit: See Table



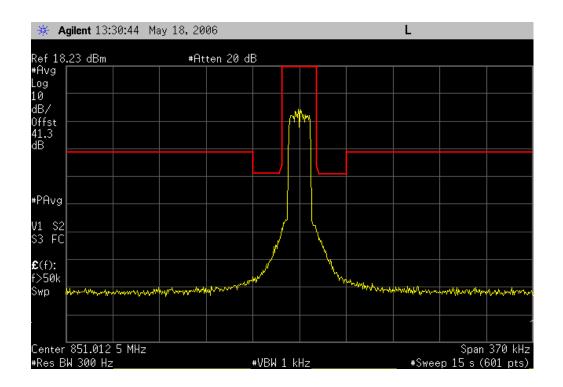
	Low Channel, Mid Power, > 37.5 I	KHZ FC	
: Pass	Value: N/A	Limit: See Table	



	Low Channel, Low Power, < 37.	5 kHz Fc	
Result: Pass	Value: N/A	Limit: See Table	

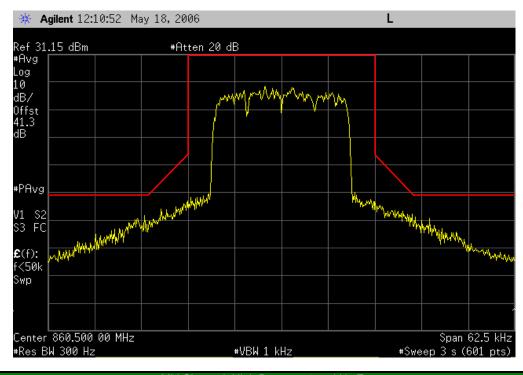


	Low Channel, Low Power, > 37.	5 kHz Fc
Result: Pass	Value: N/A	Limit: See Table

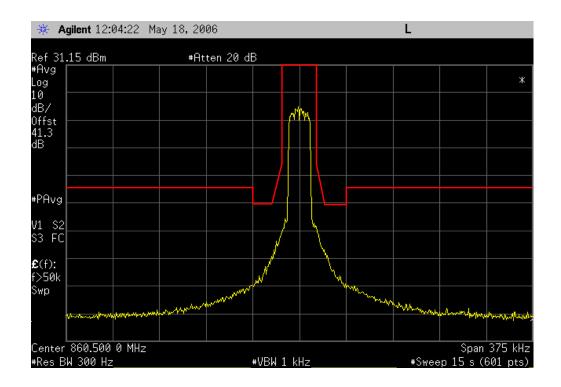


Result:

	Mid Channel, Hig	gh Power, < 37.5 kHz Fc		
Result: Pass	Value: N	N/A	Limit:	See Table

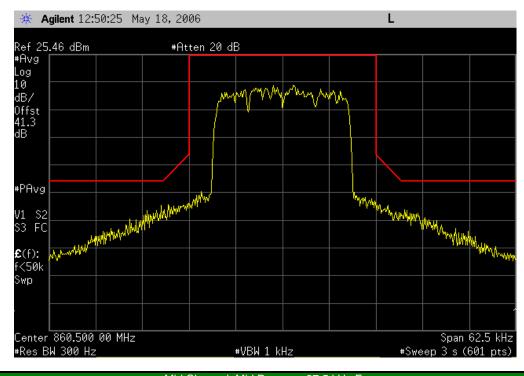


	Mid Channel, High	Power, > 37.5 kHz Fc	
Pass	Value: N/A	Limit:	See Table

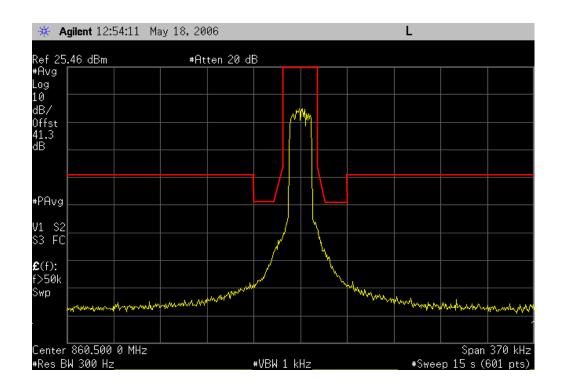


Result:

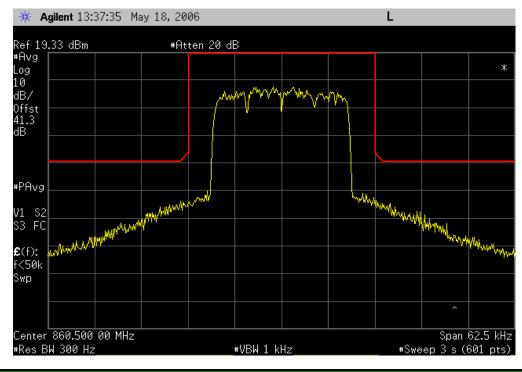
	Mid Channel, Mid Power, < 37.	5 kHz Fc
Result: Pass	Value: N/A	Limit: See Table



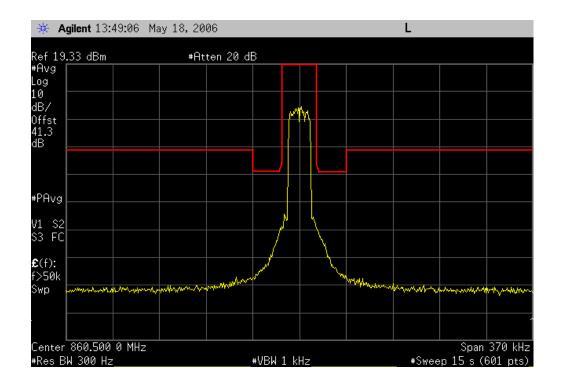
	Mid Channel, N	vlid Power, > 37.5 kHz Fc		
Pass	Value:	N/A	Limit:	See Table



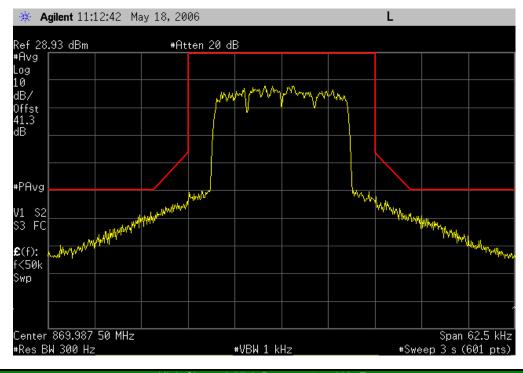
	Mid Channel, Low Power, < 37	5 kHz Fc	
Result: Pass	Value: N/A	Limit: See Table	



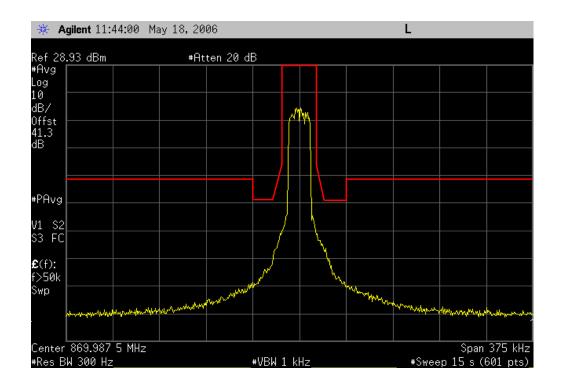
	Mid Channel, Low Power, > 37.5 k	Hz Fc	
Result: Pass	Value: N/A	Limit: See Table	



	High Channel, High Power, < 3	7.5 kHz Fc	
Result: Pass	Value: N/A	Limit: See Table	

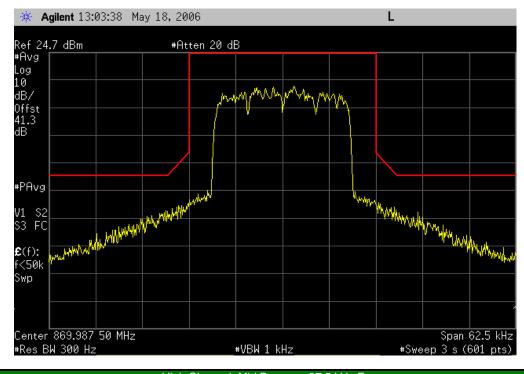


	High Channel, High Power, > 37.5	kHz Fc
Result: Pass	Value: N/A	Limit: See Table

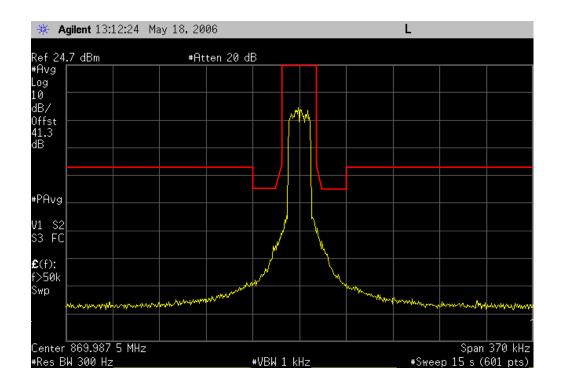




	High Channel, Mid Power, < 37.5 I	kHz Fc	
Result: Pass	Value: N/A	Limit: See Table	

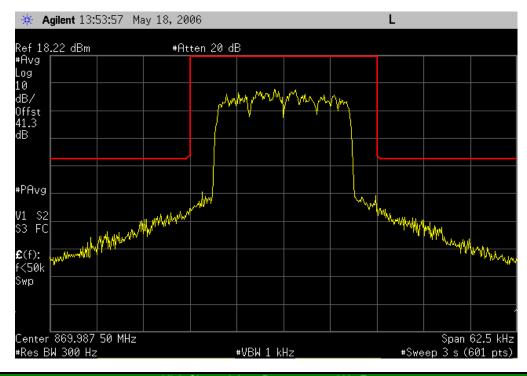


	High Channel, Mid Power, > 37.5 kH	Hz Fc		
Result: Pass	Value: N/A	Limit:	See Table	

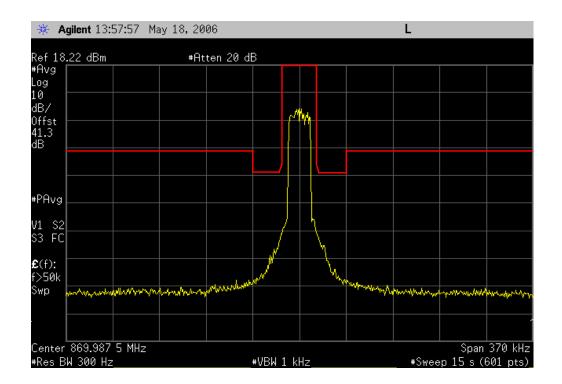


Result:

	High Channel, Low Power, < 37	.5 kHz Fc	
Result: Pass	Value: N/A	Limit: See Tab	le



	High Channel, Low Power, > 3	7.5 kHz Fc
: Pass	Value: N/A	Limit: See Table



EMISSION MASK

-								
Frequency	Output Power	Power (P)	Attenuation for the range 12.5 kHz to 37.5 kHz from fc				Attenuation >37.5 kHz	r from fc
riequency	Output I ower			(dBc)			(dBc)	
(MHz)	(dBm)	Watts	50 + (10*log P)	116*lo	g(f/6.1)	80	43 + (10*log P)	80
(11112)	(ubiii)	valls	$30 \pm (10 \log P)$	f = 12.5 kHz	f = 37.5 kHz	00	43 + (10 log P)	00
	28.68	7.38E-01	48.7	36.14	91.49	80	41.7	80
851.0125	25.80	3.80E-01	45.8	36.14	91.49	80	38.8	80
	18.23	6.65E-02	38.2	36.14	91.49	80	31.2	80
	31.15	1.30E+00	51.2	36.14	91.49	80	44.2	80
860.5	25.46	3.52E-01	45.5	36.14	91.49	80	38.5	80
	19.33	8.57E-02	39.3	36.14	91.49	80	32.3	80
	28.93	7.82E-01	48.9	36.14	91.49	80	41.9	80
869.9875	24.70	2.95E-01	44.7	36.14	91.49	80	37.7	80
	18.22	6.64E-02	38.2	36.14	91.49	80	31.2	80

NORTHWEST

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.

n	Manufacturer	Model	ID	Last Cal.	Interval
lyzer	Agilent	E4446A	AAT	4/4/2006	12

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

NORTHWEST

EMISSION MASK

Configuration: The peak measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The occupied bandwidth / emission mask was measured with the EUT set to low; medium, and high transmit frequencies. At each channel, measurements were made at the highest output settings

FCC Interpretation Regarding Emission Mask and 90.691

----Original Message----From: Andrew Leimer [mailto:ALEIMER@fcc.gov] Sent: Wednesday, May 14, 2003 12:21 PM To: rwacs@att.net Subject: Re: Part 90 rules

Hello Dean,

How are you doing? I have not heard from you in a while! The following explanation is from the archives. The basic question was if emissions mask g would ever be used. I hope it answers your question:

I found that footnote 3 was added to Section 90.210 as a result of the First R&O, Eighth R&O and 2nd FNPRM in PR Docket 93-144 (FCC 95-501), adopted 12/15/95. Footnote 3 initially said "Equipment in this band licensed to EA systems shall comply with the emission mask provisions of Section 90.691." Note here that this R&O dealt principally with the upper 200 MHz SMR channels which were auctioned in contiguous segments/blocks. Consequently, providing more flexibility in the emission mask that required protection of the "outer"channels in those blocks and to any interior channels in those blocks used by incumbents made sense.

When the Commission subsequently dealt with auctioning the lower 80 channels (non-contiguous channels in each block) and the General Category channels (contiguously allocated channels by block for auction purposes but originally allocated on a single channel basis for site-specific licensing purposes), the consideration of emission mask caused footnote 3 to be modified as it exists today. Specifically, the Second R&O in PR Docket 93-144 (FCC 97-223), adopted 6/23/97 @ para 80 reasons that applying the same emission mask standards to the lower 230 channels (lower 80 channels and 150 General Category channels) as to the upper 200 channels facilitates the use of common equipment and the combining of all such It further states that Section 90.691 (the emission mask) would apply to "outer" channels channels. used by a licensee "that create out-of-band emissions that affect another licensee". The MO&O on reconsideration of the 800 MHz 1st R&O (FCC 97-224, adopted 6/23/97) at para 76 agreed with Erricson's recommendation to expand the emission mask provision of Section 90.691 to "non-EA 800 MHz Part 90 CMRS systems". The decision was based ostensibly on extending the flexibility of the 90.691 emission mask to incumbent licensees (non-EA licensees or non-auction winners) and to those non-SMR channels used by CMRS operators. The paragraph closes by stating that neither Ericsson or Motorola believe that such relaxation will increase the amount of interference to adjacent channel licensees.

You'll note that there is some similarity between emission mask G (applicable to equipment without audio low pass filters) under Section 90.210 and the emission mask required by Section 90.691. It is my interpretation that footnote 3 under Section 90.210 (the applicability of the emission mask under Section 90.691) was intended principally for Part 90 CMRS systems in the 800 MHz band to provide flexbility and consistency to those operators. As Section 90.210 is written, however, I don't see how we could legally prevent any 800 MHz licensee from using the more flexibile emission mask under Section 90.691.

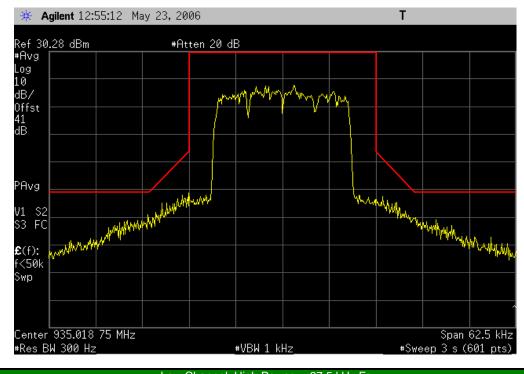
Bottom line: As the rule is written, it is possible that the "G" mask would never be used by 800 MHz licensees.

>>> Dean Busch 05/14/03 01:22PM >>> Andy; XMit 2006.03.0

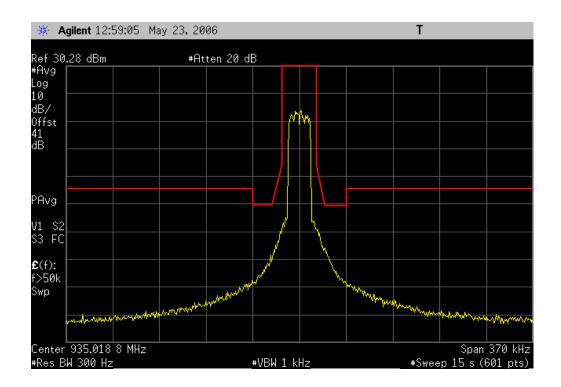
NORTHWEST EMC		EMISSIO	N MA	SK		XMit 2006.03.01
EUT:	MCRB				Work Order:	RAFN0062
Serial Number:	Various				Date:	05/23/06
Customer:	Radioframe Networks, Inc.				Temperature:	22°C
Attendees:	Dean Busch				Humidity:	43%
Project:					Barometric Pres.:	
	Rod Peloquin		Power:	-48Vdc	Job Site:	EV01
TEST SPECIFICATI	ONS			Test Method		
FCC 90.691:2005			/	ANSI/TIA/EIA-603-	-B:2002	
COMMENTS						
900MHz Band						
DEVIATIONS FROM	I TEST STANDARD					
Configuration #	1	Signature Rocky L	e Reley	ر م		

Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, High Power, < 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, High Power, > 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Mid Power, < 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Mid Power, > 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Low Power, < 37.5 kHz Fc	N/A	See Table	Pass
Low Channel, Low Power, > 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, High Power, < 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, High Power, > 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Mid Power, < 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Mid Power, > 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Low Power, < 37.5 kHz Fc	N/A	See Table	Pass
Mid Channel, Low Power, > 37.5 kHz Fc	N/A	See Table	Pass
High Channel, High Power, < 37.5 kHz Fc	N/A	See Table	Pass
High Channel, High Power, > 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Mid Power, < 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Mid Power, > 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Low Power, < 37.5 kHz Fc	N/A	See Table	Pass
High Channel, Low Power, > 37.5 kHz Fc	N/A	See Table	Pass

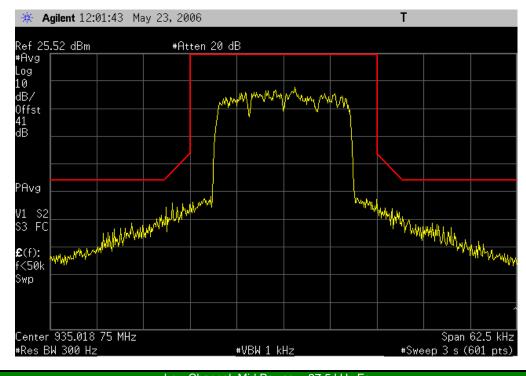
	Low Channel, High Power, < 37	.5 kHz Fc	
Result: Pass	Value: N/A	Limit: See Table	



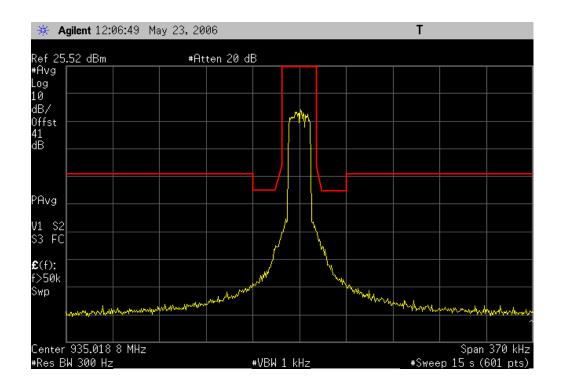
	Low Channel, High Power, > 37.5 KHz	ZFC		
Result: Pass	Value: N/A	Limit:	See Table	



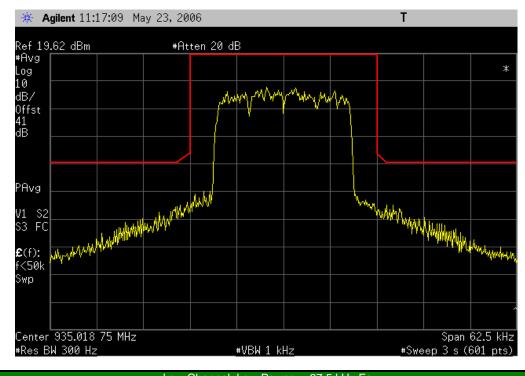
	Low Channel, Mid Power, < 37.5	kHz Fc
Result: Pass	Value: N/A	Limit: See Table



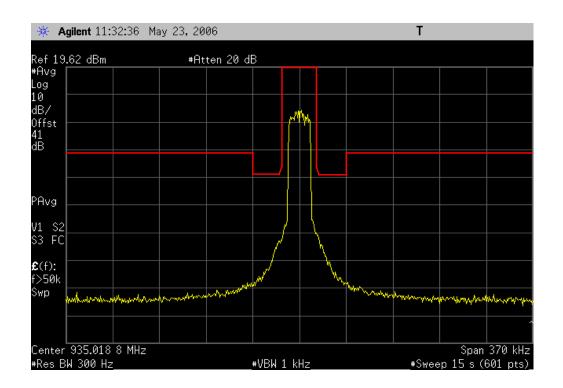
	Low Channel, Mid Power, > 37.5 kHz	FC		
Result: Pass	Value: N/A	Limit:	See Table	



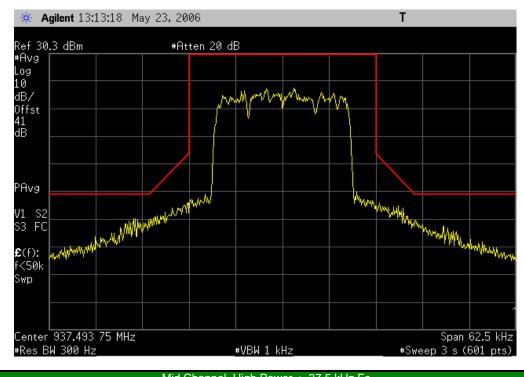
	Low Channel, Low Power, < 37.5 k	Hz Fc
Result: Pass	Value: N/A	Limit: See Table



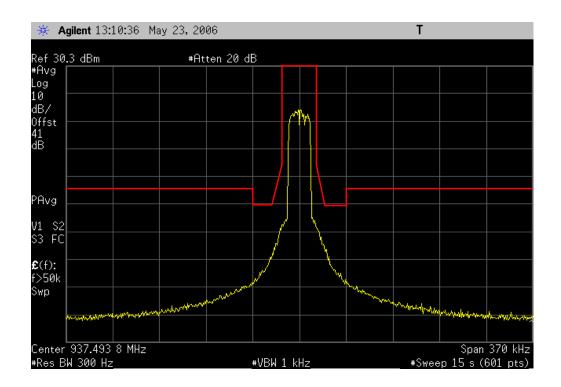
	Low Channel, Low Power, > 37.5 k	KHZ FC
Result: Pass	Value: N/A	Limit: See Table



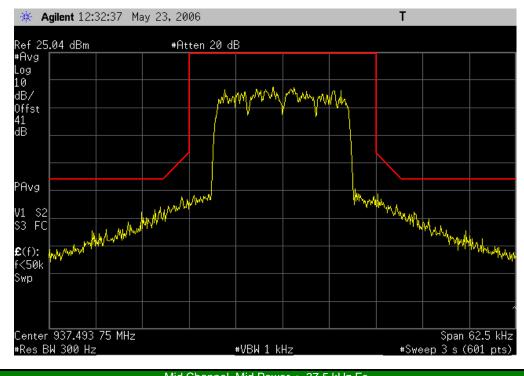
	Mid Channel, High Power, < 37.	5 kHz Fc
Result: Pass	Value: N/A	Limit: See Table



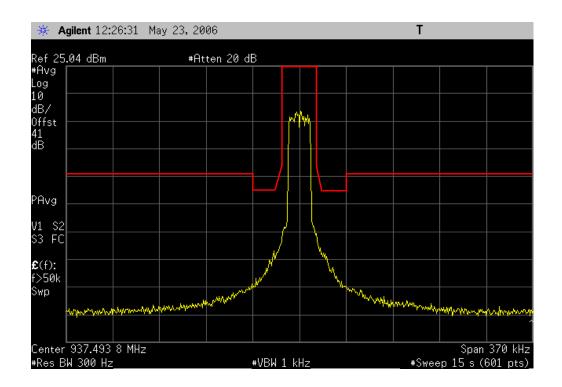
	Mid Channel, High Power, > 37.5 KHz			
Result: Pass	Value: N/A	Limit:	See Table	



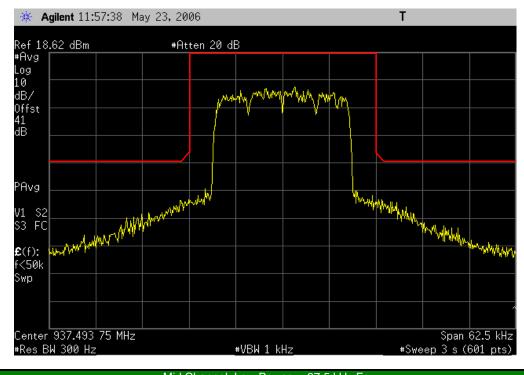
	М	d Channel,	Mid Power, < 37.5 kHz Fc		
Result: P	Pass	Value:	N/A	Limit:	See Table



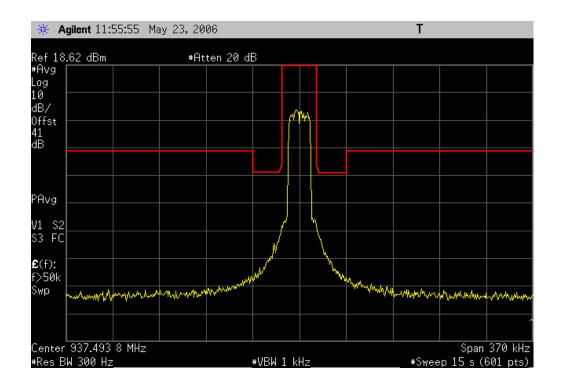
	IVIID Channel, IVIID Power, > 37.5 KHZ FC		
Result: Pass	Value: N/A	Limit:	See Table



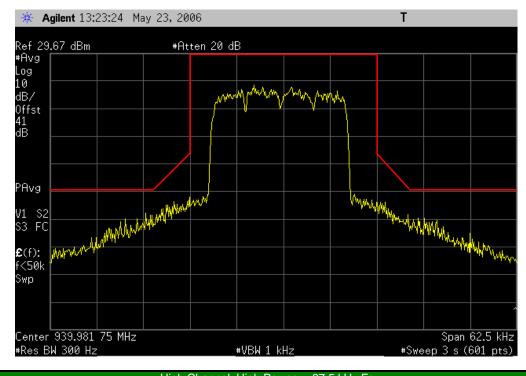
	Mid Channel, Low Power, < 37.5	5 kHz Fc
Result: Pass	Value: N/A	Limit: See Table



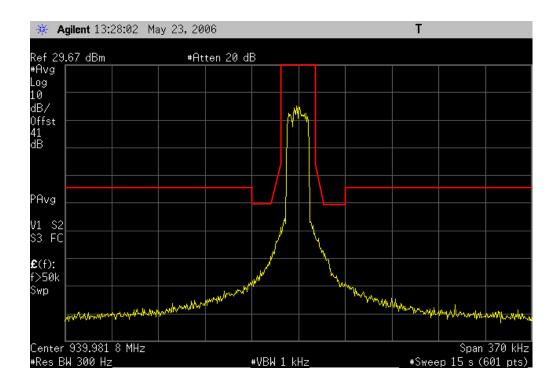
	Mid Channel, Low Power, > 37.5 kHz F	-C		
Result: Pass	Value: N/A	Limit:	See Table	



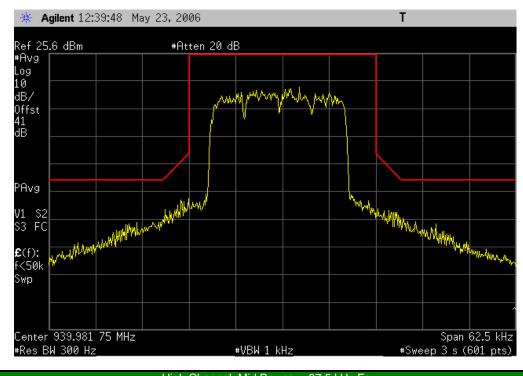
	High Channel, High Power, < 37.	5 kHz Fc	
Result: Pass	Value: N/A	Limit: See Table	



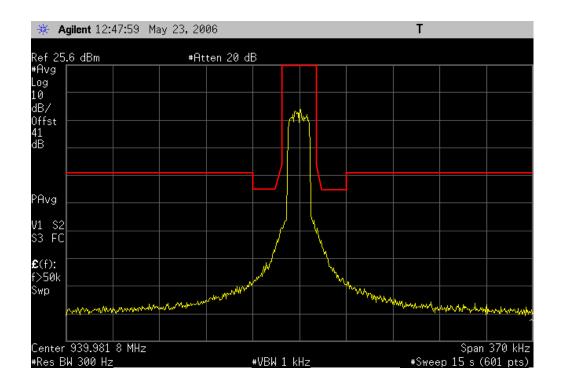
	High Channel, High Power, > 37.5 Kr		
Result: Pass	Value: N/A	Limit: See Table	



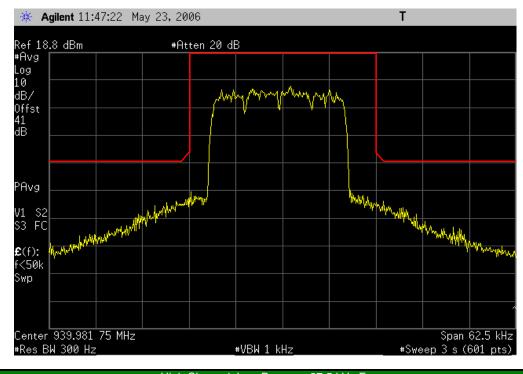
High Channel, Mid Power, < 37.5 kHz Fc					
Result: Pass	Value: N/A	Limit: See Table			



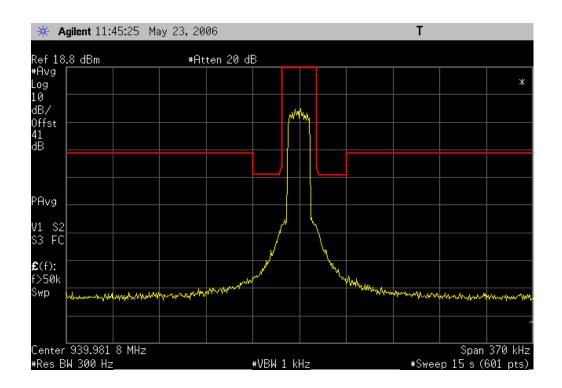
	High Channel, Mid Power, > 37.5 KF	1Z FC	
Result: Pass	Value: N/A	Limit: See Ta	able



High Channel, Low Power, < 37.5 kHz Fc					
Result: Pass	Value: N/A	Limit: See Table			



	High Channel, Low Power, > 37.5 kHz	Fc		
Result: Pass	Value: N/A	Limit:	See Table	



NORTHWEST

Frequency Output Power (P)			Attenuation for the range 12.5 kHz to 37.5 kHz from fc			Attenuation >37.5 kHz from fc			
ricqueriey	Power		(dBc)				(dBc)		
(MHz)	(dPm)	Watts	50 + (10*log D)	116*log(f/6.1)		80	43 + (10*log P)	80	
(MHz) (dBm)	waits	50 + (10*log P)	f = 12.5 kHz	f = 37.5 kHz					
	30.28	1.07E+00	50.3	36.14	91.49	80	43.3	80	
935.01875	25.52	3.56E-01	45.5	36.14	91.49	80	38.5	80	
1	19.62	9.16E-02	39.6	36.14	91.49	80	32.6	80	
	30.30	1.07E+00	50.3	36.14	91.49	80	43.3	80	
937.49375	25.04	3.19E-01	45.0	36.14	91.49	80	38.0	80	
	18.62	7.28E-02	38.6	36.14	91.49	80	31.6	80	
	29.67	9.27E-01	49.7	36.14	91.49	80	42.7	80	
939.98175	25.60	3.63E-01	45.6	36.14	91.49	80	38.6	80	
	18.80	7.59E-02	38.8	36.14	91.49	80	31.8	80	



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	AAT	4/4/2006	12
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Power Sensor	Hewlett-Packard	8481H	SPB	7/23/2004	24

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies within the allowable band, and at all three power levels. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer with an RMS average detector.

NORTHWEST					XMit 2006.03.01
EMC		OUTPUT PO	VER		
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:	Various			Date:	05/18/06
Customer:	Radioframe Networks, Inc.			Temperature:	23°C
Attendees:	Dean Busch			Humidity:	37%
Project:	None			Barometric Pres.:	29.99
	Rod Peloquin	Powe	r: -48Vdc	Job Site:	EV06
TEST SPECIFICATI	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-	3:2002	
COMMENTS					
800MHz Band					
DEVIATIONS FROM	I TEST STANDARD				
Configuration #	1	Signature Rocky Le Rev	ing		

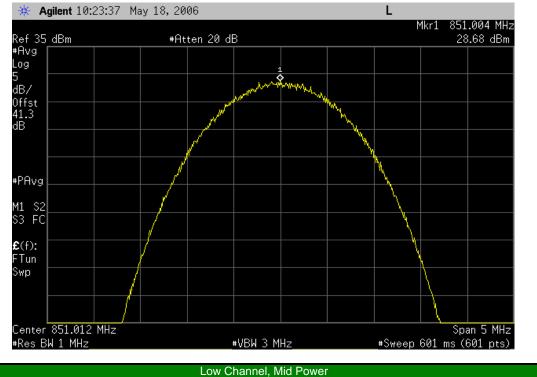
Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, High Power	28.68 dBm		Pass
Low Channel, Mid Power	25.80 dBm		Pass
Low Channel, Low Power	18.23 dBm		Pass
Mid Channel, High Power	31.15 dBm		Pass
Mid Channel, Mid Power	25.46 dBm		Pass
Mid Channel, Low Power	19.33 dBm		Pass
High Channel, High Power	28.93 dBm		Pass
High Channel, Mid Power	24.70 dBm		Pass
High Channel, Low Power	18.22 dBm		Pass

Result: Pass

Low Channel, High Power Value: 28.68 dBm

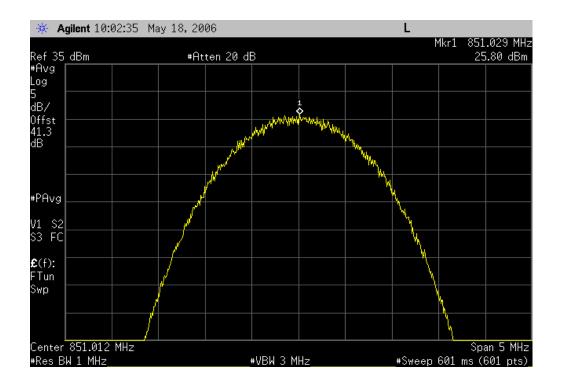
Limit:

Limit:



Result: Pass

Value: 25.80 dBm

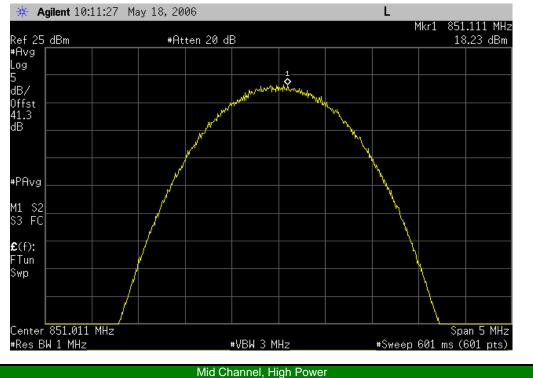


Result: Pass

Low Channel, Low Power Value: 18.23 dBm

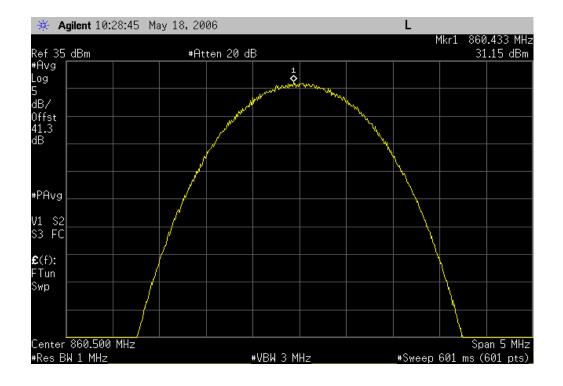
Limit:

Limit:



Result: Pass

Value: 31.15 dBm



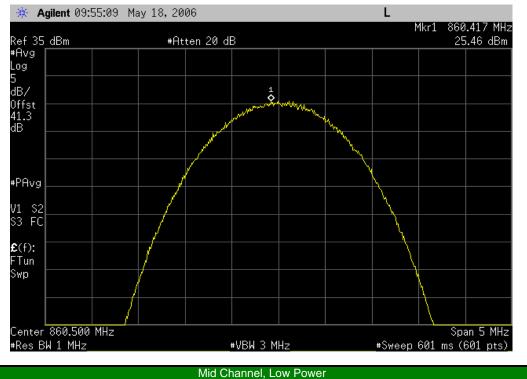
Result:

OUTPUT POWER

Limit:

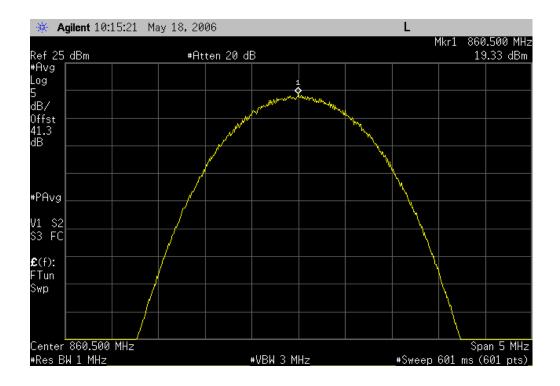
Limit:

	Mid Channel, Mid Power			
Pass	Value:	25.46 dBm		



Result: Pass

Value: 19.33 dBm

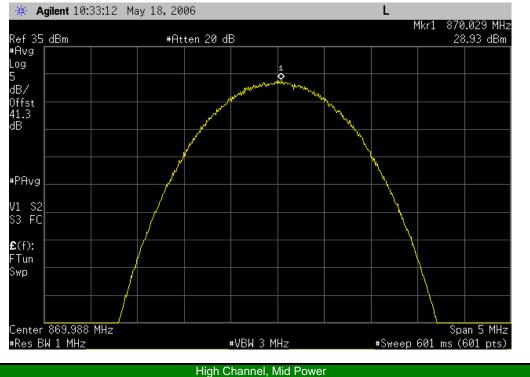


Result: Pass

High Channel, High Power Value: 28.93 dBm

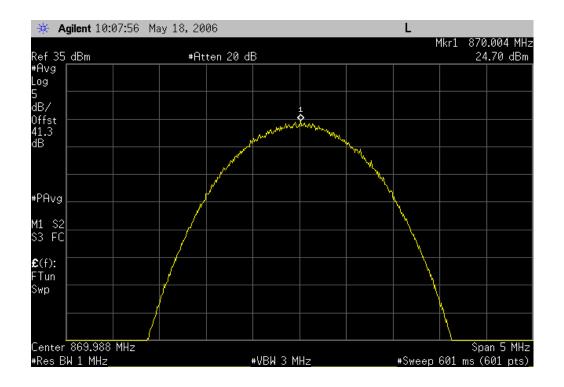
Limit:

Limit:



Result: Pass

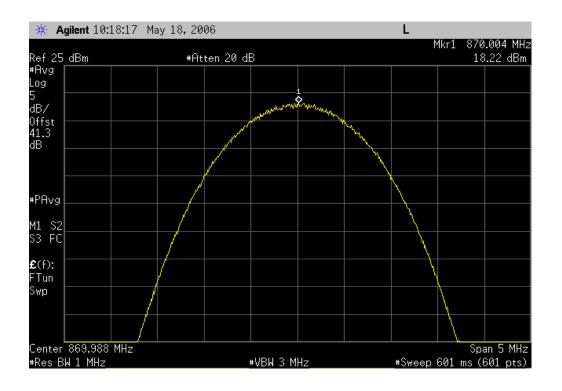
Value: 24.70 dBm



Result: Pass

High Channel, Low Power Value: 18.22 dBm

Limit:



NORTHWEST

OUTPUT POWER

XMit 2006.03.01

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	AAT	4/4/2006	12
Attenuator	Weinschel Corp	54A-10	RBK	NCR	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Power Sensor	Hewlett-Packard	8481H	SPB	7/23/2004	24
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies within the allowable band, and at all three power levels. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer with an RMS average detector.

NORTHWEST EMC		OUTPUT POW	/ER		XMit 2006.03.01
	MCRB			Work Order:	RAFN0062
Serial Number:					05/23/06
Customer:	Radioframe Networks, Inc.			Temperature:	22°C
Attendees:	Dean Busch			Humidity:	43%
Project:	None			Barometric Pres.:	29.93
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV01
TEST SPECIFICATI	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-E	3:2002	
COMMENTS					
900MHz Band					
DEVIATIONS FROM	I TEST STANDARD				
		Rock I. P.el.	2		
Configuration #	1	Signature Rocky la Rele	and the second s		

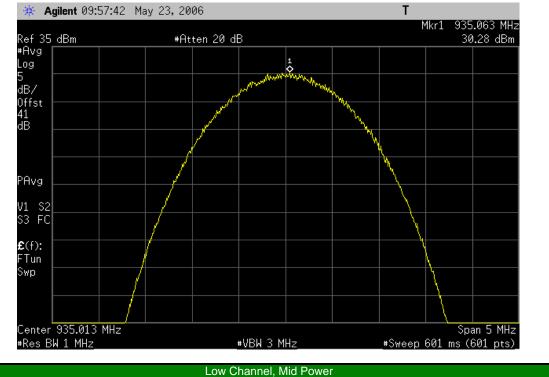
Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, High Power	30.28 dBm		Pass
Low Channel, Mid Power	25.52 dBm		Pass
Low Channel, Low Power	19.62 dBm		Pass
Mid Channel, High Power	30.30 dBm		Pass
Mid Channel, Mid Power	25.04 dBm		Pass
Mid Channel, Low Power	18.62 dBm		Pass
High Channel, High Power	29.67 dBm		Pass
High Channel, Mid Power	25.60 dBm		Pass
High Channel, Low Power	18.80 dBm		Pass

Result: Pass Value: 3

Low Channel, High Power /alue: 30.28 dBm

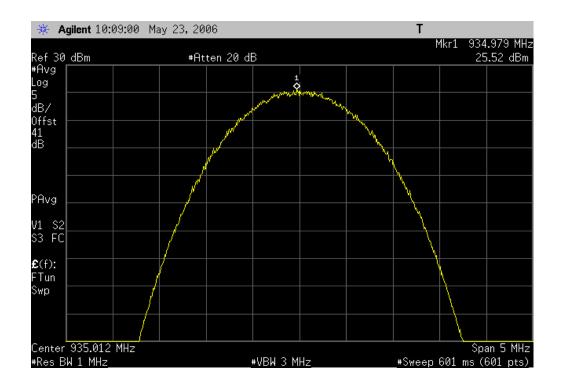
Limit:

Limit:



Result: Pass

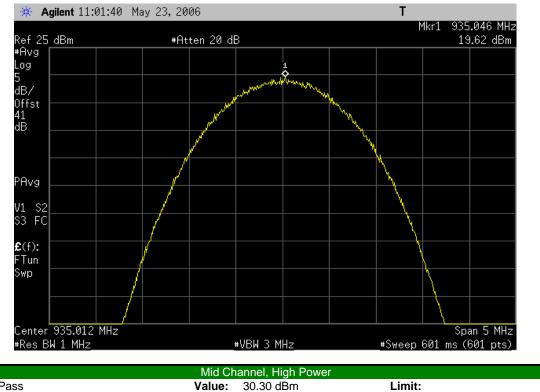
Value: 25.52 dBm

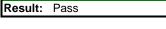


Result: Pass

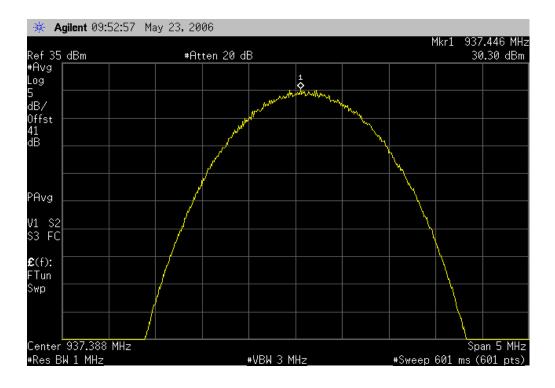
Low Channel, Low Power Value: 19.62 dBm

Limit:





30.30 dBm Value:

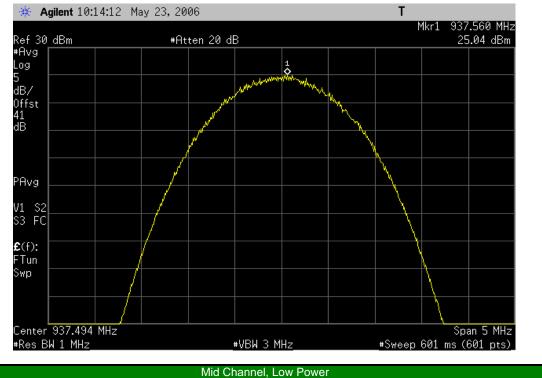


Result: Pass

Mid Channel, Mid Power Value: 25.04 dBm

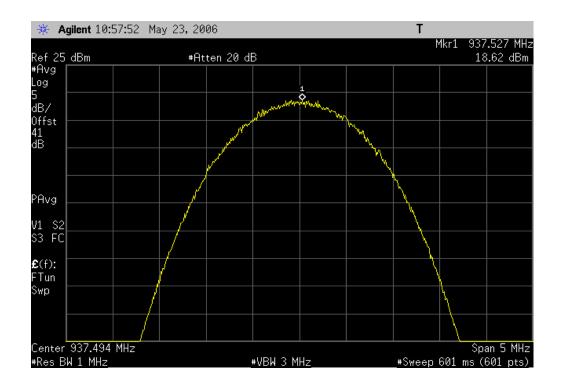
Limit:

Limit:



Result: Pass

Value: 18.62 dBm

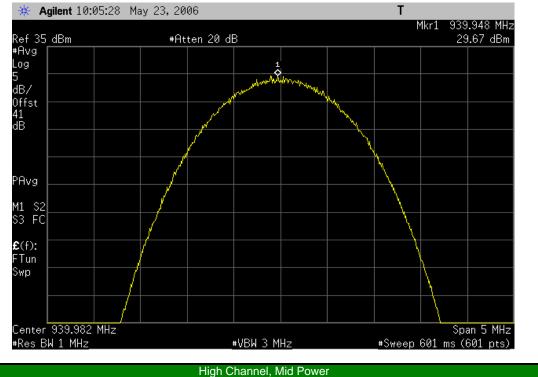


Result: Pass

High Channel, High Power Value: 29.67 dBm

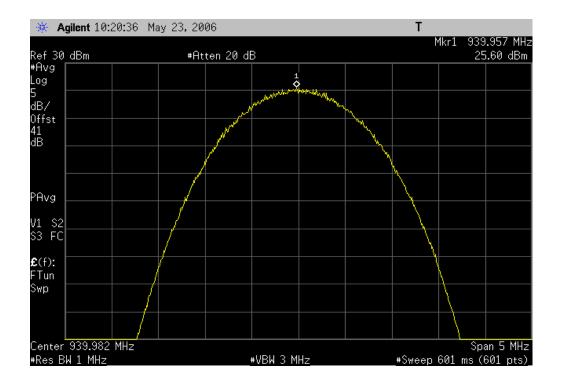
Limit:

Limit:



Result: Pass

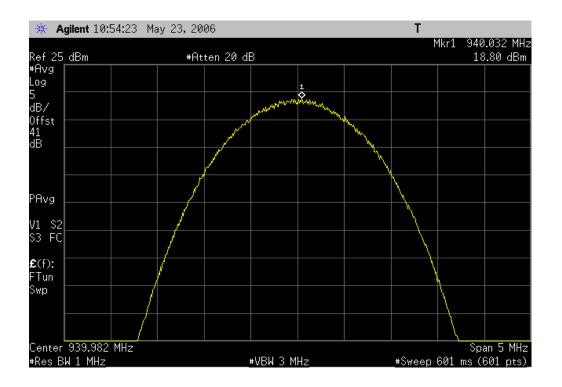
Value: 25.60 dBm



Result: Pass

High Channel, Low Power Value: 18.80 dBm

Limit:





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single channels within the center of the allowable 800MHz and 900MHz bands

Operating Modes Investigated:

Typical

Data Rates Investigated:

96 kBps at 64-QAM

Output Power Setting(s) Investigated:

Maximum ~ 14 dBm

Power Input Settings Investigated: -48Vdc

Software\Firmware Applied During Test						
Exercise software	Vx Works	Version	N/A			
Description						
The system was tested using standard operating production software to exercise the functions of the						
device during the testing.						



EUT and Peripherals

		Model/Part	
Description	Manufacturer	Number	Serial Number
EUT- Multi-Channel RadioBlade (MCRB	Radioframe Networks, Inc.	176-0860-00	14106110148
EUT- Multi-Channel RadioBlade (MCRB	Radioframe Networks, Inc.	176-0860-00	14106110160
EUT- Multi-Channel RadioBlade (MCRB	Radioframe Networks, Inc.	176-0860-00	14106110151
EUT- Multi-Channel RadioBlade (MCRB	Radioframe Networks, Inc.	176-0860-00	14106110146
EUT- Multi-Channel RadioBlade (MCRB	Radioframe Networks, Inc.	176-0860-00	14106110173
EUT- Multi-Channel RadioBlade (MCRB	Radioframe Networks, Inc.	176-0860-00	14106110174
MC-15 SERIES DUAL BAND SYSTEM (3 SE	Radioframe Networks, Inc.	176-7970-xx	14106050325
FRU, DUAL BAND RF SHELF	Radioframe Networks, Inc.	176-0970-xx	14105510109
FRU, DUAL BAND RF SHELF	Radioframe Networks, Inc.	176-0970-xx	14105510110
FRU, DUAL BAND RF SHELF	Radioframe Networks, Inc.	176-0970-xx	14105510113
RadioBlade Shelf (RBS)	Radioframe Networks, Inc.	176-0535-xx	14106030127
MC-15 BTS Interface Chassis (BIC)	Radioframe Networks, Inc.	176-0900-xx	14106050474
MC Common RadioFrame Interface Card	Radioframe Networks, Inc.	176-7540-xx	041053919XV
MC Common RadioFrame Interface Card	Radioframe Networks, Inc.	176-7540-xx	041053919W3
Base Processing Card (BPC)	Radioframe Networks, Inc.	176-7570-xx	04105411HGM
Base Processing Card (BPC)	Radioframe Networks, Inc.	176-7570-xx	04105401GP1
Base Processing Card (BPC)	Radioframe Networks, Inc.	176-7570-xx	04105421JKZ
MC-15 Airlink Interface Chassis (Al	Radioframe Networks, Inc.	176-0800-xx	14106050522
BPC W/ LC SPAM	Radioframe Networks, Inc.	176-7565-xx	04105411HC0
SPAM	Radioframe Networks, Inc.	176-7510-xx	Unknown
SPAM	Radioframe Networks, Inc.	176-7510-xx	Unknown
BPC W/ LC SPAM	Radioframe Networks, Inc.	176-7565-xx	04105411HJX
SPAM	Radioframe Networks, Inc.	176-7510-xx	Unknown
SPAM	Radioframe Networks, Inc.	176-7510-xx	Unknown
BPC W/ LC SPAM	Radioframe Networks, Inc.	176-7565-xx	04105411HLH
SPAM	Radioframe Networks, Inc.	176-7510-xx	Unknown
SPAM	Radioframe Networks, Inc.	176-7510-xx	Unknown
Ethernet Rear Transition Module (ER	Radioframe Networks, Inc.	176-7562-xx	14105320204
Ethernet Rear Transition Module (ER	Radioframe Networks, Inc.	176-7562-xx	14105320203
Coaxial RMII Transceiver Card (CRTC	Radioframe Networks, Inc.	176-0820-xx	14105480250

Remote Equipment Outside of Test Setup Boundary						
Description	Manufacturer	Model/Part Number	Serial Number			
Site Simulator	Radioframe Networks, Inc.	N/a	N/a			
Site Controller	Motorola, Inc.	CCN1008N	CAF030LTC4			
GPS Antenna	Hewlett-Packard	8532A	901			
DC Power Supply	Electronic Measurements, Inc.	EMS 60-33	20K11738			

Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	8.0	No	MC-15 SERIES DUAL BAND SYSTEM	DC Supply
BNC	Yes	30.0	No	ERTM	Site Simulator
BNC	Yes	30.0	No	Site Controller	Site Simulator
BNC	Yes	3.0	No	GPS Antenna	Site Controller
Ethernet	No	3.0	No	Site Controller	ERTM

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	01/25/2006	13 mo
Multimeter	Tektronix	DMM912	MMH	12/08/2005	13 mo
DC Power Supply	Sorensen	DCR60-45B	TPB	NCR	NA
Chamber, Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZH-32-2-2-H/AC	ТВА	08/24/2005	12 mo
Chamber Temp. & Humidity Controller	ESZ / Eurotherm	Dimension II	TBC	08/24/2005	12 mo

Test Description

<u>Requirement:</u> Per 47 CFR 15.255, the frequency stability shall be measured with variation of ambient temperature and primary supply voltage. A spectrum analyzer or frequency counter can be used to measure the frequency stability. If using a spectrum analyzer, it must have a precision frequency reference that exceeds the stability requirement of the transmitter. A temperature / humidity chamber is required.

Configuration:

Variation of Supply Voltage

The primary supply voltage was varied from 85% to 115% of nominal. The EUT can only be operated from the public AC mains, so an DC lab supply was used to vary the supply voltage from 115% to 85% -48V DC.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-20° to +50° C) and at 10°C intervals.

Measurements were made at the single transmit frequency. The antenna is integral to the EUT, so a radiated measurement was made using a spectrum analyzer and a near field probe. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Completed by:	
Rocky le	Peling

NORTHWEST							
EMC		FREQUEN	CY STABIL	ITY		Rev BETA 01/30/01	
	MCRB				Work Order:	RAFN0060	
Serial Number:	Various	rious Date: 03/21/06					
Customer:	Radioframe Networks, Inc.	dioframe Networks, Inc. Temperature: 21°C					
Attendees:	Dean Busch		Tested by:	Rod Pelqouin	Humidity:	32%	
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	Off-site	
TEST SPECIFICATION	IS						
Specification:	47 CFR 2.1055, 90.213	Year: 2005	Method:	TIA/EIA - 603	Year:	2002	
SAMPLE CALCULATIO	ONS						
COMMENTS							
EUT OPERATING MOD							
Transmitting mid band							
DEVIATIONS FROM T	EST STANDARD						
None							
REQUIREMENTS							
Minimum frequency st	tability of 1 part per million (ppm)	for variations of temperature a	and supply voltage (DC)				
RESULTS			MINIMUM FREQUENCY	Y STABILITY			
Pass							
SIGNATURE							
Tested By:	Porting to Reling						
DESCRIPTION OF TES	ST						
		Freque	ency Stability				

Frequency Stability with Variation of Ambient Temperature (Primary Supply = 48 Vdc)

Temp	Assigned Frequency	Measured Frequency	Tolerance	Specification
(°C)	(MHz)	(MHz)	(ppm)	(ppm)
50	860.55000	860.550037	0.04	1
40	860.55000	860.550062	0.07	1
30	860.55000	860.550037	0.04	1
20	860.55000	860.550037	0.04	1
10	860.55000	860.550250	0.29	1
0	860.55000	860.550037	0.04	1
-10	860.55000	860.550049	0.06	1
-20	860.55000	860.550049	0.06	1
-30	860.55000	860.550049	0.06	1

Frequency Stability with Variation of Primary Supply Voltage (Ambient Temperature = 20°C)

Voltage	Assigned Frequency	Measured Frequency	Tolerance	Specification
(Vdc)	(MHz)	(MHz)	(ppm)	(ppm)
55.2 (115%)	860.55000	860.550062	0.07	1
52.8 (110%)	860.55000	860.550037	0.04	1
50.4 (105%)	860.55000	860.550050	0.06	1
48 (100%)	860.55000	860.550037	0.04	1
45.6 (95%)	860.55000	860.550050	0.06	1
43.2 (90%)	860.55000	860.550000	0.00	1
40.8 (85%)	860.55000	860.55000	0.00	1

NORTHWEST							
EMC		FREQUEN	CY STABIL	ITY		Rev BETA	
						01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various						
Customer:	Radioframe Networks, Inc.				Temperature:	21°C	
Attendees:	Dean Busch		Tested by:	Rod Pelqouin	Humidity:	32%	
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06 & EV09	
TEST SPECIFICATION	IS						
Specification:	47 CFR 2.1055, 90.213	Year: 2005	Method:	TIA/EIA - 603	Year:	2002	
SAMPLE CALCULATI	ONS						
COMMENTS							
EUT OPERATING MOI	DES						
Transmitting mid 900	MHz band						
DEVIATIONS FROM T	EST STANDARD						
None							
REQUIREMENTS							
Minimum frequency s	tability of 1 part per million (ppm)	for variations of temperature a	nd supply voltage (DC)				
RESULTS			MINIMUM FREQUENC	Y STABILITY			
Pass	0.05 ppm						
Signature							
Tested By:	Pochy te Peling						
DESCRIPTION OF TES	ST						
		Freque	ncy Stability				

Frequency Stability with Variation of Ambient Temperature (Primary Supply = -48 Vdc)

Temp	Assigned Frequency	Measured Frequency	Tolerance	Specification
(°C)	(MHz)	(MHz)	(ppm)	(ppm)
50	937.46875	937.468775	0.03	1
40	937.46875	937.468800	0.05	1
30	937.46875	937.468800	0.05	1
20	937.46875	937.468787	0.04	1
10	937.46875	937.468763	0.01	1
0	937.46875	937.468787	0.04	1
-10	937.46875	937.468763	0.01	1
-20	937.46875	937.468763	0.01	1
-30	937.46875	937.468775	0.03	1

Frequency Stability with Variation of Primary Supply Voltage (Ambient Temperature = 20°C)

Voltage (Vdc)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (ppm)
55.2 (115%)	937.46875	937.468738	0.01	1
52.8 (110%)	937.46875	937.468763	0.01	1
50.4 (105%)	937.46875	937.468763	0.01	1
48 (100%)	937.46875	937.468775	0.03	1
45.6 (95%)	937.46875	937.468775	0.03	1
43.2 (90%)	937.46875	937.468775	0.03	1
40.8 (85%)	937.46875	937.468775	0.03	N/A

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	AAT	4/4/2006	12
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Power Sensor	Hewlett-Packard	8481H	SPB	7/23/2004	24
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The antenna power conducted emissions were measured with the EUT set in receive mode. The measurements were made using a direct connection between each of the RF outputs of the EUT and the spectrum analyzer. The spectrum was scanned throughout the specified frequency range.

NORTHWEST EMC	SPURIOUS EMISSION	IS AT ANT		MINALS	XMit 2006.03.01
	MCRB			Work Order:	RAFN0062
Serial Number:	Various				05/23/06
Customer:	Radioframe Networks, Inc.			Temperature:	24°C
Attendees:	Dean Busch			Humidity:	41%
Project:				Barometric Pres.:	29.93
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV01
TEST SPECIFICATI	ONS		Test Method		
FCC 15.111: 2006			ANSI C63.4 2003		
COMMENTS					
800MHz Band					
DEVIATIONS FROM	TEST STANDARD				
Configuration #	1 Ren Signature	chy te Reley	, مر		

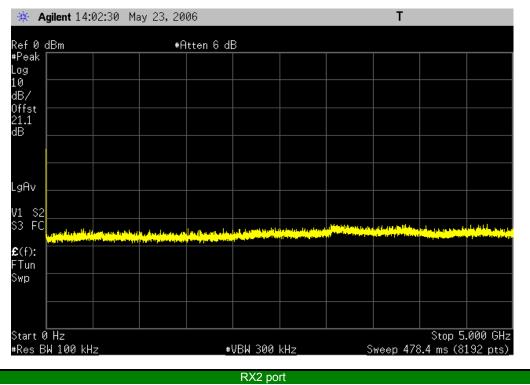
Modes of Operation and Test Conditions	Value	Limit	Result
RX1 port	< -60 dBm	≤ -57 dBm	Pass
RX2 port	< -60 dBm	≤ -57 dBm	Pass
RX3 port	< -60 dBm	≤ -57 dBm	Pass

NORTHWEST EMC

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

t 2006.03.01





 Result:
 Pass
 Value:
 < -60 dBm</th>
 Limit:
 ≤ -57 dBm

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NORTHWEST EMC

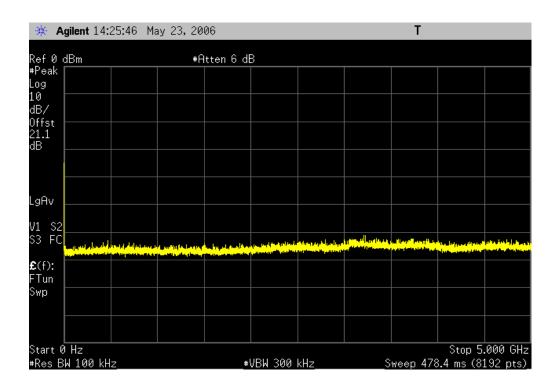
SPURIOUS EMISSIONS AT ANTENNA TERMINALS

t 2006.03.01

Result:	Pass	Value:

RX3 port e: < -60 dBm

Limit: ≤ -57 dBm



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	AAT	4/4/2006	12
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Pre-Amplifier	Amplifier Research	LN1000	APB	7/10/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

A spectrum analyzer was used to scan from 0 to 9 GHz. A 100kHz resolution bandwidth was used. No video filtering was employed. A 30dB external attenuator was used on the RF input of the spectrum analyzer.

NORTHWEST	SPURIOUS EMISSIONS A		ENNA TERI		XMit 2006.03.01
EMC					
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:	Various			Date:	05/18/06
Customer:	Radioframe Networks, Inc.			Temperature:	
Attendees:	Dean Busch			Humidity:	35%
Project:				Barometric Pres.:	
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV06
TEST SPECIFICATI	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-B:2	.002	
COMMENTS					
800MHz Band, High	Power Level				
DEVIATIONS FROM	TEST STANDARD				
Configuration #	1 Signature	' Relu	<u>کر اور اور اور اور اور اور اور اور اور او</u>		

Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 7.495GHz-9GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 7.495GHz-9GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
High Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 7.495GHz-9GHz	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, In Band	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, 7.495GHz-9GHz	< -30 dBm	≤ -13 dBm	Pass
12 Channel Intermods, In Band, Lower group			

	Low Channel, In Band		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm		#Atten 20) dB				
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PAvg							
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enter 860.50 M Res BW 100 kHz			#VBW 300	LU-	#\$110.0m	Spa 601 ms (n 30 MH 601 pt

	Low Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 17:54:54	May 18, 2006			Т		
Ref 40 dBm	#Atten 20) dB				
#Avg Log						
10						
dB/ Offst						
0ffst 41.3 dB						
#PAvg						
V1 S2						
\$3 FC						
£(f):						
FTun					L,	
Swp		······································		 		
					St	
Start 0 Hz #Res BW 100 kHz		_#VBW 300	kHz	#Sweep	. Stop ۱ 601 ms (۱	.000 GHz 301 pts)

	Low Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

40 dBm	#Atten 2	0 dB			
1					
t					
/g					
\$2					
\$2					
·····			 	 	
t 995 MHz				Stop 2	

	Low Channel, 2.795GHz-4.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 18:01:00 May 18,	2006	Т
Ref 40 dBm	#Atten 20 dB	
#Avg Log		
10 dB/		
Offst		
41.3 dB		
#PAvg		
V1 S2 S3 FC		
£(f): FTun		
Swp		
Start 2.795 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 4.500 GHz #Sweep 601 ms (601 pts)

	Low Channel, 4.495GHz-6GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

lef 40 dBm	#6	Atten 20 d	IB			
Avg						
og Ø						
IB/						
I.3						
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1 S2 3 FC						<u> </u>
3 FC						
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tart 4.495 GHz					 Stop 6	.000 GF

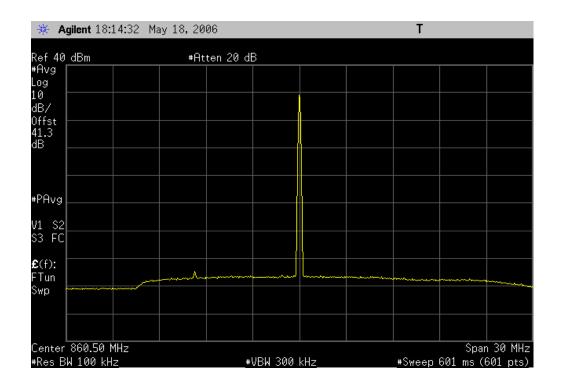
	Low Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

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Ref 40 dBm	#Att	en 20 dB				
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.0						
IB/						
11.3 IB						
1B						
PAvg						
/1 S2 33 FC						
C(f): Tun				 		
Swp						
Start 5.995 GHz					Stop 7.	500 GH:
ŧRes BW 100 kHz_		<u></u> #VBW 30	0 kHz	#Sweep 0	601 ms (6	601 pts)

	Low Channel, 7.495GHz-9GHz			
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

ten 20 di						
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					Stop 9	- 000 CU
				Image: Section of the section of th	Image: Second	

	Mid Channel, In Band		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm



	Mid C	Channel, 0-1GHz		
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm

Start Ø Hz						<u></u>	 1.000 GH
Tun Swp				 	·····	L.A.	-
2(f):							
/1 S2 33 FC							
PAvg							
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)ffst 1.3							
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og Ø							
Avg							
Ref 40 dBm	#A	tten 20 di	В				

	Mid Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

★ Agilent 18:19:07 M	lay 18, 2006		Т	
Ref 40_dBm	#Atten 20 dl	В		
#Avg Log				
10 dB/				
Offst				
41.3 dB				
#PAvg				
V1 S2 S3 FC				
£ (f):				
FTun				
Swp				
Start 995 MHz				Stop 2.800 GHz
#Res BW 100 kHz	#	VBW 300 kHz	#Sweep	601 ms (601 pts)_

	Mid Channel, 2.795GH	z-4.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

#0	1++on 20 d	IR					
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						Stop 4	.500 GH
	#f	#Atten 20 d	#Atten 20 dB	*Atten 20 dB	#Atten 20 dB         Image: Constraint of the second seco	#Atten 20 dB         Image: I	Image: selection of the

	Mid Channel, 4.495GHz-6GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 18:23:05 Ma	y 18,2006		Т	
Ref 40 dBm	#Atten 20 dB			
#Avg Log				
10 dB/				
ab/ Offst				
Offst 41.3 dB				
#PAvg				
V1 S2				
\$3 FC				
£(f): FTun				
Swp		······	_,,,_,,,,,,_,,,,,,,,,,,,,,,,,,,,,,,,,	
Start 4.495 GHz #Res BW 100 kHz	#\/{	3W 300 kHz	#Sween	Stop 6.000 GHz 601 ms (601 pts)_

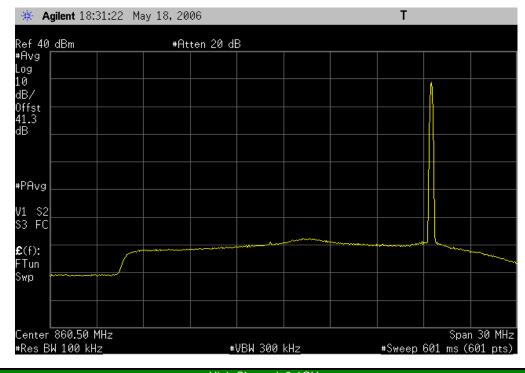
	Mid Channel, 5.995GHz-7.5G	Hz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

<b>* Agilent</b> 18:24:	55 May 18,2						
≷ef 40_dBm	#A	ltten 20 d	В				
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PAvg							
n s2							
/1 S2 33 FC							
C(f): Tun					 		
Śwp			yaan maaraa				*****
tart 5.995 GHz						Stop 7	.500 GH
Res BW 100 kHz_		#	VBW 300	kHz	_#Sweep	601 ms (	601 pts

	Mid Channel, 7.495GHz-9GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

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мр							
tart 7.495 GHz							.000 GH
Res BW 100 kHz_		#\	/BW 300	kHz	#Sweep	601 ms (0	601 pts

	High Channel, In Band			
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	



	High Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 18:33:1	1 May 18, 2006		Т	
Ref 40 dBm	#Atten 20 d	łВ		
#Avg Log				
10 dB/				
ab/ Offst				
Offst 41.3 dB				
#PAvg				
V1 S2				
S3 FC				
<b>£</b> (f):				
FTun Swp	·····			
Start 0 Hz				Stop 1.000 GHz
#Res BW 100 kHz		⊭VBW 300 kHz	#Sweep	601 ms (601 pts)

	High Channel, 995MHz-2.8GF	lz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

★ Agilent 18:35:					-		
kef 40_dBm	;	Atten 20 🤇	ЯB		 		
Avg .og							
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/1 S2 3 FC							
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Tun					 		
wb							
tart 995 MHz						Stop 2	2.800 GF
Res BW 100 kHz_			#VBW 300	kHz	#Sweep 601 ms (601 pt:		

	High Channel, 2.795GHz-4.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

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Ref 40_dBm	#At	ten 20 dB				
#Avg Log						
10						
dB/						
Offst 41.3 dB						
#PAvg						
V1 S2 S3 FC						
€(f): FTun						
Swp						
Start 2.795 GHz					Stop 4	.500 GHz
#Res BW 100 kHz_		#VBW 3	300 kHz	#5	Gweep 601 ms (	601 pts)_

	High Channel, 4	.495GHz-6GHz	
Result: Pass	<b>Value:</b> < -30	dBm Limit:	≤ -13 dBm

₩ Agilent 18:39:									
lef 40 dBm	#F	Atten 20 d	IB						
Avg og									
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tart 4.495 GHz							Stop_6	.000 GF	
Res BW 100 kHz_				#VBW 300 kHz			#Sweep 601 ms (601 pts		

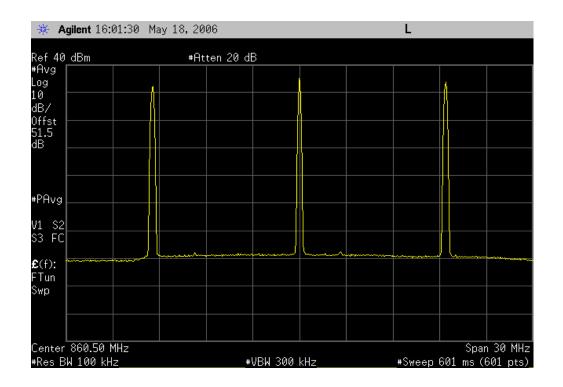
	High Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

* Agilent 18:41:2	6 May 18,200	-			-		
kef 40_dBm	#Att	en 20 dE	3		 		
Avg							
og Ø							
B/							
ffst 1.3 B							
1.3							
PAvg							ļ
1 00							
1 S2 3 FC							
:(f):							
Tun		·			 		·
мр							
tart 5.995 GHz						Stop 7.	500 GH
Res BW 100 kHz		#!	VBW 300	kHz	#Sweep	601 ms (0	

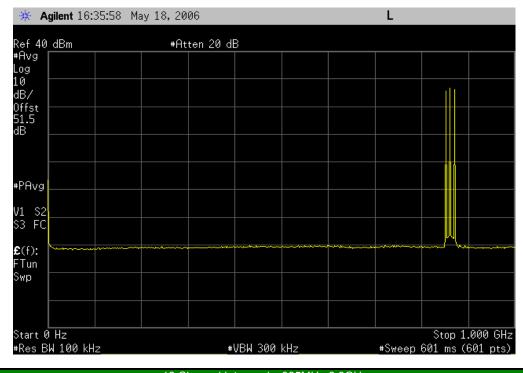
	High Channel, 7.495GHz-9GH	lz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

ef 40_dBm	#At	#Atten 20 dB						
Avg og								
0								
IB/								
Iffst 1.3								
B								
PAvg								
1 00								
1 S2 3 FC								
:(f): Tun								
wp		******	···					······
tart 7.495 GHz							Stop 9	000 CL
Res BW 100 kHz		#VBW 300 kHz				Stop 9.000 Gł #Sweep 601 ms (601 pts=		

	12 Channel Intermods, In Band		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm



	12 Channel Intermods, 0-1GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm



	12 Channel Intermods, 995MHz-2.8GH	Z	
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 16:57	:52 May 18, 20	ð6		L		
Ref 40_dBm	#At	ten 20 dB				
#Avg Log						
10 dB/						
Offst						
51.5 dB						
*D0						
#PAvg						
V1 S2 S3 FC						
£(f):				 		
FTun						
Swp						
Start 995 MHz					Stop 2.	800 GHz
#Res BW 100 kHz		#VBI	W 300 kHz	#Sweep	601 ms (6	

# Spurious Emissions at Antenna Terminals

12 Channel Intermods, 2.795GHz-4.5GHz				
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm

ef 40_dBm	#Atten 2	0 dB			
Avg og					
0 B/					
ffst					
ffst 1.5 B					
PAvg					
1 \$2					
1 S2 3 FC					
:(f):	 		 ······································	 	
Tun vp					
tart 2.795 GHz				Stop 4	 .500 Gł

	12 Channel Intermods, 4.495GHz-6GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 17:01:5	9 May 18, 2006		L	
Ref 40 dBm	#Atten 20 d	В		
ŧÂvg .og				
.0				
IB/				
)ffst 11.5 IB				
PAvg				
v1 s2				
53 FC				
<b>2</b> (f):				
Tun				
δwp				
				C 888_CU
Start 4.495 GHz Res BW 100 kHz	#	VBW 300 kHz	#Sweep	Stop 6.000 GH: 601 ms (601 pts)

# Spurious Emissions at Antenna Terminals

12 Channel Intermods, 5.995GHz-7.5GHz				
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm

Ref 40_dBm	#Atte	en 20 dB			
Avg					
og Ø					
ı₿∕					
lffst 1.5					
j <b>1.</b> 5					
IB					
PAvg					
1 S2 3 FC					
3 FC			 	·····	·····
:(f):	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	*****			
Tun					
wp					
tart 5.995 GHz Res BW 100 kHz		#VBW 30	 	Stop eep 601 ms	7.500 GH

	12 Channel Intermods, 7.495GHz-9GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 17:05:29	9 May 18, 2006		L	
Ref 40_dBm	#Atten 20	dB		
#Avg Log				
.0				
dB/ Dffst ─────				
51.5 #B				
B				
PAvg				
/1 \$2				
53 FC				
E(f):				
Tun				
Gwp				
Start 7.495 GHz ⊧Res BW 100 kHz		. <b>#VBW 300 kHz</b>	#\$14000	Stop 9.000 GHz 601 ms (601 pts)

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	AAT	4/4/2006	12
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Pre-Amplifier	Amplifier Research	LN1000	APB	7/10/2006	13

#### MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

#### **TEST DESCRIPTION**

A spectrum analyzer was used to scan from 0 to 9 GHz. A 100kHz resolution bandwidth was used. No video filtering was employed. A 30dB external attenuator was used on the RF input of the spectrum analyzer.

NORTHWEST EMC	SPURIOUS EMISSIONS A	Τ ΑΝΤ	ENNA TERI	MINALS	XMit 2006.03.01
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:	Various			Date:	05/18/06
Customer:	Radioframe Networks, Inc.			Temperature:	
Attendees:	Dean Busch			Humidity:	35%
Project:				Barometric Pres.:	29.99
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV06
TEST SPECIFICATI	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-B:2	002	
				· · · · · · · · · · · · · · · · · · ·	
COMMENTS					
800MHz Band, Low	Power Level				
DEVIATIONS FROM	TEST STANDARD				
Configuration #	1 Signature	- Relu	2 7		

Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 7.495MHz-9.0GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 7.495MHz-9.0GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
High Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 7.495MHz-9.0GHz	< -30 dBm	≤ -13 dBm	Pass

	Low Channel, In Band	
Result: Pass	<b>Value:</b> < -30 dBm	<b>Limit:</b> ≤ -13 dBm

<b>* Agilent</b> 18:49	20 May 18,	2006		Т		
Ref 40_dBm	+	Atten 20 dB				
ŧAvg .og						
.0						
IB/						
)ffst 41.3 1B	h					
PAvg						
/1 \$2						
3 FC	]]					
(f):	سيدسيا لر			 		
Tun Swp						
Center 860.50 MH	z				Span (	
Res BW 100 kHz		#VE	3W 300 kHz_	#Sweep 0	601 ms (60	1 pts

	Low Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 18:51:17 Ma	y 18, 2006		Т	
Ref 40 dBm	#Atten 20 dl	В		
#Avg Log				
10				
dB/				
Offst 41 3				
41.3 dB				
#PAvg				
V1 S2 S3 FC				
<b>£</b> (f):				h
FTun Swp				
Start 0 Hz #Res BW 100 kHz	#	VBW 300 kHz	#Sween	Stop 1.000 GHz 601 ms (601 pts)

	Low Channel, 995MHz-2.8GHz			
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

Ref 40 dBm	#Ati	ten 20 di	3	 			
Avg							
.og .0							
IB/ I							
)ffst							
)ffst  1.3  B							
PAvg							
1 S2 3 FC							
:(f):							
Tun							
wp aw	******	~~~~~		 			
itart 9 <mark>95 MHz</mark> Res BW 100 kHz			VBW 300		~	Stop 2 601 ms (	.800 GH

	Low Channel, 2.795GHz-4.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 18:55:47 M	ay 18, 2006		Т	
Ref 40 dBm	#Atten 20 dE	3		
#Avg Log				
10 dB/				
Offst				
0ffst 41.3 dB				
#PAvg				
V1 S2				
S3 FC				
£(f): FTun				
Swp		<u>~_,</u>	·····	
Start 2.795 GHz #Res BW 100 kHz	#{	/BW 300 kHz	#Sween	Stop 4.500 GHz 601 ms (601 pts)_

	Low Chan	nel, 4.495GHz-6GHz		
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm	#At	ten 20 dB			
Avg					
og Ø				 	
B/					
Iffst 1.3 B					
B					
PAvg					
1 00					
1 S2 3 FC					
:(f): Tun					
wp	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		 	 	
tart 4.495 GHz				Stop 6	6.000 GH

	Low Channel, 5.995GHz-7.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 19:00:27 May 18, 20	06	Т
Ref40_dBm #At	ten 20 dB	
#Avg Log		
10 dB/		
Offst		
0ffst 41.3 dB		
#PAvg		
V1 S2 S3 FC		
£(f): FTun	and the second	
Swp		
Start 5.995 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 7.500 GHz #Sweep 601 ms (601 pts)_

	Low Channel, 7.495MHz-9.0GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

Agilent 19:02:0	4 May 10, 20	00					
Ref 40_dBm	#At	ten 20 di	В				
Avg							
.og .0							
IB/							
)ffst I1.3							
IB							
PAvg							
/1 S2 53 FC							
53 FC							
:(f):							
Tun					 		
βwp							
Start 7.495 GHz							.000 GH
Res BW 100 kHz		#	VBW 300	kHz	_#Sweep	601 ms (	601 pts

	Mid Channel, In Band		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 19:07:	41 May 18, 20	ð6				Т		
Ref 40 dBm	#Ati	ten 20 dE	3					
#Avg Log								
10								
dB/ Offst								
Offst 41.3 dB				(				
			,					
#PAvg								
V1 S2								
S3 FC								
£(f):								
FTun Swp		·····			· ^			
Center 860.50 MHz								30 MHz
#Res BW 100 kHz_		#	VBW 300	kHz		_#Sweep	601 ms (6	601 pts)_

	Mid Channel, 0-1GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm	 #Atten 20	dB	 			
ŧÂvg .og						
.0 1B/						
ID/						
)ffst 41.3 #B						
DO						
PAvg						
/1 \$2						
53 FC						
<b>2</b> (f):						
Tun						
wp	 			**************************************		*
Start Ø Hz					Stop 1	.000 G

	Mid Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

<b>Agilent</b> 19:11:2	2 May 18, 2006			Т		
Ref 40_dBm	#Atten	20 dB				
ŧÂvg .og						
0						
B/ ffst						
Iffst 1.3 B						
PAvg						
1 \$2						
3 FC						
:(f):						
Tun				 		
wp						
tart 995 MHz					Stop 2.	800 GH
Res BW 100 kHz		#VBW 300	0 kHz	#Sweep	601 ms (0	601 pts

	Mid Channel, 2.795GHz-4.50	GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

tart 2.795 GHz					  .500 GH
qw				 	
Tun	 				
:(f):					
1 S2 3 FC					
1 \$2					
PAvg					
1.3 B					
ffst 1.3					
0 B/					
Avg og					
ef 40 dBm	 #Atten 20	dB			_

	Mid Channel, 4.495GHz-6GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 19:16:	20 May 18, 2006	ò		T	
Ref 40 dBm	#Atte	n 20 dB			
#Avg Log					
10					
dB/ Offst					
Offst 41.3 dB					
#PAvg					
V1 S2					
\$3 FC					
£(f):					
FTun Swp	<u></u>				
Start 4.495 GHz				Stop	6.000 GHz
#Res BW 100 kHz_		#VBW 300 I	kHz	_#Sweep 601 ms	(601 pts)_

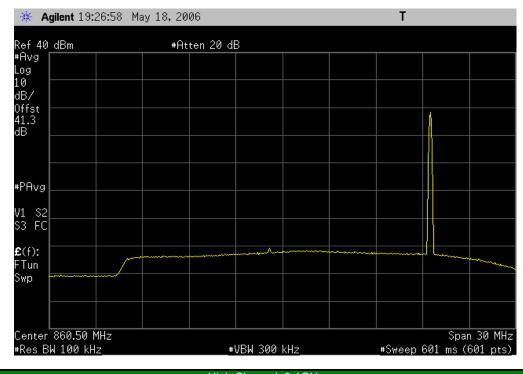
	Mid Channel, 5.995GHz	2-7.5GHz	
Result: Pass	<b>Value:</b> < -30 dBm	<b>Limit:</b> ≤ -13	dBm

Agilent 19:18:	<b>Igilent</b> 19:18:23 May 18, 2006				T		
Ref 40_dBm	#Att	en 20 dB:					
Avg .og							
.0							
IB/							
0ffst 11.3 IB							
PAvg							
1 \$2							
3 FC							
:(f):							
Tun			and the second s		······		
бмр							
tart 5.995 GHz						op 7.500 GH	
Res BW 100 kHz_		#VBW 3	300 kHz	-	⊧Sweep 601	ms (601 pts	

	Mid Channel, 7.495MHz-9.0GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 19:20:05 May	18,2006	Т	
Ref 40_dBm	#Atten 20 dB		
#Avg Log			
10			
dB/ Offst			
41.3 dB			
#PAvg			
V1 S2			
S3 FC			
£(f):			
FTun			·····
Start 7.495 GHz			.000 GHz
#Res BW 100 kHz	#VBW 300 kHz_	#Sweep 601 ms (6	601 pts)_

	High Channel, In Band		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm



	High Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 18:33:11	l May 18, 2006		Т	
Ref 40_dBm	#Atten 20 c	lΒ		
#Avg Log				
10				
HB/				
0ffst 41.3 dB				
:В				
PAvg				
И \$2 53 FC				
53 FC				
E(f):				
Tun				
òwp wp				
Start 0 Hz •Res BW 100 kHz		ŧVBW 300 kHz	#\$14000	Stop 1.000 GH: 601 ms (601 pts)

	High Channel, 995MHz-2.8GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm	# <u>0</u> +	#Atten 20 dB					
Avg	+nu						
.og							
.0 IB/							
ID/							
)ffst  1.3  B							
IR							
PAvg							
1 52							
/1 S2 53 FC							
C(f):							
Swp						· · · · · · · · · · · · · · · · · · ·	
Start 995 MHz Res BW 100 kHz		- UB	300 kHz_		Stop 2.800 GH Sweep 601 ms (601 pts#		

	High Channel, 2.795GHz-4.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 19:33	:10 May 18, 20	ð6		1	•	
Ref 40 dBm	#At	ten 20 dB				
#Avg Log						
10						
dB/ Offst						
Offst 41.3 dB						
#PAvg						
V1 S2						
\$3 FC						
£(f): FTun						
Swp		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			·····	
Start 2.795 GHz		"UDU 2				500 GHz
#Res BW 100 kHz_		#VDW 3	300 kHz	#SWe	ep 601 ms (6	pts/_

	High Channel, 4.495GHz-6GHz			
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

ef 40 <u>dBm</u>	#A1	ten 20 dB				
Avg og						
0  B/						
Iffst 1.3 B						
PAvg						
1 \$2						
1 S2 3 FC						
:(f): Tun						
wp	<u> </u>	**************************************	·····	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		

	High Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 19:36:58 May	18,2006	Т
Ref 40_dBm	#Atten 20 dB	
#Avg Log		
10 dB/		
Offst		
41.3 dB		
#PAvg		
V1 S2 S3 FC		
<b>£</b> (f):		
FTun		
Swp		
Start 5.995 GHz		Stop 7.500 GHz
#Res BW 100 kHz	#VBW 300 kHz	#Sweep 601 ms (601 pts)_

	High Channel, 7.495MHz-9.0GH	Z	
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 19:38	:55 May 18, 20	96		Т	
Ref 40 dBm	#At	ten 20 dB			
#Avg Log					
10 dB/					
dB/ Offst					
Offst 41.3 dB					
#PAvg					
V1 S2					
V1 S2 S3 FC					
<b>£</b> (f):					
FTun		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·····		·····
Swp					
Start 7.495 GHz					Stop 9.000 GHz
#Res BW 100 kHz_		#VBW (	300 kHz	#Swee	ep 601 ms (601 pts)_

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	AAT	4/4/2006	12
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Pre-Amplifier	Amplifier Research	LN1000	APB	7/10/2006	13

#### MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

#### **TEST DESCRIPTION**

A spectrum analyzer was used to scan from 0 to 9 GHz. A 100kHz resolution bandwidth was used. No video filtering was employed. A 30dB external attenuator was used on the RF input of the spectrum analyzer.

NORTHWEST					XMit 2006.03.01
EMC	SPURIOUS EMISSIONS A	I ANI	ENNA TERI	WINALS	
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:	Various			Date:	05/18/06
	Radioframe Networks, Inc.			Temperature:	24°C
Attendees:	Dean Busch			Humidity:	35%
Project:				Barometric Pres.:	29.99
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV06
TEST SPECIFICATION	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-B:2	2002	
				· · · · · · · · · · · · · · · · · · ·	
COMMENTS					
800MHz Band, Mid I					
DEVIATIONS FROM	TEST STANDARD				
Configuration #	1 Signature	- Pelu			

Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 7.495GHz-9GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 7.495GHz-9GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
High Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 7.495GHz-9GHz	< -30 dBm	≤ -13 dBm	Pass

	Low Channel, In Band		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

ef 40 <u>dB</u> m		#Atten	20 dB			
Avg og						
0						
B/						
Ifst 1.3 B						
PAvg	<u> </u> }			 		
1 \$2						
3 FC						
:(f): Tun						
wp				 *****	- X	 *

	Low Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 19:54:32	2 May 18, 2006		Т	
Ref 40_dBm	#Atten 20 d	В		
#Avg Log				
10				
dB/ Offst				
41.3 dB				
#PAvg				
V1 S2				
V1 S2 S3 FC				
<b>£</b> (f):				
FTun				
Swp				
Start 0 Hz				Stop 1.000 GHz
#Res BW 100 kHz	#	VBW 300 kHz	#Sweep	601 ms (601 pts)_

	Low Channel, 995MHz-2.8GH	Ηz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

ef 40 dBm	#F	Atten 20 c	IB				
Avg 🛛 👘							
og Ø							
B/							
ffst 1.3							
B							
PAvg							
1 S2 3 FC							
:(f):							
Tun wp	*	· · · · · · · · · · · · · · · · · · ·		 	Ļ,		
tart 995 MHz						L	2.800 GH

	Low Channel, 2.795GHz-4.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 19:59:01 May	18,2006	Т	
Ref 40_dBm	#Atten 20 dB		
#Avg Log			
10			
dB/ Offst			
0ffst 41.3 dB			
#PAvg			
V1 S2			
\$3 FC			
£(f):			
FTun FTun	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
Swp			
Start 2.795 GHz			Stop 4.500 GHz
#Res BW 100 kHz	#VBW 300 kH	lz#Sweep	601 ms (601 pts)

	Low Channel, 4.495GHz-6GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

ef 40_dBm	#	Atten 20 c	IB			
Avg og						
0						
B/						
Iffst 1.3 B						
в						
PAvg						
1 \$2						
3 FC						
:(f):						
Tun 🛛 🚽						
wp						
itart 4.495 GHz					Stop 6	6.000

	Low Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

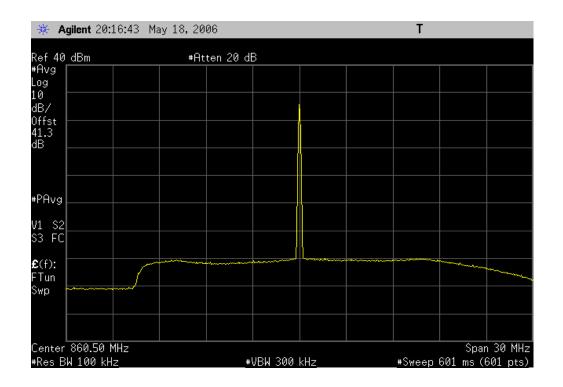
🔆 Agilent 20:03:09 May 18, 20	06 <b>T</b>
	ten 20 dB
#Avg Log	
10 dB/	
Offst	
41.3 dB	
#PAvg	
V1 S2 S3 FC	
<b>£</b> (f):	
FTun Swp	
Start 5.995 GHz #Res BW 100 kHz	Stop 7.500 GHz #VBW 300 kHz#Sweep 601 ms (601 pts)_

Ľ

	Low Channel, 7.495GHz-9GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

Start 7.495 GHz					Stop_9	.000 GH
Swp						
C(f):	 				 	
/1 S2 53 FC						
PAvg						
IB						
Iffst						
IB/						
.0						
Avg .og						
lef 40 dBm	#Atter	n 20 d	В			

	Mid Channel, In Band		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm



	Mid Channel, 0-1GF	lz	
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

Hart 0 Hz Res BW 100 kHz_			3W 300 kHz		#\$u000	Stop 1.0 601 ms (6	000 GH
Tun Wp				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
(f):						- M	
3 FC							
/1 S2 3 FC							
PAvg							
B							
Iffst 1.3 B							
IB/							
0							
Avg og							
ef 40_dBm	#A	tten 20 dB					

	Mid Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 20:2	21:28 May 18, 2	:006		Т	
Ref 40_dBm	#F	Atten 20 dB			
ŧAvg .og					
0					
B/ Iffst					
1.3 IB					
PAvg					
1 \$2					
3 FC					
:(f): Tun					
wp	·····				
tart 995 MHz					Stop 2.800 GH
Res BW 100 kH:	2	#V[	3W 300 kHz_	_#Sweep 60	01 ms (601 pts)

	Mid Channel, 2.795GH	z-4.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

C(f): Tun Wp		 		-
/1 S2				
PAvg				
IB				
Iffst				
0 0 B/				
ef 40 dBm Avg og	itten 20 dB			

	Mid Channel, 4.495GHz-6GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 20:25:15	May 18, 2006		T	
Ref 40_dBm	#Atten 20 d	В		
#Avg Log				
10 dB/				
Offst				
Offst 41.3 dB				
#PAvg				
V1 S2				
\$3 FC				
€(f): FTun				
Swp				
Start 4.495 GHz			^	Stop 6.000 GHz
#Res BW 100 kHz	#	VBW 300 kHz	#Sweep	601 ms (601 pts)

	Mid Channel, 5.995GHz-7.5G	iHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

ef 40 dBm	#	Atten 20 d			
Avg					
og Ø				 	
IB/					
Ifst 1.3					
1.3 B					
					 <u> </u>
PAvg					
1 \$2					
1 S2 3 FC					
×0.					<u> </u>
:(f): Tun			 	 	 4
wp	·····				
tart 5.995 GHz					   7.500 GH

	Mid Channel, 7.495GHz-9GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 20:29:	36 May 18, 2006			T	
Ref 40 dBm	#Atten 2	0 dB			
≇Avg Log					
.0					
1B/					
Offst 41.3 3B					
PAvg					
л s2					
53 FC					
<b>E</b> (f):					
Tun	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			·····	
Swp					
Start 7.495 GHz					9.000 GHz
#Res BW 100 kHz_		<u> </u> #VBW 300 k	Hz	_#Sweep 601 ms	(601 pts)

# NORTHWEST

	High Channel, In Band			
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

Ref 40 dBm	#8	ltten 20 d	IB				
Avg							
.og							
.0							
IBZ						1	
)ffst 11.3							
iB							
						┼╂	
PAvg							
11 52							
/1 S2 S3 FC							
<b>2</b> (f):							
Tun				h	 		
qwó							
Center 860.50 MHz							⊥ n 30 M⊦

	High Channel, 0-1GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 20:35:5	i0 May 18, 2006				Т	
Ref 40_dBm	#Atten	20 dB				
ŧAvg ₋og						
0 IB/						
)ffst  1.3  B						
PAvg						
1 52						
3 FC						
:(f): Tun						
wp			~ <u>+</u>			
tart 0 Hz						.000 GH
ŧRes BW 100 kHz <u>_</u>		<u></u> #VBW 300	ı kHz	#Sw	eep 601 ms (	601 pts)

	High Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm	#F	ltten 20 d	B				
Avg .og							
0							
IB/							
Iffst							
IB							
PAvg							
1 \$2							
3 FC							
:(f):							
Tun							
wp							
tart 995 MHz						Stop 2	800 GH
Res BW 100 kHz		#	VBW 300	kHz	#Sweep 601 ms (601 pt		

	High Channel, 2.795GHz-4.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 20:38:5	59 May 18, 2006			Т		
Ref 40_dBm	#Atten	20 dB				
#Avg Log						
10						
dB/ Offst						
41.3 dB						
#PAvg						
V1 S2						
S3 FC						
£(f):						
FTun				 		
Swp						
Start 2.795 GHz					Stop 4	500 GHz
#Res BW 100 kHz		#VBW 300	kHz	#Sweep	601 ms (6	

	High Channel, 4.495GHz-6GH	Ηz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

<b>* Agilent</b> 20:38	:59 May 18,	2006					
Ref 40_dBm	;	Atten 20 c	∄B				
Avg							
.og .0							
1B/							
)ffst 41.3 #B							
iB							
PAvg							
и оо							
/1 \$2 33 FC							
2(f):							
Tun Swp					 	•	
Start 2.795 GHz						Stop 4	
Res BW 100 kHz_			⊭VBW 300 k	(Hz	Stop 4.500 GH #Sweep 601 ms (601 pts		

	High Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 20:41:37 May 18, 20	96	Т
Ref 40 dBm #At	ten 20 dB	
#Avg Log		
10 dB/		
Offst		
41.3 dB		
#PAvg		
V1 S2 S3 FC		
£(f): FTun		
Swp		
Start 5.995 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 7.500 GHz _#Sweep 601 ms (601 pts)_

# NORTHWEST

	High Channel, 7.495GHz-9Gł	Hz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

🔆 Agilent 20:43:	:32 May 18, 200	ð6		Т		
Ref 40 dBm	#Ati	ten 20 dB				
#Avg Log						
10						
dB/ 📔 👘						
Offst 41.3 dB						
#PAvg						
J1 S2						
53 FC						
E(f): Tun				 		,
бжр						
Start 7.495 GHz						000 GHz
#Res BW 100 kHz_		#VBh	300 kHz	#Sweep	601 ms (6	601 pts)

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	AAT	4/4/2006	12
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Power Sensor	Hewlett-Packard	8481H	SPB	7/23/2004	24
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13

#### MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

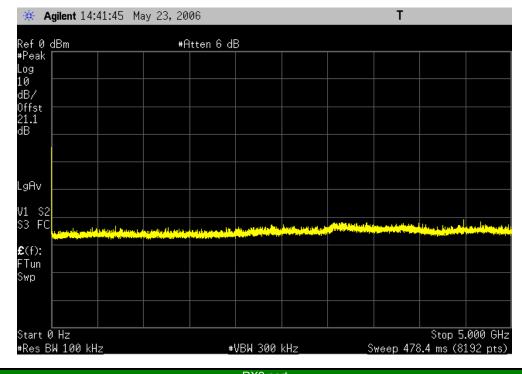
#### TEST DESCRIPTION

The antenna power conducted emissions were measured with the EUT set in receive mode. The measurements were made using a direct connection between each of the RF outputs of the EUT and the spectrum analyzer. The spectrum was scanned throughout the specified frequency range.

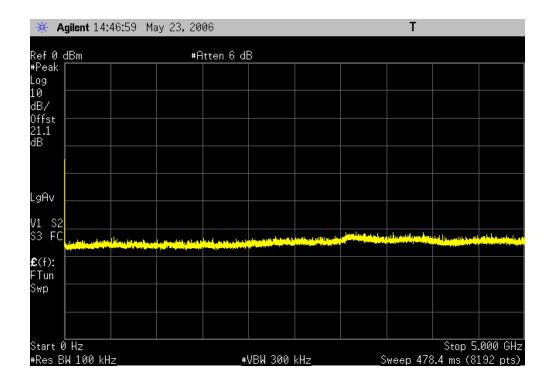
NORTHWEST EMC	SPURIOUS EMISSION	IS AT ANT		MINALS	XMit 2006.03.01
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:	Various			Date:	05/23/06
Customer:	Radioframe Networks, Inc.			Temperature:	24°C
Attendees:	Dean Busch			Humidity:	41%
Project:				Barometric Pres.:	
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV01
TEST SPECIFICATI	ONS		Test Method		
FCC 15.111:2006			ANSI C63.4 2003		
COMMENTS					
900MHz Band					
DEVIATIONS FROM	TEST STANDARD				
Configuration #	1 Roc Signature	hy he Reley			

Modes of Operation and Test Conditions	Value	Limit	Result
RX1 port	< -60 dBm	≤ -57 dBm	Pass
RX2 port	< -60 dBm	≤ -57 dBm	Pass
RX3 port	< -60 dBm	≤ -57 dBm	Pass

		RX1 port		
Result: Pass	Value:	< -60 dBm	Limit:	≤ -57 dBm



	RX2 port	
Result: Pass	<b>Value:</b> < -60 dBm	<b>Limit:</b> ≤ -57 dBm



NORTHWEST

	RX3 port	
Result: Pass	<b>Value:</b> < -60 dBm	<b>Limit:</b> ≤ -57 dBm

🔆 Agilent 14	.50.40 m	u, 20, 20	~~				RT		
əf 0 dBm		<b>#</b> A	ltten 6 dl	В					
Peak									
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37									
fst 🚽 🚽									
.1									
Av									
. S2									
	detelant land	al		ويستريلها والتروي	والمراو المروي	Nobilitud oto	and dan be	ومعادلهم المربي العما	hateletere
					And in colored where			Contraction of the Original	
f): un									
'p									
art 0 Hz es BW 100 k				VBW 300		~	47	Stop 5. 3.4 ms (8:	

XMit 2006.03.01

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	AAT	4/4/2006	12
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Power Sensor	Hewlett-Packard	8481H	SPB	7/23/2004	24

#### MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

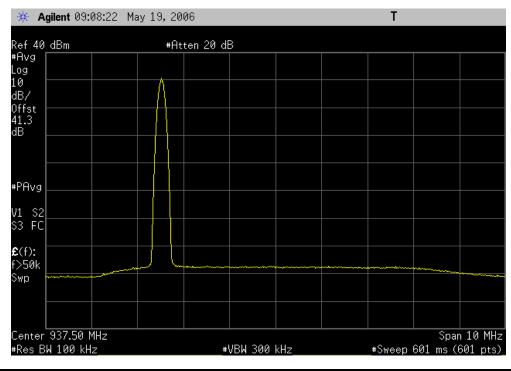
#### **TEST DESCRIPTION**

A spectrum analyzer was used to scan from 0 to 10 GHz. A 100kHz resolution bandwidth was used. No video filtering was employed. A 30dB external attenuator was used on the RF input of the spectrum analyzer.

NORTHWEST					XMit 2006.03.01
EMC	SPURIOUS EMISSIONS A	I ANI	ENNA IERI	WINALS	
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:	Various			Date:	05/19/06
Customer:	Radioframe Networks, Inc.			Temperature:	
Attendees:	Dean Busch			Humidity:	34%
Project:				Barometric Pres.:	29.89
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV06
TEST SPECIFICATI	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-B:2	2002	
				· · · · · · · · · · · · · · · · · · ·	
COMMENTS					
900MHz Band, High	Power Level				
i i					
DEVIATIONS FROM	TEST STANDARD				
L					
Configuration #	1 Rocky la	- Rely	2		
	Signature				

Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
High Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass
9 Channel Intermods, In Band	-22.4 dBm	≤ -13 dBm	Pass
9 Channel Intermods, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
9 Channel Intermods, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
9 Channel Intermods, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
9 Channel Intermods, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
9 Channel Intermods, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
9 Channel Intermods, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass

	Low Channel, In Band		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm



	Low Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 09:10:	14 May 19,200	6		Т		
Ref 40 dBm	#Att	en 20 dB				
Avg .og						
0						
IB/ I						
Iffst 1.3 B						
В						
PAvg						_
1 \$2						
3 FC						
:(f):						
Tun						<u> </u>
wp						
tart 0 Hz					Stop 1.0	100 GH
Res BW 100 kHz_		₩VBW 30	10 kHz	#Sweep 6		

	Low Cha	nnel, 995MHz-2.8GHz	
Result: Pass	Value:	< -30 dBm Limit:	≤ -13 dBm

ef 40 dBm	#A	tten 20 d	20 dB					
Avg								
og								
0 B/								
ffst								
ffst 1.3 B								
PAvg								
1 \$2								
3 FC								
×0.								
:(f): Tun								
wp			······			·····	·····	
tart 995 MHz							Stop 2	 2.800 GI

	Low Channel, 2.795GHz-4.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 09:20:35 Ma	y 19, 2006			Т	
Ref 40 dBm	#Atten 20 dE	3			
#Avg Log					
10 dB/					
0ffst					
Offst 41.3 dB					
#PAvg					
V1 S2 S3 FC					
£(f): FTun					
Swp				······	
				Stor 4	500 GHz
Start 2.795 GHz #Res BW 100 kHz	#!	√BW 300 kHz	#5	.ətop 4 Weep 601 ms (6	

	Low Channel, 4.495GHz-6GH	lz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

Ref 40_dBm	#	Atten 20 d	зВ			
Avg .og						
0						
B/						
Iffst 1.3						
B						
PAvg						
1 S2 3 FC						
:(f):						
Tun	········			 	 	
tart 4.495 GHz					Stop 6	000 GH

	Low Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

ef 40_dBm	#Atten	20 dE	3			
Avg og						
0						
B/						
ffst 1.3 B						
в						
PAvg						
1 \$2						
3 FC						
(f): Tun				 	 	
wb	 					

	Low Channel, 7.49	5GHz-9.45GHz	
Result: Pass	<b>Value:</b> < -30 (	dBm Limit:	≤ -13 dBm

Ref 40 dBm	#ŕ	Atten 20 d	B			
Avg						
.og						
.0						
IB/						
offst 1.3						
IB						
PAvg						
1109						
1 \$2						
3 FC						
x0.						
:(f): Tun				 		
iwp					 	
tart 7.495 GHz					Stop 9	.450 GH

	Mid Channel, In Band		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

<b>Agilent</b> 09:29:52	May 19, 2006		Т	
Ref 40 dBm	#Atten 20 d	В		
#Avg Log				
10		Δ		
dB/ Offst				
41.3 dB		I - 11		
		<u>├──</u>		
#PAvg				
V1 S2 S3 FC				
<b>£</b> (f): f>50k				
Swp				
Center 937.50 MHz				Span 10 MHz
#Res BW 100 kHz		VBW 300 kHz	#Sweep 6	i01 ms (601 pts)_

	Mid Channel, 0-1GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm	#	Atten 20 d	зB				
ŧAvg							
.og .0							
.ø ιΒ/							
)ffst 41.3							
H1.3 HB							
-DO							
PAvg							
/1 \$2 33 FC							
S3 FC							
C(f):							
Tun							
wp wp				 	**		
tart0Hz						Stop 1.	ааа сн

	Mid Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

₩ Agilent 09:33:28 May 19, 20	106	T
Ref40_dBm #At	ten 20 dB	
+Avg .og		
0		
IB/		
Iffst 1.3 B		
PAvg		
1 \$2		
3 FC		
(f): Tun		
wp		
tart 995 MHz Res BW 100 kHz	#VBW 300 kHz	Stop 2.800 GH #Sweep 601 ms (601 pts=

	Mid Chanr	nel, 2.795GHz-4.5	GHz		
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm	

ef 40 dBm	#	Atten 20 d	dB			
Avg 🛛 👘						
og						
0  B/						
ffst						
Iffst 1.3						
в						
PAvg						
1 S2 3 FC						
:(f):						
Tun				 		ļ
wp						
tart 2.795 GHz					Stop 4	1.500 GH

	Mid Channel, 4.495GHz-6GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 09:37:24	4 May 19, 2006		Т	
Ref 40_dBm	#Atten 20 d	łВ		
#Avg Log				
10				
dB/ Offst				
Offst 41.3 dB				
#PAvg				
V1 S2 S3 FC				
£(f): FTun				
Swp	<u></u>		····	
Start 4.495 GHz				Stop 6.000 GHz
#Res BW 100 kHz		⊭VBW 300 kHz	#Sweep	) 601 ms (601 pts)

	Mid Channel, 5.995GHz-	7.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

ef 40 dBm	#Atten 20	dB			
Avg					
.og					
0					
B/					
Iffst					
в					
PAvg					
1 \$2					
3 FC					
:(f):					
Tun			 	 	4
wp	 ~~~~				
tart 5.995 GHz Res BW 100 kHz		_#VBW 300		Stop 7 601 ms (	7.500 GH

	Mid Channel, 7.495GHz-9.45GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 09:40:	51 May 19, 2006		Т	
Ref 40 dBm	#Atten 2	0 dB		
ŧAvg _og				
.0				
£B/				
Offst 41.3				
41.3 4B				
PAvg				
л s2				
53 FC				
<b>E</b> (f):				
Tun				
Эwp				
Start 7.495 GHz				Stop 9.450 GH:
ŧRes BW 100 kHz_		<b>#VBW</b> 300 kHz_	#Sweep	601 ms (601 pts)

	High Channel, In Band			
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

Ref 40 dBm	#At	ten 20 c	lВ						
Avg									
.og									
.0 IB/							}		
Iffst							1		
)ffst  1.3									
IB						+			
						+			
PAvg									
1 \$2									
3 FC									
:(f):					_				
>50k		·····		× × •	L		L		
ý gwi									·
Center 937.50 MHz Res BW 100 kHz			ŧVBW 300					Spa 601 ms (	n 10 MH

	High Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 09:45:46 Ma	y 19, 2006		Т	
Ref 40 dBm	#Atten 20 dE	3		
#Avg Log				
10 dB/				
Offst				
41.3 dB				
#PAvg				
V1 S2 S3 FC				
S3 FC				
€(f): FTun				
Swp				^
Start 0 Hz				Stop 1.000 GHz
#Res BW 100 kHz	#1	/BW 300 kHz	#Sweep	601 ms (601 pts)

	High Channel, 995MHz-2.8GF	Ηz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

<b>* Agilent</b> 09:47	:38 May 19,2	2006			T		
ef 40_dBm	#[	Atten 20 di	В				
Avg og							
0							
B/							
Iffst 1.3 B							
B							
PAvg							
1 \$2							
3 FC							
:(f):							
Tun					 		
wp							
tart 995 MHz Res BW 100 kHz_		#	VBW 300	kHz	#Sween	5top 2 601 ms (	2.800 GH 601 nts

	High Channel, 2.795GHz-4.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 09:49:13 May 19, 20	006	Т
Ref40dBm #A	tten 20 dB	
#Avg Log		
10 dB/		
Offst		
41.3 dB		
#PAvg		
V1 S2 S3 FC		
£(f): FTun		
Swp manufacture and some some some some some some some some	Marina and a sub-	and a second
Start 2.795 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 4.500 GHz #Sweep 601 ms (601 pts)

	High Cha	nnel, 4.495GHz-6GHz		
Result: Pa	ss Value:	< -30 dBm Lin	mit: :	≤ -13 dBm

#A	tten 20 d	В					
~~ <u>~</u> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							********
							 5.000 GI
	*A	*Atten 20 d	#Atten 20 dB	*Atten 20 dB	#Atten 20 dB	#Atten 20 dB	Image: selection of the

	High Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

<b>Agilent</b> 09:53:38	3 May 19, 2006		Т	
Ref 40 dBm	#Atten 20	dB		
ŧAvg _og				
.0 IB/				
)ffst 11.3 IB				
PAvg				
1 S2				
3 FC				
:(f): Tun				
qw				
tart 5.995 GHz				Stop 7.500 GH
Res BW 100 kHz		#VBW 300 kHz	#Sweep	601 ms (601 pts

	High Channel, 7.495GHz-9.45GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

( 10 ID			15				
ef 40 dBm Avg	#	Atten 20 d	3B		 		
og							
0							
B/ 📔 👘 👘							
ffst 1.3							
B							
PAvg							
1 \$2							
3 FC							
(f):							
Tun wp				······································	 		
tart 7.495 GHz						Stop 9	.450 GH
Res BW 100 kHz_			#VBW 300	kHz	#Sweep	601 ms (	

	9 Channel Intermods, In Band		
Result: Pass	Value: -22.4 dBm	Limit:	≤ -13 dBm

🔆 Agilent 13:20:12	4ay 19, 2006		Т	ML+1 042 44 MU-
Ref 40 dBm	#Atten 20 dB			Mkr1 942.44 MHz –22.42 dBm
#Avg Log				
10 dB/			٨	
Offst			{	
51.6 dB				
#PAvg				
V1 S2				1
S3 FC				MA
€(f): FTun				
Swp				
Center 937.50 MHz #Res BW 100 kHz		300 kHz		Span 12 MHz 01 ms (601 pts)

	9 Channel Intermods, 0-1GH	Z		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

Ref 40 dBm ≢Avg	#	Atten 20 d	B	 		
_og						
10 187						
Dffst 51.5 4B						
PAvg						
11 S2						
/1 \$2 53 FC						
C(f):				 	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Swp						
∫ Start 0 Hz					Ston	1.000 GH

	9 Channel Intermods, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 13:52:18 May 19, 2	2006	T
Ref40dBm #M	Atten 20 dB	
#Avg Log		
10 dB/		
Offst		
51.5 dB		
#PAvg		
V1 S2 S3 FC		
€(f): FTun		
Swp		
Start 995 MHz #Res BW 100 kHz	#VBW 300 kHz	Stop 2.800 GHz #Sweep 601 ms (601 pts)

	9 Channel Inter	mods, 2.795GHz-4.5GHz		
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm

₩ Agilent 13:54:	C/ 1103 IV;	2000				Т		
ef 40_dBm	:	#Atten 20 dB						
Avg								
og Ø								
IB/								
ffst 1.5								
B								
PAvg								
1 \$2								
3 FC								
:(f):			··· <b>_</b> ··		·	•		<u></u>
Tun								
wp								
tart 2.795 GHz							Stop 4	.550 Gł
Res BW 100 kHz_			#VBW 300	kHz		#Sweep	601 ms (	

	9 Channel Intermods, 4.495GHz-6GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 13:57:1	.2 May 19, 2006		Т	
Ref 40 dBm	#Atten 20	dB		
#Avg Log				
10 187				
Dffst 51.5 4B				
PAvg				
1 S2				
53 FC				
C(f): Tun				
οwp				
Start 4.500 GHz Res BW 100 kHz		_#VBW 300 kHz	#Succes	Stop 6.000 GH 601 ms (601 pts)

# NORTHWEST

## SPURIOUS EMISSIONS AT ANTENNA TERMINALS

	9 Channel Inte	rmods, 5.995GHz-7.5GHz		
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm

Agilent 13:59:	.01 May 19	, 2005			Т		
Ref 40_dBm		#Atten 20	dB				
Avg							
.og .0							
IB/							
)ffst 51.5							
IB							
PAvg							
/1 S2 53 FC							
53 FC				سسسيهر	 ·		L
<b>2</b> (f):		~~ <u>~</u> ~					
Tun							
Gwp							
Start 5.995 GHz						Stop 7	500 GH
Res BW 100 kHz_			#VBW 300	) kHz	#Sweep	601 ms (	

	9 Channel Intermods, 7.495GHz-9.45GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

* Agilent 14:00:	49 May 19,20	00			T		
Ref 40_dBm	#At	ten 20 dł	3				
ŧÂvg .og							
.0							
IB/							
)ffst							
1.5 B							
PAvg							
/1 S2 53 FC							
				·····	 		
C(f):							
Tun							
)wp							
tart 7.495 GHz Res BW 100 kHz_			VBW 300			Stop 9. 601 ms (0	.450 GH

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	AAT	4/4/2006	12
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Power Sensor	Hewlett-Packard	8481H	SPB	7/23/2004	24

#### MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

#### **TEST DESCRIPTION**

A spectrum analyzer was used to scan from 0 to 10 GHz. A 100kHz resolution bandwidth was used. No video filtering was employed. A 30dB external attenuator was used on the RF input of the spectrum analyzer.

NORTHWEST EMC	SPURIOUS EMISSI	IONS AT ANT	ENNA TER	MINALS	XMit 2006.03.01
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:					05/19/06
Customer:	Radioframe Networks, Inc.			Temperature:	
Attendees:	Dean Busch			Humidity:	34%
Project:				Barometric Pres.:	29.89
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV06
TEST SPECIFICATION	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-B:2	2002	
COMMENTS					
900MHz Band, High	Power Level				
DEVIATIONS FROM	TEST STANDARD				
Configuration #	1 Sianature	Porty to Rela	, 7		

Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
High Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass

# NORTHWEST

## SPURIOUS EMISSIONS AT ANTENNA TERMINALS

XMit 2006.03.01

	Low Channel, In Band			
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

Ref 40_dBm	#Atte	en 20 dB		
ŧAvg ₋og				
.0				
HB/				
Dffst 41.3 4B	$\land$			
PAvg				
rrrvg				
/1 \$2 53 FC				
53 FC				
<b>2</b> (f): >50k				
Śwp			 	
Center 937.50 MHz	2			Span 10 MH

	Low Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 11:11:50	) May 19, 2006		Т	
Ref 40 dBm	#Atten 20 c	IB		
#Avg Log				
10				
dB/ Offst				
Offst 41.3 dB				
#PAvg				
V1 S2				
S3 FC				
<b>£</b> (f):				
FTun Swp				
Start 0 Hz				Stop 1.000 GHz
#Res BW 100 kHz		ŧVBW 300 kHz	#Sweep	o 601 ms (601 pts)

	Low Channel, 995MHz-2.80	GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

* Agilent 11:13:5			_					
Ref 40 dBm	#Att	en 20 dB						
Avg .og								
.0								
IB/								
)ffst								
)ffst  1.3  B								
PAvg								
11 60								
/1 S2 53 FC								
<b>2</b> (f):								
Tun				1				
wp								
tart 995 MHz					1		Stop 2	.800 GH
Res BW 100 kHz		#V	BW 300 I	kHz		#Sweep	601 ms (	601 pts

	Low Channel, 2.795GHz-4.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

★ Agilent 11:16:54 May 19, 20	006	Т
Ref40_dBm #A	tten 20 dB	
#Avg Log		
10		
dB/ Offst		
0ffst 41.3 dB		
#PAvg		
V1 S2		
S3 FC		
£(f): FTun		
Swp		······································
Start 2.795 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 4.500 GHz #Sweep 601 ms (601 pts)

	Low Ch	annel, 4.495GHz-6GHz		
Result: F	Pass Value	: < -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm	#H1	ten 20 d	8			
Avg .og						
.0						
IB/ I						
Iffst						
Iffst 11.3 IB						
PAvg						
1 S2 3 FC						
:(f):						
Tun						
iwp 👘						
tart 4.495 GHz Res BW 100 kHz			VBW 300		 Stop 6 601 ms (	.000 GH

	Low Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

	0 May 19, 2006					
Ref 40_dBm	#Atten 2	20 dB				
+Avg						
og Ø						
iB/						
Iffst						
)ffst  1.3  B						
IB						
PAvg						
1 \$2						
3 FC						
:(f):						
Tun				 		
wp qw						
tart 5.995 GHz						.500 GH
Res BW 100 kHz <u></u>		<u>+</u> VBW 300	kHz	#Sweep	601 ms (	601 pts)

	Low Channel, 7.495GHz-9.45	GHz	
Result: Pass	<b>Value:</b> < -30 dBm	<b>Limit:</b> ≤ -13 dBm	

ten 20 di					
 	 		·		
					ĺ
		Image: second	Image: second	Image: second	Image: state of the state o

	Mid Channel, In Band		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 11:28:29	May 19, 2006		T	
Ref 40 dBm	#Atten 20 d	В		
#Avg Log				
10				
dB/ Offst				
Offst 41.3 dB		Δ		
#PAvg				
V1 S2				
S3 FC				
<b>£</b> (f): f>50k				
Swp				
Center 937.50 MHz				Span 10 MHz
#Res BW 100 kHz	#	VBW 300 kHz	#Sweep	601 ms (601 pts)

	Mid Channel, 0-1GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

ffst 1.3 B					
ffst	Avg				
ffst 1.3 B	Ava				
ffst					
	fst				
	g g				

	Mid Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 11:34:16	May 19, 2006			Т	
Ref 40_dBm	#Atten 20 c	IB			
#Avg Log					
10					
dB/ Offst					
41.3 dB					
#PAvg					
J1 S2					
53 FC					
€(f):					
FTun			<u>,</u>		
Swp					
Start 995 MHz				Stop 2	2.800 GHz
#Res BW 100 kHz	+	ŧVBW 300 kHz	<b>#</b> S	weep 601 ms (	601 pts)

	Mid Channel, 2.795GHz-4.5G	Hz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

Ref 40 dBm Avg	#	Atten 20 (	dB			
.og						
.0 IB/						
)ffst 1.3						
I1.3 IB						
PAvg						
/1 S2 33 FC						
(f):						
Tun Wp		••	~ <u>~</u> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	 · · · · · · · · · · · · · · · · · · ·	 	
Start 2.795 GHz						  .500 GH

	Mid Channel, 4.495GHz-6GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

★ Agilent 11:38:27	' May 19, 2006		T	
Ref 40_dBm	#Atten 20 d	В		
#Avg Log				
10 dB/				
Offst 41.3 dB				
#PAvg				
V1 S2				
S3 FC				
€(f): FTun				
Swp				
Start 4.495 GHz #Res BW 100 kHz	#	VBW 300 kHz	#Sweep	Stop 6.000 GHz 601 ms (601 pts)

	Mid Channel, 5.995GHz-7.5G	Hz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

ef 40_dBm	+	Atten 20	dB		 	
Avg og						
0						
B/						
ffst 1.3						
B						
DOUL						
PAvg						
1 S2 3 FC						
3 FC						
:(f):						
Tun	~ <u>~</u>			 	 	
qwp						
tart 5.995 GHz					<u> </u>	7.500 GH

	Mid Channel, 7.495GHz-9.45GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

Ref 40 dBm	#At	ten 20 di	В					
Avg								
og								
0 B/								
ffst								
ffst 1.3 B								
B								
PAvg								
1 S2 3 FC								
:(f):								
Tun					· · · · · · · · · · · · · · · · · · ·			
wp								
tart 7.495 GHz							Stop 9	450 GH
Res BW 100 kHz_		#	VBW 300	kHz		#Sween	601 ms (6	

	High Channel, In Band			
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm	

Ref 40 dBm	#A:	tten 20 dE	3					
Avg								
.og								
.0								
IB/								
)ffst 41.3 #B					۸			
IB					$\square$			
					$\vdash$			
PAvg								
/1 S2								
53 FC						ļ		
<b>2</b> (f):								
>50k								
Śwp www.		****		~~~ <b>~</b> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	 			
Center 937.50 MHz Res BW 100 kHz			VBW 300				Spa	an 10 MH (601 pts

	High Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 11:50:0	95 May 19, 2006		Т	
Ref 40_dBm	#Atten 20 d	В		
#Avg Log				
10				
dB/ Offst				
41.3 dB				
#PAvg				
V1 S2 S3 FC				
S3 FC				
<b>£</b> (f):				
FTun Swp		·····		
Start 0 Hz				Stop 1.000 GHz
#Res BW 100 kHz	#	VBW 300 kHz	#Sweep	601 ms (601 pts)

	High Channel, 995MHz-2.8G	GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

Ref 40 dBm	щ	Atten 20 d	ID				
Avg	#1	ntten ZU d					
og							
õ – – –							
IB/							
ffst 1.3							
1.3 B							
PAvg					 		ļ
1 S2 3 FC							
:(f):							
Tun							
wp							
						Stop 2	
Start 995 MHz Res BW 100 kHz			VBW 300	LU⇒	Stop 2.800 G #Sweep 601 ms (601 pt;		

	High Channel, 2.795GHz-4.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

	May 19, 2006		T	
Ref 40 dBm	#Atten 20 d	IB		
#Avg Log				
10 dB/				
Offst				
0ffst 41.3 dB				
#PAvg				
V1 S2 S3 FC				
£(f): FTun				
Swp				
Start 2.795 GHz #Res BW 100 kHz		ŧVBW 300 kHz	#Sween	Stop 4.500 GHz 601 ms (601 pts)

	High Cha	nnel, 4.495GHz-6GHz		
Result: Pa	ss Value:	< -30 dBm Lin	mit: :	≤ -13 dBm

Ref 40 dBm	#P	ltten 20 d	В			
Avg						
og Ø						
B/						
Iffst 1.3 B						
B						
PAvg						
1 S2 3 FC						
:(f): Tun						
wp	***			 	 	
tart 4.495 GHz Res BW 100 kHz			VBW 300		 Stop 6 601 ms (	5.000 GH

	High Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 <b>Agilent</b> 11:57:53	8 May 19, 2006		T	
Ref 40 dBm	#Atten 20 d	В		
#Avg Log				
10				
dB/ 📔 👘				
0ffst 41.3 dB				
+PAvg				
л s2				
3 FC				
C(f):				
Śwp				
Start 5.995 GHz				Stop 7.500 GHz
#Res BW 100 kHz	#	VBW 300 kHz	#Sweep	601 ms (601 pts)

## NORTHWEST

## SPURIOUS EMISSIONS AT ANTENNA TERMINALS

	High Channel, 7.495GHz-9.450	GHz	
Result: Pass	<b>Value:</b> < -30 dBm	<b>Limit:</b> ≤ -13 dBm	

🔆 Agilent 11:5	9:50 May 19, 20	06			T		
Ref 40 dBm	#At	ten 20 dE	3				
#Avg Log							
10 dB/							
aB/ Offst							
Offst 41.3 dB							
#PAvg							
V1 S2							
S3 FC							
<b>£</b> (f):							
FTun Swp	******	·····			 	~~	••••••
Start 7.495 GHz							450 GHz
#Res BW 100 kHz		#\	/BW 300	kHz	#Sweep	601 ms (6	601 pts)

< -30 dBm

≤ -13 dBm

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	AAT	4/4/2006	12
Signal Generator	Hewlett-Packard	8648D	TGC	1/27/2006	13
Power Meter	Hewlett Packard	E4418A	SPA	7/23/2004	24
Power Sensor	Hewlett-Packard	8481H	SPB	7/23/2004	24

#### MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

#### **TEST DESCRIPTION**

A spectrum analyzer was used to scan from 0 to 10 GHz. A 100kHz resolution bandwidth was used. No video filtering was employed. A 30dB external attenuator was used on the RF input of the spectrum analyzer.

NORTHWEST					XMit 2006.03.01
EMC	SPURIOUS EMISSIONS A		ENNA TERI	MINALS	
EUT:	MCRB			Work Order:	RAFN0062
Serial Number:				Date:	05/19/06
	Radioframe Networks, Inc.			Temperature:	23°C
Attendees:	Dean Busch			Humidity:	34%
Project:				Barometric Pres.:	29.89
	Rod Peloquin	Power:	-48Vdc	Job Site:	EV06
TEST SPECIFICATION	ONS		Test Method		
FCC 90.691:2005			ANSI/TIA/EIA-603-B:2	2002	
				· · · · · · · · · · · · · · · · · · ·	
COMMENTS					
900MHz Band, High					
DEVIATIONS FROM	TEST STANDARD				
Configuration #	1 Signature	- Rely	, ٣		

Modes of Operation and Test Conditions	Value	Limit	Result
Low Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Low Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
Mid Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, In Band	< -30 dBm	≤ -13 dBm	Pass
High Channel, 0-1GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 995MHz-2.8GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 2.795GHz-4.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 4.495GHz-6GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 5.995GHz-7.5GHz	< -30 dBm	≤ -13 dBm	Pass
High Channel, 7.495GHz-9.45GHz	< -30 dBm	≤ -13 dBm	Pass

	Low Channel, In Band		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

lef 40_dBm	#Att	en 20 dB		
Avg og				
0 IB/	٨			
Iffst 1.3 IB				
PAvg				
/1 S2 3 FC				
3 FC				
:(f): >50k				
бир				

	Low Channel, 0-1GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

<b>Agilent</b> 10:02:	15 May 19, 2006		Т	
Ref 40_dBm	#Atten 20 ·	dB		
#Avg Log				
10				
dB/				
0ffst 41.3 dB				
dB				
#PAvg				
V1 S2				
V1 S2 S3 FC				
€(f): FTun				
Swp				h
Start Ø Hz				Stop 1.000 GHz
ŧRes BW 100 kHz_		#VBW 300 kHz	#Sweep	601 ms (601 pts)

	Low Channel, 995MHz-2.8G	Hz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

Agilent 10:03:	:57 May 19, 2	006					
Ref 40_dBm	#A	tten 20 dE	3				
Avg .og							
.0							
IB/							
)ffst  1.3  B							
IR							
PAvg							
rnvy							
1 S2							
3 FC							
(f):							
Tun Wap					 		
itart 995 MHz						Stop 2	 .800 GH
Res BW 100 kHz_		#\	/BW 300 I	kHz	#Sweep	601 ms (	601 pts

	Low Channel, 2.795GHz-4.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 10:0	6:04 May 19, 20	06			Т	
Ref 40 dBm	#At	ten 20 dB				
#Avg Log						
10						
dB/ Offst						
Offst 41.3 dB						
#PAvg						
V1 S2						
\$3 FC						
<b>£</b> (f):						
FTun Swp						
Start 2.795 GHz						.500 GHz
#Res BW 100 kHz		#VBW	300 kHz	#S	weep 601 ms (	601 pts)

	Low Ch	annel, 4.495GHz-6GHz		
Result: F	Pass Value	: < -30 dBm	Limit:	≤ -13 dBm

_	51 May 19, 20					
lef 40_dBm	#A	tten 20 dB	;			
Avg						
og Ø						
IB/						
ffst						
Iffst 1.3 B						
PAvg						
1 52						
1 S2 3 FC						
:(f):						
Tun				·····	 	~~~~~
tart 4.495 GHz Res BW 100 kHz			/BW 300 kH;		Stop 6 601 ms (	.000 GH

	Low Channel, 5.995GHz-7.5GHz		
Result: Pass	<b>Value:</b> < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 10:23:03 May 19,	2006	Т
Ref40_dBm #	Atten 20 dB	
#Avg Log		
10 dB/		
Offst		
41.3 dB		
#PAvg		
V1 S2 S3 FC		
<b>£</b> (f):		
FTun		
Swp		
Start 5.995 GHz		Stop 7.500 GHz
#Res BW 100 kHz	#VBW 300 kHz	_#Sweep 601 ms (601 pts)_

	Low Channel, 7.495GHz-9.45	GHz	
Result: Pass	<b>Value:</b> < -30 dBm	<b>Limit:</b> ≤ -13 dBm	

 		~~~~
	Stop 9 <u>.450</u>	GH
	I 300 kHz #Sw	Stop 9.450 300 kHz #Sweep 601 ms (601

	Mid Channel, In Band		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 10:30:14	May 19, 2006		Т	
Ref 40_dBm	#Atten 20 d	В		
#Avg Log				
10 dB/		٨		
0ffst 41.3 dB				
#PAvg				
V1 S2 S3 FC				
€(f): f>50k				
Swp				
Center 937.50 MHz #Res BW 100 kHz	#	VBW 300 kHz	#Sweep	Span 10 MHz 601 ms (601 pts)

	Mid Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

+Avg .og					
10 187					
)ffst 11.3 1B					
PAvg					
И \$2 53 FC					
C(f): Tun					
Śwp	······	 	 	 ·····	/h

	Mid Channel, 995MHz-2.8GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 10:33:47 Ma	ay 19, 2006		T	
Ref 40 dBm	#Atten 20 dB	}		
#Avg Log				
10				
dB/ Offst				
41.3 dB				
#PAvg				
л s2				
53 FC				
E(f):				
Tun				
Эмр				
				0.000 CU-
Start 995 MHz +Res BW 100 kHz		/BW 300 kHz	#Sweep	Stop 2.800 GHz 601 ms (601 pts)

	Mid Channel, 2.795GHz-4.5G	Hz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

10 dB/ Offst 41.3 dB *PAvg *PAvg V1 S2 S3 FC E(f):	
HB/ Dffst 41.3 HB +PAvg	
HB/ Dffst H1.3 HB	
IB/ Offst 11.3	
IB/ Offst 11.3	
IB/	
Avg	

	Mid Channel, 4.495GHz-6GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

* Agilent 10:37:48	8 May 19, 2006					
Ref 40_dBm	#Atten 2	20 dB				
Avg .og						
0						
B/						
Iffst 1.3 B						
PAvg						
1 \$2						
3 FC						
(f): Tun						
wp						
tart 4.495 GHz Res BW 100 kHz		 #VBW 30		_	Stop 6 601 ms (.000 GH

	Mid Channel, 5.995GHz-7.5G	Hz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

	28 May 19, 20					
Ref 40_dBm	#At	ten 20 dB		 		
Avg .og						
.0						
IB/ 📔 👘						
)ffst 1.3						
IB						
PAvg						
n s2						
/1 \$2 3 FC						
C(f): Tun				 ween and the second		
ivp						
tart 5.995 GHz Res BW 100 kHz			BW 300 kH:		Stop 7 601 ms (.500 GH

	Mid Channel, 7.495GHz-9.45GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

* Agilent 10:42:	:00 May 19, 2006	i		Т	
Ref 40 <u>dBm</u>	#Atte	n 20 dB			
Avg .og					
0					
B/					
)ffst 1.3					
1.3 IB					
PAvg					
1 S2					
3 FC					
C(f):					
Gwp gwg					
tart 7.495 GHz					Stop 9.450 GH
Res BW 100 kHz_		#VBW 300	kHz	#Sweep 6	01 ms (601 pts)

	High Channel, In Band	1	
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

Center 937.50 MHz Res BW 100 kHz	2		:00 kHz		Span 10 MH 601 ms (601 pts
jwp qw		······································	<u></u>	manufad ha	
:(f): >50k					
/1 S2 3 FC					
PAvg					
1.3 IB					
)ffst 11.3				——————————————————————————————————————	
0 IB/					
.og					
lef 40 dBm Avg	#At	ten 20 dB		1	

	High Channel, 0-1GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

Stop 1.000 GH

	High Channel, 995MHz-2.8GHz	2		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm	

ef 40 dBm		Atten 20 d	1B				
Avg		Htten 20 (
.og							
.0							
IB7							
Iffst							
IB							
PAvg							
11109							
/1 S2 3 FC							
3 FC							
:(f):							
Tun							
wp	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			 		· · · · · · · · · · · · · · · · · · ·	
tart 995 MHz Res BW 100 kHz_			#VBW 300		~	Stop 2 601 ms (.800 GF

	High Channel, 2.795GHz-4.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 10:51	:14 May 19, 200	96			Т		
Ref 40 dBm	#Atı	ten 20 dE	3				
#Avg Log							
10							
dB/							
Offst 41.3 dB							
ав							
#PAvg							
V1 S2 S3 FC							
€(f): FTun							
Swp					 		
Start 2.795 GHz							500 GHz
#Res BW 100 kHz_		#\	/BW 300	kHz	#Sweep	601 ms (6	601 pts)_

	High Cha	nnel, 4.495GHz-6GHz		
Result: Pa	ss Value:	< -30 dBm Lin	mit: :	≤ -13 dBm

🔆 Agilent 10:53	:01 May 1	9,2006				Т		
Ref 40 dBm		#Atten 2	0 dB					
Avg .og								
.0								
IB/								
)ffst 1.3 B								
IR								
PAvg								
1 S2 3 FC								
×0.								
:(f): Tun								
wp	~~~~~		·····		····	······································		
tart 4.495 GHz							Stop 6	5.000 GH
Res BW 100 kHz_			#VBW 30)0 kHz		_#Sweep	601 ms (,601 pts

	High Channel, 5.995GHz-7.5GHz		
Result: Pass	Value: < -30 dBm	Limit:	≤ -13 dBm

🔆 Agilent 11:04:10 May 19, 2	006	Т
	itten 20 dB	
#Avg Log		
10		
dB/ Offst		
41.3 dB		
#PAvg		
V1 S2		
\$3 FC		
£ (f):		
FTun		
Swp		
Start 5.995 GHz		Stop 7.500 GHz
#Res BW 100 kHz	#VBW 300 kHz	#Sweep 601 ms (601 pts)

	High Chann	el, 7.495GHz-9.45GHz		
Result: Pass	Value:	< -30 dBm	Limit:	≤ -13 dBm

✤ Agilent 11:05	5:46 May 19, 20	ð6		T	
Ref 40 dBm	#Ati	ten 20 dB			
#Avg Log					
10 dB/					
dB/ Offst					
Offst 41.3 dB					
#PAvg					
V1 S2 S3 FC					
\$3 FC					
£ (f):					
FTun Swp			······		
Start 7.495 GHz					.450 GHz
#Res BW 100 kHz		#VBW 300	kHz	_#Sweep 601 ms (601 pts)

EMC Field Strength of Spurious Radiation

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 sector configuration, 800 and 900MHz bands POWER SETTINGS INVESTIGATED -48Vdc FREQUENCY RANGE INVESTIGATED Start Frequency 30 MHz Stop Frequency 10 GHz

SAMPLE CALCULATIONS

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

Description	Manufacturer	Model	ID	Last Cal.	Interva
High Pass Filter 1.2 - 18 GHz	Micro-Tronics	HPM50108	HFV	9/28/2005	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	1/4/2006	13
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Spectrum Analyzer	Agilent	E4446A	AAT	4/4/2006	12

Frequency R	ange Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(kHz)
0.01 - 0.1	5 1.0	0.2	0.2
0.15 - 30.	0 10.0	9.0	9.0
30.0 - 100	0 100.0	120.0	120.0
Above 100	00 1000.0	N/A	1000.0
Measurements were	made using the bandwidths and d	etectors specified. No video filte	er was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Per 2.1053 and 90.691, the Field Strength of Spurious Radiation was measured in the far-field at an FCC Listed OATS up to 10 GHz. Spectrum analyzer, signal generator, and linearly polarized antennas were used to measure radiated harmonics and spurious emissions. The orientation of the EUT and measurement antenna were manipulated to maximize the level of emissions. The EUT was configured to transmit at the highest output power into a dummy load at low, mid, and high frequencies for both the 800MHz and 900MHz bands.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is place on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the dipole antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

For the purposes of preliminary measurements, the field strength of the spurious emissions can be measured and compared with a 3 meter limit. The 3 meter limit was calculated to be 82.5 dBuV/m at 3 meters. The final measurements must be made utilizing the substitution method described above.

NORTHWEST		Fie	eld	St	re	nc	yt	n c	of	S	pu	ıri	0	u	s	Ra	ad	lia	ti	01	า)6.04.25)06.4.26
	MCRB																					Ore	ler.	RA	FNOC	062		
Serial Number																									19/06			
Customer		ame Net	works	, Inc.																Те	mpe			23°				
Attendees	None			,																				34%				
Project																			Ba	rom				29.8				
Tested by		shkanne	ejhad								Po	wer:	-		-						Jo	b S	ite:	EVC)1			
TEST SPECIFICAT	IONS														letho													
FCC 90.691:2005													AN:	51/1	ΓΙΑ/Ε	IA-6	03-E	:200	12									
TEST PARAMETE		4 4								т	oot F	liate	200	(m)	\			2										
Antenna Height(s) COMMENTS	(m)	1 - 4									est D	JISTA	nce	(m)			3							_		_	
Antenna ports terr EUT OPERATING Transmitting typic DEVIATIONS FRO No deviations.	MODES al sector	TANDA		, 800 a	and §	900MH	łz ba	ands																				
Run #		1																	1			Δ	1	•	1	0	1	
Configuration #		1																4	1/2	li	, /	for	N	Y	L	-		
Results		Pass		NVLA	P Lał	o Cod	e 20(0630-	-0							Sigi	natur	e /	10	0	1			-		-		
-10.0 -20.0 -30.0 -30.0 -30.0 -50.0 -60.0 -70.0 -80.0 1700.00		.000	11740.		176	0.000) 1	780.	0000				18	20	.000		340.	.000		860	.000) 1	•	0.00		190		000
	1							T			MH	Z	I								1			I				
Freq (MHz)				Azim (degre	ees)	Hei (met	ters)							olari			tector		EIR (Wat	ts)	(EIRF (dBm	n)	. (0	ec. Lin dBm)	nit	S	pared to pec. (dB)
1874.809				280		1.			_	-	_	-		-Ho			PK		.56E			-48.			13.0			35.1
1791.108				183		1.								-Ho			PK		0.34E			-50.3			13.0			37.3
1791.315				52.		2.								-Ho			PK		.23E			49.			13.0			36.1
1875.379				302	.0	1.	.9						V	-Ho	orn		PK	5	5.98E	:-09	-	-52.2	2	-	13.0		-3	39.2

NORTHWEST	Fiel	d Strengt	h of Spur	ious F	Radia	tion	PSA 2006.0 EMI 2006.
	MCRB						er: RAFN0062
Serial Number:							te: 05/19/06
	Radioframe Netwo Dean Busch	rks, Inc.				Temperatu	
Project:						Barometric Pre	ty: 34%
	Holly Ashkannejha	ad	Power	: -48Vdc			te: EV01
TEST SPECIFICATIO				Test Method			
FCC 90.691:2005				ANSI/TIA/EIA	А-603-В:2002	2	
TEST PARAMETERS Antenna Height(s) (Test Dista	ance (m)	3		
COMMENTS	,						
Antenna ports term EUT OPERATING M Transmitting typica DEVIATIONS FROM	ODES I sector configurat	ion, 800 and 900MHz I	bands				
No deviations.		-					
Run #	2					1 a A	1:10
Configuration #	1			-	4	foly A	my
Results	Pass	NVLAP Lab Code 2	00630-0	S	Signature 🦳	0	
0.0							
-10.0							
-20.0							
-30.0							
Eg -40.0							
-50.0		• • • • • • • • • • • • • • • • • • •		•			
-60.0							
-70.0							
-80.0							
1000.000) 1020.000 104	40.000 1060.000	1080.000 1100.000 MHz	1120.000	1140.000	1160.000 1	180.000 1200.000
Freq (MHz)		Azimuth Height (degrees) (meters)				EIRP EIRP (Watts) (dBm)	
1000.165		184.0 1.0		V-Horn		93E-09 -50.5	
1124.965 1000 115		317.0 1.0 360.0 1.7		V-Horn H-Horn		29E-09 -50.8 83E-09 -54.2	
1000.115 1124.564		360.0 1.7 17.0 1.2		H-Horn H-Horn		83E-09 -54.2 98E-09 -55.3	
1099.841		95.0 1.2		H-Horn		94E-09 -55.3	
1050.008		75.0 1.1		H-Horn		99E-09 -55.2	
1050.081		37.0 1.0		V-Horn		99E-09 -52.2	-13.0 -39.2
1099.035		360.0 1.0		V-Horn	PK 4.	73E-09 -53.3	-13.0 -40.3

NORTHWEST EMC		Field	d Stre	ength	of Sp	ouri	ous	Rad	iatior	_ ۱		SA 2006.04.25 EMI 2006.4.26
	MCRB										RAFN0062	
Serial Number:	-								vv		05/19/06	-
Customer:		ne Networ	ks, Inc.						Ter	nperature		
Attendees:	Dean Bus									Humidity:	34%	
Project:									Barome	etric Pres.:		
Tested by:		kannejha	d			Power:	-48Vdc			Job Site:	EV01	
TEST SPECIFICAT	IONS						Test Meth					
FCC 90.691:2005	25						an5i/11A/	'EIA-603-B:2	2002			
Antenna Height(s)		1 - 4			То	st Dista	nce (m)	C)			
COMMENTS	(11)	1 - 4				31 01310			,			
Antenna ports term EUT OPERATING M Transmitting typica DEVIATIONS FROM No deviations. Run # Configuration #	MODES al sector co M TEST ST/	onfiguratio ANDARD 3 1	on, 800 and	900MHz band	S				Holy	Al	inf	7
Results	Pa	ass	NVLAP La	ab Code 20063	0-0			Signature	Hory	10	/	
0.0 -10.0 -20.0 -30.0 -30.0 -30.0 -50.0												
-60.0												
-70.0												
-80.0												
100.000	0	150.00	0	200.000		50.000 MHz		300.000	3	350.000	4	00.000
Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
125.002 124.998 375.012 375.040			215.0 7.0 169.0 71.0	1.6 1.0 1.3 1.4			H-Bilog V-Bilog V-Bilog H-Bilog	PK PK PK PK	8.18E-09 1.24E-08 5.08E-09 3.06E-09	-50.9 -49.1 -52.9 -55.1	-13.0 -13.0 -13.0 -13.0	-37.9 -36.1 -39.9 -42.1

EMC

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.

Receive mode typical sector	configuration, 800 and 900	MHz bands	
POWER SETTINGS INVEST	IGATED		
-48Vdc			
	STIGATED		
FREQUENCY RANGE INVE		Stop Frequency	

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	AAT	4/4/2006	12
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(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

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 3 meters or 10 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.

EUT, MCR8 Werk Order: 2013006 Customer: RadioTrane Networks, Inc. Temperature: 23*C Attendes: Note Barometric Pres; 28*B Proper: Note Barometric Pres; 28*B Proper: Note Barometric Pres; 28*B Proper: Note Attendes; 28*C Proper: Note Attendes; 28*B Pass NVLAP Lab Code; 20030:0 Signature Attendes; 44*B Pass NVLAP Lab Code; 20030:0 Signature Attendes; 44*B Pass NVLAP Lab Code; 20030:0 Signature Atte		IORTHWEST			R	ADIAT	ED E	MISS	IONS	DATA	SHE	ET			2SA 2006.04.25 EMI 2006.4.26
Custome: Temperul: 23 C Attendes: Humidity: 33 % Barometric Pres:: 23 49 IS Stead by Toty: Barometric Pres:: 23 49 Barometric Pres:: 23 49 IS Stead by Toty: Job Stead by Toty:												W			2
Attendess: None Humding: 34% Project: None Browneric Pres: 23.9 Tested by: Holy Athannejhad Powir: 45% (2003) Tested by: Holy Athannejhad Test Molecular Tested by: Holy Athannejhad Test Molecular Test DAAMERERS Athannes Antenna Ports terminated. Test DAAMERERS COMMENTS Athannes Antenna ports terminated. Test DAAMERERS Receive med typical sector configuration, 800 and 900Mitz bands Receive med typical sector configuration, 800 and 900Mitz bands Receive med typical sector configuration, 800 and 900Mitz bands Receive med typical sector configuration, 800 and 900Mitz bands Results Pass NVLAP Lub Code 200630-0 Segnature Securits Pass 900 40.0 40.0 4 40.0 4 40.0 4 40.0 4 40.0 4 40.0 4 40.0 4 40.0 4 40.0 4 40.0	Se				o Notice -	ra Ina						T			
Project: None Barometic Pres: 29.89 Test de // cloy Ashkanane/had Fewer: -46V.dc Job Site; EV01 Test Se2GE/CATIONS Feld Method Feld Method Job Site; EV01 Test Se2GE/CATIONS Feld Method ANSI/C63.42003 ANSI/C63.42003 Job Site; EV01 Test PARAMETERS Antenna port seminated. Test PARAMETERS Antenna port seminated. Job Site; EV01 EUT OPERATING MODES Receive mode typical sector configuration.800 and 900MHz bands Boc/valons. Receive mode typical sector configuration.800 and 900MHz bands Boc/valons. Receive Mets TSTANAD No deviations. Pass 1 Test Deviations. Signature Add Method 80.0 40.0 4 4 4 4 4 4 90.0 40.0 4 4 4 4 4 4 90.0 40.0 4 4 4 4 4 4 90.0 40.0 4 4 4 4 4 <t< td=""><td></td><td></td><td></td><td></td><td></td><td>NS, IIIC.</td><td></td><td></td><td></td><td></td><td></td><td>Ter</td><td></td><td></td><td></td></t<>						NS, IIIC.						Ter			
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1125.157 45.2 -5.0 22.0 1.2 3.0 0.0 H-Horn PK 0.0 40.2 80.0 -39.8	1	466.692		45.2	-3.5	266.0	1.2	3.0	0.0	H-Horn	PK	0.0	41.7	80.0	-38.3

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

Receive mode typical sector configuration, 800 and 900MHz bands.

POWER SETTINGS INVESTIGATED

-48V DC

SAMPLE CALCULATIONS

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Hewlett-Packard	8593EM	AAM	12/8/2005	13
LISN	Solar	9252-50-R-24-BNC	LIM	1/9/2006	13

MEASUREMENT BANDWIDTHS							
	Frequency Range	Peak Data	Quasi-Peak Data	Average Data			
	(MHz)	(kHz)	(kHz)	(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			
Ν	Measurements were made usi	ng the bandwidths and det	ectors specified. No video filte	r was used.			

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is 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 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω .

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