Radioframe Networks, Inc.

MCRB

March 29, 2006

Report No. RAFN0060

Report Prepared By



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

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22975 NW Evergreen Parkway Suite 400 Hillsboro, Oregon 97124

Certificate of Test

Issue Date: March 29, 2006 Radioframe Networks, Inc. Model: MCRB

Emissions					
Test Description	Specification	Test Method	Pass	Fail	
Radiated Emissions	FCC 15.109(b) Class A:2005-10	ANSI C63.4:2003	\boxtimes		
Conducted Emissions	FCC 15.107 Class A:2005-10	ANSI C63.4:2003	\boxtimes		
Emission Mask	47 CFR 90.691:2005	TIA/EIA - 603:2002	\boxtimes		
Frequency Stability	47 CFR 2.1055, 90.217:2005	TIA/EIA - 603:2002	\boxtimes		
Output Power	47 CFR 2.1046 & 90.217:2005	TIA/EIA - 603:2002	\boxtimes		
Spurious Conducted Emissions- Transmit	47 CFR 2.1051 & 90.691:2005	TIA/EIA - 603:2002			
Spurious Conducted Emissions- Receive	47 CFR 15.111(a)	ANSI C63.4:2003			
Spurious Radiated Emissions	FCC 90.691 and 2.1053 Spurious Emissions:2005	TIA/EIA - 603-B:2002	\boxtimes		

Modifications made to the product

See the Modifications section of this report

Test Facility

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

Northwest EMC, Inc.

22975 NW Evergreen Parkway, Suite 400; Hillsboro, OR 97124

Phone: (503) 844-4066

Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:

Greg 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 History

Revision 05/05/03

Revision Number	Description	Date	Page Number
00	None		

Revision 03/18/05

Accreditations and Authorizations



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





NVLAP: Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 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.



NVLAP LAB CODE 200630-0 NVLAP LAB CODE 200676-0

Industry Canada: Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 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.



TUV 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).



Technology International: Assessed in accordance with ISO Guide 25 defining the general international requirements for the competence of calibration and testing laboratories and with ITI assessment criteria LACO196. Based upon that assessment, Interference Technology International, Ltd., has granted approval for specifications implementing the EU Directive on EMC (89/336/EEC and amendments). The scope of the approval was provided on a Schedule of Assessment supplied with the certificate and is available upon request.



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 and R-1025, 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

What is measurement uncertainty?

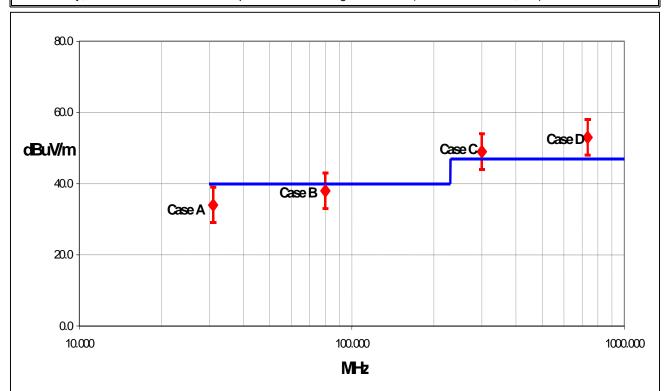
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following statement of measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" value. In the case of transient tests (ESD, EFT, Surge, Voltage Dips and Interruptions), the test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements.

The following documents were the basis for determining the uncertainty levels of our measurements:

- "ISO Guide to the Expression of Uncertainty in Measurements", October 1993
- "NIS81: The Treatment of Uncertainty in EMC Measurements", May 1994
- "IEC CISPR 16-3 A1 f1 Ed.1: Radio-interference measurements and statistical techniques", December 2000

How might measurement uncertainty be applied to test results?

If the diamond marks the measured value for the test and the vertical bars bracket the range of + and – measurement uncertainty, then test results can be interpreted from the diagram below. (See CISPR 16-4-1, 4.7)



Test Result Scenarios:

Case A: Product complies.

Case B: Product conditionally complies. It is not possible to say with 95% confidence that the product complies.

Case C: Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply.

Case D: Product does not comply.

Measurement Uncertainty

Radiated Emissions ≤ 1 GHz		Value (dB)				
	Probability	Bico	nical	Log Pe	eriodic	D	ipole
	Distribution	Ante	enna	Ante	enna	An	tenna
Test Distance		3m	10m	3m	10m	3m	10m
Combined standard	normal	+ 1.86	+ 1.82	+ 2.23	+ 1.29	+ 1.31	+ 1.25
uncertainty u _c (y)		- 1.88	- 1.87	- 1.41	- 1.26	- 1.27	- 1.25
Expanded uncertainty <i>U</i>	normal (k=2)	+ 3.72	+ 3.64	+ 4.46	+ 2.59	+ 2.61	+ 2.49
(level of confidence ≈ 95%)		- 3.77	- 3.73	-2.81	- 2.52	- 2.55	- 2.49

Radiated Emissions > 1 GHz	Value (dB)		
	Probability Distribution	Without High Pass Filter	With High Pass Filter
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.38 - 1.35
Expanded uncertainty <i>U</i> (level of confidence ≈ 95%)	normal (k=2)	+ 2.57 - 2.51	+ 2.76 2.70

Conducted Emissions		
	Probability	Value
	Distribution	(+/- dB)
Combined standard uncertainty <i>uc(y)</i>	normal	1.48
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	2.97

Radiated Immunity		
	Probability	Value
	Distribution	(+/- dB)
Combined standard uncertainty uc(y)	normal	1.05
Expanded uncertainty <i>U</i> (level of confidence ≈ 95 %)	normal (k = 2)	2.11

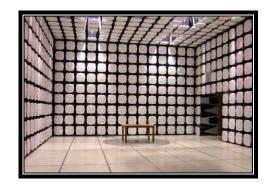
Conducted Immunity					
	Probability	Value			
	Distribution	(+/- dB)			
Combined standard uncertainty <i>uc(y</i>)	normal	1.05			
Expanded uncertainty U	normal (k = 2)	2.10			
(level of confidence ≈ 95 %)	Horriai (K = 2)	2.10			

Legend

 $u_c(y)$ = square root of the sum of squares of the individual standard uncertainties

 $\it U$ = combined standard uncertainty multiplied by the coverage factor: $\it k$. This defines an interval about the measured result that will encompass the true value with a confidence level of approximately 95%. If a higher level of confidence is required, then $\it k$ =3 (CL of 99.7%) can be used. Please note that with a coverage factor of one, uc(y) yields a confidence level of only 68%.

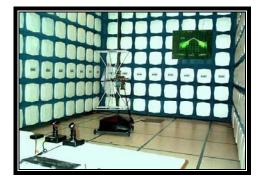




California – Orange County Facility Labs OC01 – OC13

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





Oregon – Evergreen Facility Labs EV01 – EV10

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

Revision 10/3/03

Party Requesting the Test	
Company Name:	Radioframe Networks, Inc.
Address:	1120 112th Ave NE, Suite 600
City, State, Zip:	Bellevue, WA 98004
Test Requested By:	Dean Busch
Model:	MCRB
First Date of Test:	March 20, 2006
Last Date of Test:	March 23, 2006
Receipt Date of Samples:	March 20, 2006
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided.
I/O Ports:	RF out

Functional Description of the EUT (Equipment Under Test):

Multi Band Radio blade for Cellular Micro Base Station covering both 800E MHz and 900MHz bands.

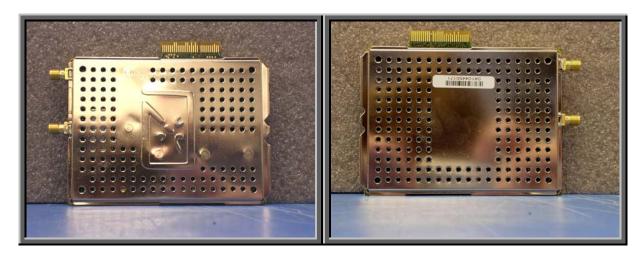
Client Justification for EUT Selection:

The product is an engineering sample, representative of the final product.

Client Justification for Test Selection:

These tests satisfy the requirements for FCC Certification

EUT Photo



CONFIGURATION 1 RAFN0060

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

EUT			
Description	Manufacturer	Model/Part 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

Peripherals in test setup boundary				
Description	Manufacturer	Model/Part Number	Serial Number	
MC-15 SERIES DUAL BAND SYSTEM (3 SECTOR)	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 (CRIC)	Radioframe Networks, Inc.	176-7540-xx	041053919XV	
MC Common RadioFrame Interface Card (CRIC)	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 (AIC)	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 (ERTM)	Radioframe Networks, Inc.	176-7562-xx	14105320204	
Ethernet Rear Transition Module (ERTM)	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	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 = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 RAFN0060

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 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		

Peripherals in test setup boundary				
Description	Manufacturer	Model/Part Number	Serial Number	
MC-15 SERIES DUAL BAND SYSTEM (3 SECTOR)	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 (CRIC)	Radioframe Networks, Inc.	176-7540-xx	041053919XV	
MC Common RadioFrame Interface Card (CRIC)	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 (AIC)	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 (ERTM)	Radioframe Networks, Inc.	176-7562-xx	14105320204
Ethernet Rear Transition Module (ERTM)	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 Num					
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		
DC Power Supply	Electronic Measurements, Inc.	EMS 60-33	20K11738		

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

CONFIGURATION 3 RAFN0060

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 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

Peripherals in test setup boundary				
Description	Manufacturer	Model/Part Number	Serial Number	
MC-15 SERIES DUAL BAND SYSTEM (3 SECTOR)	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 (CRIC)	Radioframe Networks, Inc.	176-7540-xx	041053919XV	
MC Common RadioFrame Interface Card (CRIC)	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 (AIC)	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 (ERTM)	Radioframe Networks, Inc.	176-7562-xx	14105320204
Ethernet Rear Transition Module (ERTM)	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	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 = Cal	ole is permaner	ntly attached to the	e device. Shie	ding and/or presence of ferrite	may be unknown.

CONFIGURATION 4 RAFN0060

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 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			

Peripherals in test setup boundary						
Description	Manufacturer	Model/Part Number	Serial Number			
MC-15 SERIES DUAL BAND SYSTEM (3 SECTOR)	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 (CRIC)	Radioframe Networks, Inc.	176-7540-xx	041053919XV			
MC Common RadioFrame Interface Card (CRIC)	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 (AIC)	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 (ERTM)	Radioframe Networks, Inc.	176-7562-xx	14105320204			
Ethernet Rear Transition Module (ERTM)	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	Sorensen	DCR 60-45B	0144		

Revision 4/28/03

		Equ	uipment mod	lifications	
Item	Date	Test	Modification	Note	Disposition of EUT
1	3/20/2006	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	3/20/2006	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.
3	3/21/2006	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	3/22/2006	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.
5	3/22/2006	FCC 15.109 HF 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.
6	3/22/2006	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.
7	3/23/2006	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.
8	3/23/2006	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.
9	3/23/2006	Spurious Conducted Intermodulations	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.
10	3/23/2006	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

RADIATED EMISSIONS

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

MODES OF OPERATION

No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz)

MODE USED FOR FINAL DATA

No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz)

POWER SETTINGS INVESTIGATED

-48VDC

POWER SETTINGS USED FOR FINAL DATA

-48VDC

FREQUENCY RANGE INV	ESTIGATED		
Start Frequency	30MHz	Stop Frequency	1000MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4443A	AAS	12/8/2005	12
Antenna, Biconilog	EMCO	3142	AXB	1/6/2005	24
Pre-Amplifier	Miteq	AM-1551	AOY	11/28/2005	13

MEASUREMENT BA	NDWIDTHS			
	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
Mea	asurements were made us	sing the bandwidths and detection	ctors 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, 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.

NORTHWEST **RADIATED EMISSIONS DATA SHEET EMC** EUT: MCRB Work Order: RAFN0060 Serial Number: Various Date: 03/23/06 Customer: Radioframe Networks, Inc. Temperature: 20 Attendees: Dean Busch Humidity: 34% Project: None Barometric Pres.: 30.15 Tested by: Rod Peloquin Power: -48VDC Job Site: EV11 **TEST SPECIFICATIONS** Test Meth FCC 15.109(b) Class A:2005-10 ANSI C63.4:2003 TEST PARAMETERS Antenna Height(s) (m) Test Distance (m) 10 1 - 4 COMMENTS Full system configuration, Receive ports terminated EUT OPERATING MODES No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz) DEVIATIONS FROM TEST STANDARD No deviations. Run# Rolly La Reley Configuration # 4 Results Pass NVLAP Lab Code 200630-0 Signature 80.0 70.0 60.0 50.0 dBuV/m 40.0 • 2 30.0 • 20.0 10.0 0.0 10.000 100.000 1000.000 MHz External Distance Compared to Amplitude Factor Azimuth Heiaht Distance Polarity Adjusted Spec. Limit Frea Detector Attenuation Adjustmen Spec. (dBuV) (dB) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) (degrees) (meters) H-Bilog -17.4 ΩP 40.7 375.003 58.1 50.0 1.4 10.0 0.0 0.0 46.5 -5.8 QΡ 350.007 52.9 -18.1 42.0 1.2 10.0 0.0 H-Bilog 0.0 34.8 46.5 -11.7 675.005 45.2 -11.9 322.0 2.6 10.0 0.0 H-Bilog QP 0.0 33.3 46.5 -13.2 750.008 43.6 -11.1 178.0 2.0 10.0 0.0 H-Bilog QP 0.0 32.5 46.5 -14.0 47.3 H-Bilog QΡ 46.5 -14.2 500.005 -15.0 138.0 1.4 10.0 0.0 0.0 32.3 QΡ 625.006 45.1 -12.9 151.0 1.2 10.0 0.0 V-Bilog 0.0 32.2 46.5 -14.3 V-Bilog QP 800.006 42 4 -11 2 65.0 1.6 10.0 0.0 0.0 31 2 46.5 -15.3 V-Bilog 375.005 QP 48.4 -17.4 131.0 3.8 10.0 0.0 0.0 31.0 46.5 -15.5 625.006 43.7 -12.9 139.0 1.2 10.0 0.0 H-Bilog QP 0.0 30.8 46.5 -15.7 790.007 41.6 -11.2 277.0 1.0 10.0 0.0 H-Bilog QP 0.0 30.4 46.5 -16.1 874.986 37.3 -9.7 146.0 1.0 10.0 0.0 V-Bilog QΡ 0.0 27.6 46.5 -18.9 V-Bilog QP 874.984 35.4 -9.7 326.0 1.0 10.0 0.0 0.0 25.7 46.5 -20.8 V-Bilog QP 30.008 33.7 -15.9 149.0 1.0 10.0 0.0 0.0 17.8 39.0 -21.2 V-Bilog QP 30.003 32.2 -15.9 109.0 0.0 39.0 -22.7 1.2 10.0 0.0 16.3

H-Bilog

30.076

31 4

-15.9

273.0

3.5

10.0

0.0

ΩP

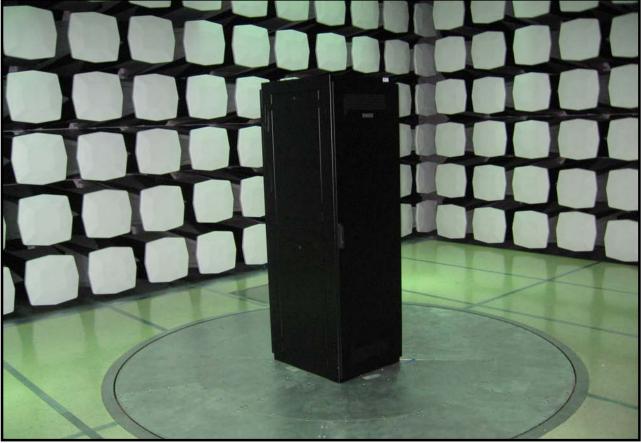
0.0

15.5

39.0

-23.5







RADIATED EMISSIONS

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

MODES OF OPERATION

No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz)

MODE USED FOR FINAL DATA

No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz)

POWER SETTINGS INVESTIGATED

-48VDC

POWER SETTINGS USED FOR FINAL DATA

-48VDC

FREQUENCY RANGE INV	ESTIGATED		
Start Frequency	1GHz	Stop Frequency	5GHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	7/15/2005	12
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12

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

NORTHWEST **RADIATED EMISSIONS DATA SHEET EMC** EUT: MCRB Work Order: RAFN0060 Serial Number: Various Date: 03/22/06 Customer: Radioframe Networks, Inc. Temperature: 22 Attendees: Dean Busch Humidity: 32% Project: None Barometric Pres.: 30.12 Tested by: Rod Peloquin Power: -48VDC Job Site: EV01 TEST SPECIFICATIONS Test Method FCC 15.109(b) Class A:2005-10 ANSI C63.4:2003 TEST PARAMETERS Antenna Height(s) (m) 1 - 4 Test Distance (m) 3 COMMENTS Full system configuration, Receive ports terminated EUT OPERATING MODES No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz) DEVIATIONS FROM TEST STANDARD No deviations. Run# Rocky la Relengs Configuration # 4 Results Pass NVLAP Lab Code 200630-0 Signature 90.0 80.0 70.0 60.0 dBuV/m 50.0 40.0 30.0 20.0 10.0 0.0 1000.000 1500.000 2000.000 2500.000 3000.000 3500.000 4000.000 4500.000 5000.000 MHz External Distance Compared to Freq Amplitude Factor Azimuth Heiaht Distance Polarity Adjusted Spec. Limit Attenuation Detector Adjustment Spec. (dBuV) (dB) (degrees) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (meters) (MHz) V-Horn 32.3 -27.7

35.2

34.0

46.0

43.9

1599.901

1600.011

1600.122

1599.944

-2.9

-2.9

-2.9

-2.9

353.0

221.0

353.0

221.0

1.2

1.1

1.2

1.1

3.0

3.0

3.0

3.0

0.0

0.0

0.0

0.0

H-Horn

V-Horn

H-Horn

ΑV

AV

PΚ

PΚ

0.0

0.0

0.0

0.0

31.1

43.1

41.0

60.0

60.0

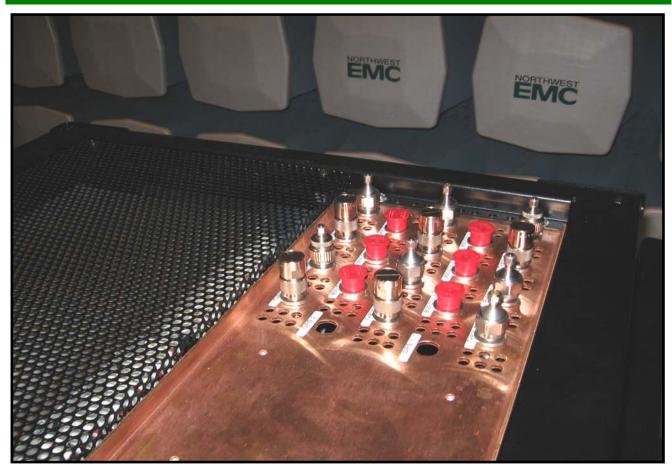
80.0

80.0

-28.9

-36.9

-39.0







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

No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz)

POWER SETTINGS INVESTIGATED

-48VDC

SAMPLE CALCULATIONS

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	7/15/2005	12
LISN	Solar	9252-50-R-24-BNC	LIP	12/13/2005	13
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/19/2005	13

	Quasi-Peak Data	Average Data
(kHz)	(kHz)	(kHz)
1.0	0.2	0.2
10.0	9.0	9.0
100.0	120.0	120.0
1000.0	N/A	1000.0
	1.0 10.0 100.0 1000.0	1.0 0.2 10.0 9.0 100.0 120.0

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, 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 .

NORTHWEST **CONDUCTED EMISSIONS DATA SHEET EMC** EUT: MCRB Work Order: RAFN0060 Serial Number: Various Date: 03/22/06 Customer: Radioframe Networks, Inc. Temperature: 22 Attendees: Dean Busch Humidity: 32% Project: None Barometric Pres.: 30.12 Tested by: Rod Peloquin Power: -48VDC Job Site: EV01 Test Method FCC 15.107 Class A:2005-10 ANSI C63.4:2003 TEST PARAMETERS

Cable or Line Tested Positive

COMMENTS

Full system configuration, Receive ports terminated

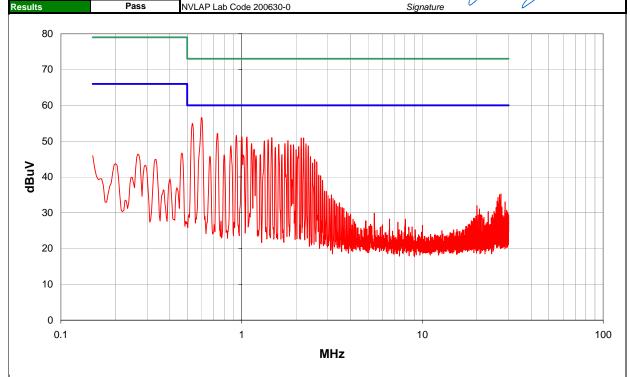
EUT OPERATING MODES

No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz) DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1
Configuration #	4
Results	Pass

Rocky to Reling Signature



Freq	Amplitude		Transducer	Cable	External Attenuation		etector	Adjusted	Spec. Limit	Compared to Spec.
(MHz)	(dBuV)		(dB)	(dB)	(dB)		equal peaks from scan)	dBuV	dBuV	(dB)
0.602	36.4	1	0.0	0.2	20.0	l l		56.6	60.0	-3.4
0.536	34.7		0.0	0.2	20.0			54.9	60.0	-5.1
0.733	31.9		0.0	0.3	20.0			52.2	60.0	-7.8
0.934	31.3		0.0	0.3	20.0			51.6	60.0	-8.4
1.003	31.0		0.0	0.3	20.0			51.3	60.0	-8.7
1.068	30.9		0.0	0.3	20.0			51.2	60.0	-8.8
1.469	30.6		0.0	0.4	20.0			51.0	60.0	-9.0
2.136	30.4		0.0	0.5	20.0			50.9	60.0	-9.1
2.202	30.4		0.0	0.5	20.0			50.9	60.0	-9.1
1.404	30.0		0.0	0.4	20.0			50.4	60.0	-9.6
1.804	29.7		0.0	0.5	20.0			50.2	60.0	-9.8
1.334	29.7		0.0	0.4	20.0			50.1	60.0	-9.9
1.735	28.9		0.0	0.4	20.0			49.3	60.0	-10.7
1.134	29.0		0.0	0.3	20.0			49.3	60.0	-10.7
2.271	28.8		0.0	0.5	20.0			49.3	60.0	-10.7
1.604	28.7		0.0	0.4	20.0			49.1	60.0	-10.9
1.936	28.5		0.0	0.5	20.0			49.0	60.0	-11.0
1.870	28.5		0.0	0.5	20.0			49.0	60.0	-11.0
0.872	28.4		0.0	0.3	20.0			48.7	60.0	-11.3

NORTHWEST **CONDUCTED EMISSIONS DATA SHEET EMC** EUT: MCRB Work Order: RAFN0060 Serial Number: Various Date: 03/22/06 Customer: Radioframe Networks, Inc. Temperature: 22 Attendees: Dean Busch Humidity: 32% Project: None Barometric Pres.: 30.12 Tested by: Rod Peloquin Power: -48VDC Job Site: EV01 Test Method

FCC 15.107 Class A:2005-10

ANSI C63.4:2003

TEST PARAMETERS

Cable or Line Tested Negative

COMMENTS

Full system configuration, Receive ports terminated

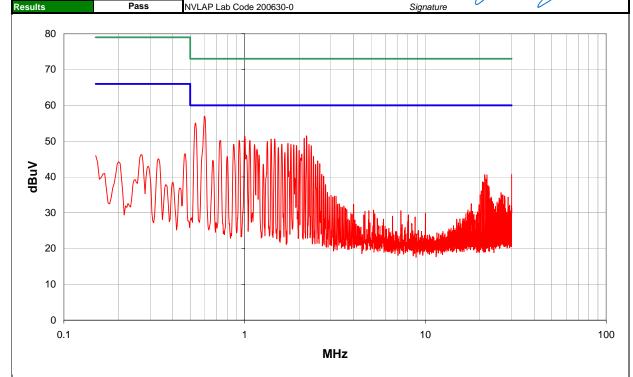
EUT OPERATING MODES

No Tx, receiving 24 Channel, 8 channel /sector (4 at 800MHz, 4 at 900MHz) DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	4
Results	Pass

Roely la Rely Signature



Freq (MHz)	Amplitude (dBuV)	Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.602	36.7	 0.0	0.2	20.0	ı		ı	56.9	60.0	-3.1
0.536	34.8	0.0	0.2	20.0				55.0	60.0	-5.0
2.202	31.0	0.0	0.5	20.0				51.5	60.0	-8.5
1.003	31.1	0.0	0.3	20.0				51.4	60.0	-8.6
2.136	30.3	0.0	0.5	20.0				50.8	60.0	-9.2
1.466	30.2	0.0	0.4	20.0				50.6	60.0	-9.4
1.404	30.2	0.0	0.4	20.0				50.6	60.0	-9.4
1.068	29.9	0.0	0.3	20.0				50.2	60.0	-9.8
0.934	29.9	0.0	0.3	20.0				50.2	60.0	-9.8
0.733	29.9	0.0	0.3	20.0				50.2	60.0	-9.8
1.338	29.5	0.0	0.4	20.0				49.9	60.0	-10.1
1.735	29.0	0.0	0.4	20.0				49.4	60.0	-10.6
1.604	28.7	0.0	0.4	20.0				49.1	60.0	-10.9
0.868	28.8	0.0	0.3	20.0				49.1	60.0	-10.9
2.271	28.6	0.0	0.5	20.0				49.1	60.0	-10.9
1.804	28.6	0.0	0.5	20.0				49.1	60.0	-10.9
1.134	28.7	0.0	0.3	20.0				49.0	60.0	-11.0
1.870	28.5	0.0	0.5	20.0				49.0	60.0	-11.0
1.936	28.3	0.0	0.5	20.0				48.8	60.0	-11.2

Conducted Emissions



Conducted Emissions



Emission Mask

Revision 10/1/03

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:
Low Channel, 800MHz Band
Mid Channel, 800MHz Band
High Channel, 800MHz Band
Low Channel, 900MHz Band
Mid Channel, 900MHz Band
High Channel, 900MHz Band

Operating Modes Investigated:

Typical, Single channel

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	EUT and Peripherals							
Description	Manufacturer	Model/Part 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 (AIC)	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 (ERTM)	Radioframe Networks, Inc.	176-7562-xx	14105320204					
Ethernet Rear Transition Module (ERTM)	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	Sorensen	DCR 60-45B	0144				

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		

Test Description

Requirement: Per 47 CFR 90.691, "The emission limits are as follows: (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log₁₀(f/6.1) decibels or 50 + 10 Log₁₀(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz. (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz."

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.

Emission Mask

Revision 10/1/03

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 channels. It further states that Section 90.691 (the emission mask) would apply to "outer" 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 $800\ \text{MHz}$ licensees.

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

I hope you can help me with this or at least point me in the right direction.

I have a client that has an EA based radio system that is currently using licensed transmitters with an output of 100mW in the 851 - 866 MHz range. The system is approved under 90.691. If the manufacturer raises the power level to 5 watts per channel output will they need to meet the emissions mask of 90.210 (g) or do they still fall under 90.691.

Thanks

Dean Busch Radiowave Compliance Services, Inc.

Emission Mask

Revision 10/1/03

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

See emission mask table below. It was concluded that testing at lower power levels was unnecessary since the general limit is -13 dBm. Clearly the high power configuration is worse case.

800 MHz Band

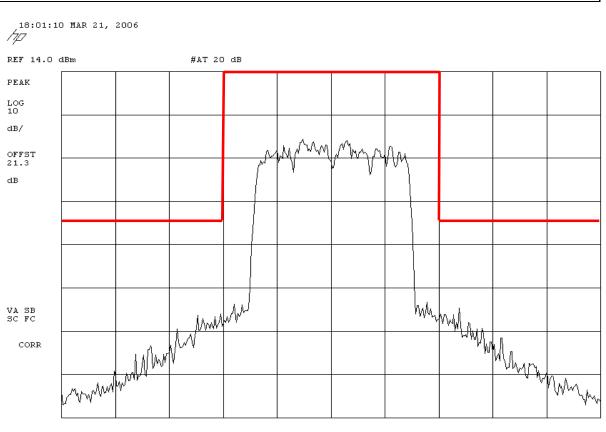
Channel	Output Power	Power (P)	Attenuation for th	Attenuation >37.5 kHz from fc				
	(dBm)	Watts		(dBc)				
			50 + (10*log P)	116*lo	116*log(f/6.1)		43 + (10*log P)	80
				f = 12.5 kHz	f = 37.5 kHz			
Low	11.3	1.35E-02	31.3	36.14	91.49	80	24.3	80
	5	3.16E-03	25.0	36.14	91.49	80	18.0	80
Mid	13.8	2.40E-02	33.8	36.14	91.49	80	26.8	80
	7.8	6.03E-03	27.8	36.14	91.49	80	20.8	80
High	12.7	1.86E-02	32.7	36.14	91.49	80	25.7	80
	6.7	4.68E-03	26.7	36.14		80	19.7	80

900 MHz Band

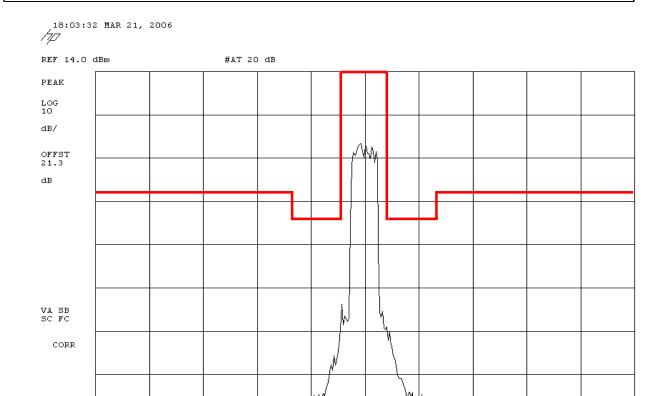
Channel	Output Power	Power (P)	Attenuation for th	ne range 12.5 kHz	Attenuation >37.5 kHz from fc			
	(dBm)	Watts	(dBc)				(dBc)	
		50 + (10*log P)		116*log(f/6.1)		80	43 + (10*log P)	80
				f = 12.5 kHz	f = 37.5 kHz			
Low	13.85	2.43E-02	33.9	36.14	91.49	80	26.9	80
	6.9	4.90E-03	26.9	36.14	91.49	80	19.9	80
Mid	13.97	2.49E-02	34.0	36.14	91.49	80	27.0	80
	6.4	4.37E-03	26.4	36.14	91.49	80	19.4	80
I Carla	10.40	0.005.00	00.5	00.44	04.40	00	00.5	00
High	13.46	2.22E-02	33.5	36.14	91.49	80	26.5	80
	6.5	4.47E-03	26.5	36.14	91.49	80	19.5	80

Completed by:

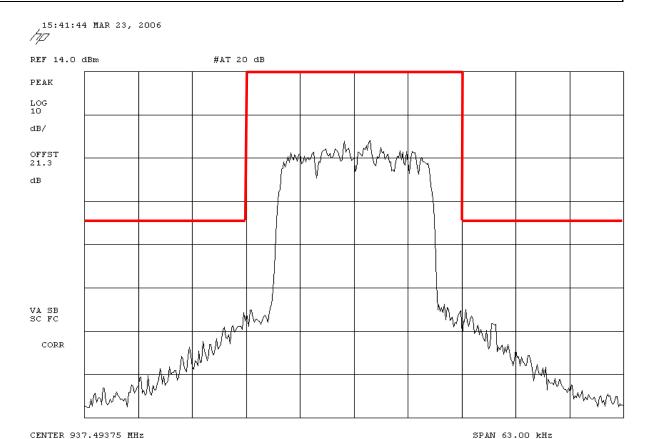
ROUTHWEST EMISSIONS MASK REVBETA								
EMC		EMISSIC	JNS MASK		Rev BETA 01/30/01			
EUT:	MCRB			Work Order:	RAFN0060			
Serial Number:	Various	Various						
Customer:	Radioframe Networks, Inc.			Temperature:	21° C			
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	31%			
Customer Ref. No.:	None		Power: -48Vdc	Job Site:	EV06			
TEST SPECIFICATION	IS							
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2003			
SAMPLE CALCULATION	ONS							
COMMENTS								
EUT OPERATING MOD	DES							
Modulated Carrier	Modulated Carrier							
DEVIATIONS FROM TI	EST STANDARD							
None	None							
REQUIREMENTS	REQUIREMENTS							
Maximum level of any	spurious emission must be atten	uated below the specified emis	ssion mask. 0 dB reference is 13.84 dBm					
RESULTS								
Pass								
SIGNATURE								
Rocly la Reling								
DESCRIPTION OF TEST								
E	Emission Mask for EA-based Systems: Lowest Channel @ Highest Output Power							



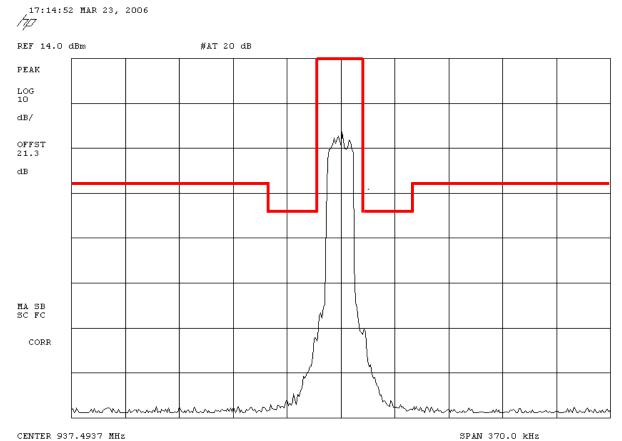
EMC		EMISSIC	NS MASK		Rev BETA 01/30/01
	MC Series System			Work Order:	
Serial Number:		Date:	03/20/06		
Customer:	Radioframe Networks, Inc.			Temperature:	23° C
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	40%
Customer Ref. No.:	None		Power: -48Vdc	Job Site:	Off-site
TEST SPECIFICATION	s				
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2003
SAMPLE CALCULATION	ONS				
COMMENTS EUT OPERATING MOD Modulated Carrier DEVIATIONS FROM TE None					
REQUIREMENTS					
	spurious emission must be atten	uated below the specified emiss	sion mask. 0 dB reference is 13.84 dBm		
RESULTS		<u>'</u>			
Pass					
SIGNATURE Tested By:	Roeling be Frelings				
DESCRIPTION OF TES	т				
E	mission Mask for E	A-based Systems:	: Lowest Channel @ Highes	t Output Pow	er



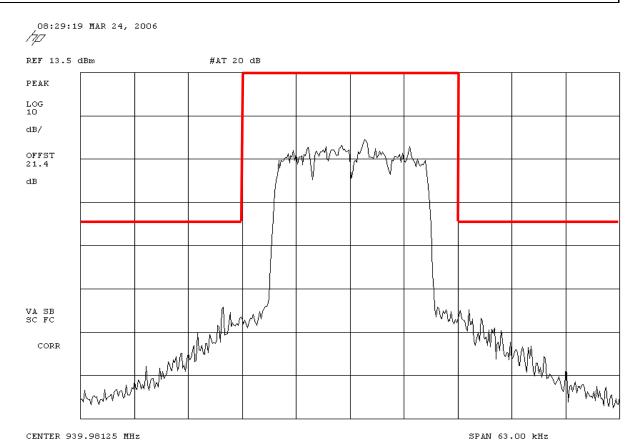
EMISSIONS MASK					
EMC		Limbold	NO MACK		01/30/01
	MC Series System			Work Order:	
Serial Number:					03/20/06
Customer:	Radioframe Networks, Inc.			Temperature:	
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	
Customer Ref. No.:			Power: -48Vdc	Job Site:	Off-site
TEST SPECIFICATION	S				
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2003
SAMPLE CALCULATION	ONS				
COMMENTS					
EUT OPERATING MOD	DES				
Modulated Carrier					
DEVIATIONS FROM TE	EST STANDARD				
None					
REQUIREMENTS					
	spurious emission must be atten	uated below the specified emiss	ion mask. 0 dB reference is 13.84 dBm		
RESULTS					
Pass					
SIGNATURE					
Rocley la Releng					
DESCRIPTION OF TEST					
Emission Mask for EA-based Systems: Middle Channel @ Highest Output Power					



NORTHWEST EMC						
	MC Series System			Work Order:	RAFN0054	
Serial Number:	Various			Date:	03/20/06	
Customer:	Radioframe Networks, Inc.			Temperature:	23° C	
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	40%	
Customer Ref. No.:	None		Power: -48Vdc	Job Site:	Off-site	
TEST SPECIFICATION	s					
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2003	
SAMPLE CALCULATION	ONS					
COMMENTS EUT OPERATING MODES Modulated Carrier DEVIATIONS FROM TEST STANDARD None REQUIREMENTS						
	spurious emission must be atten	uated below the specified emi	ssion mask. 0 dB reference is 13.84 dBm			
RESULTS		·				
Pass SIGNATURE						
Rochy la Frelings Tested By:						
DESCRIPTION OF TES	ST.					
Emission Mask for EA-based Systems: Middle Channel @ Highest Output Power						

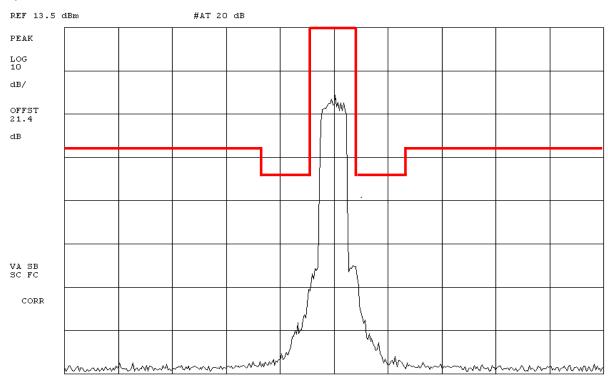


	EMISSIONS MASK					
EMC		Limbold	NO MACK		01/30/01	
EUT:	MC Series System			Work Order:		
Serial Number:	Various			Date:	03/20/06	
Customer:	Radioframe Networks, Inc.			Temperature:	23° C	
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	40%	
Customer Ref. No.:	None		Power: -48Vdc	Job Site:	Off-site	
TEST SPECIFICATION	IS					
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2003	
SAMPLE CALCULATION	ONS					
COMMENTS						
EUT OPERATING MOI	DES					
Modulated Carrier						
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS						
	spurious emission must be atten	uated below the specified emiss	ion mask. 0 dB reference is 13.84 dBm			
RESULTS						
Pass						
SIGNATURE						
Rochy la Reling						
DESCRIPTION OF TEST						
Emission Mask for EA-based Systems: Highest Channel @ Highest Output Power						



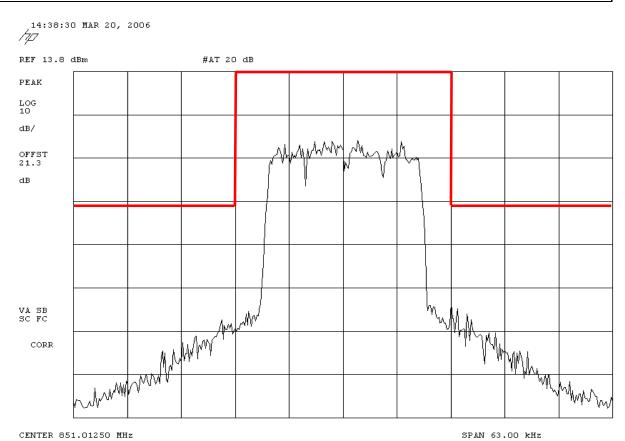
EMC EMISSIONS MASK Rev BETA 61/30/01						
EUT:	MC Series System			Work Order:	RAFN0054	
Serial Number:				Date:	03/20/06	
Customer:	Radioframe Networks, Inc.			Temperature:	23° C	
***************************************	Dean Busch		Tested by: Rod Peloquin	Humidity:		
Customer Ref. No.:			Power: -48Vdc	Job Site:	Off-site	
TEST SPECIFICATION						
Specification: SAMPLE CALCULATION		Year: 2005	Method: TIA / EIA - 603	Year:	2003	
COMMENTS EUT OPERATING MOD	DES					
Modulated Carrier						
DEVIATIONS FROM TE	EST STANDARD					
None REQUIREMENTS						
	anurious amission must be atten	usted below the appointed emissi	on mask. 0 dB reference is 13.84 dBm			
RESULTS	spurious emission must be atten	uated below the specified emission	on mask. 0 db reference is 13.64 dbm			
Pass						
SIGNATURE						
Rochy la Peleng						
DESCRIPTION OF TES	DESCRIPTION OF TEST					
E	Emission Mask for EA-based Systems: Highest Channel @ Highest Output Power					

08:35:23 MAR 24, 2006

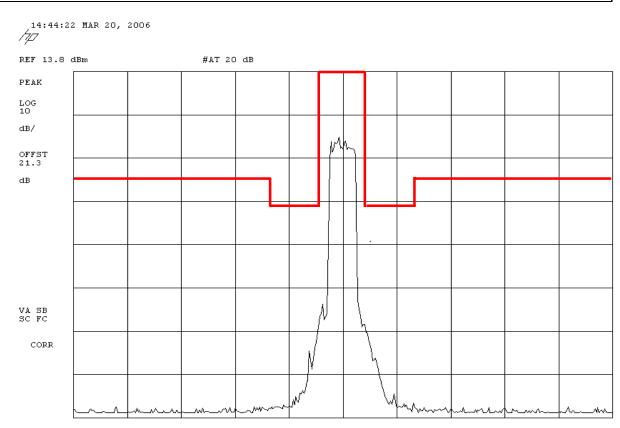


#RES BW 300 Hz

NORTHWEST						
EMC		LIVIIOSIC	MASIMASIN		01/30/01	
EUT:	MCRB			Work Order:	RAFN0060	
Serial Number:	Various			Date:	03/20/06	
Customer:	Radioframe Networks, Inc.			Temperature:	21° C	
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	31%	
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06	
TEST SPECIFICATION	S					
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATION	ONS					
COMMENTS						
EUT OPERATING MOD	DES					
Modulated Carrier						
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS						
	spurious emission must be atten	uated below the specified emiss	ion mask. 0 dB reference is 13.84 dBm			
RESULTS						
Pass						
SIGNATURE						
Rochy la Reling						
**** *						
DESCRIPTION OF TES						
Emission Mask for EA-based Systems: Lowest Channel @ Highest Output Power						

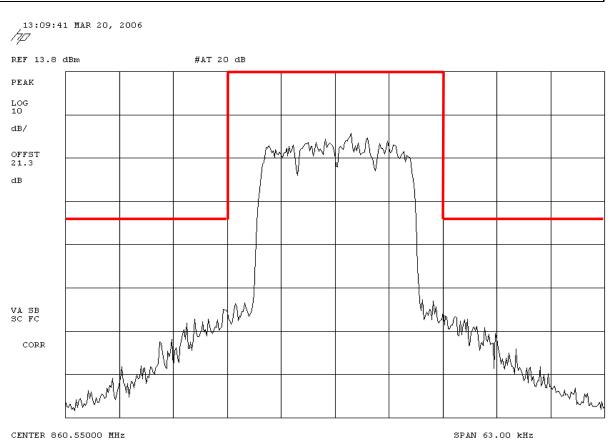


EMC							
	MC Series System			Work Order:			
Serial Number:				Date:	03/20/06		
Customer:	Radioframe Networks, Inc.			Temperature:	23° C		
Attendees:			Tested by: Rod Peloquin	Humidity:	40%		
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	Off-site		
TEST SPECIFICATION	s						
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATION	ONS						
COMMENTS EUT OPERATING MOD Modulated Carrier DEVIATIONS FROM TE	EUT OPERATING MODES						
None	EST STANDARD						
REQUIREMENTS							
Maximum level of any	spurious emission must be attenu	uated below the specified emiss	ion mask. 0 dB reference is 13.84 dBm				
RESULTS							
Pass							
SIGNATURE							
Rocky la Feling							
DESCRIPTION OF TES	DESCRIPTION OF TEST						
Emission Mask for EA-based Systems: Lowest Channel @ Highest Output Power							



SWP 12.3 sec

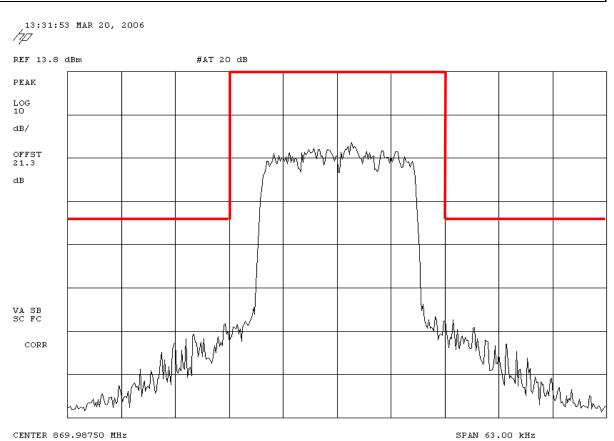
EMISSIONS MASK					
EMC		Limbold	THO MIAON		01/30/01
EUT:	MC Series System			Work Order:	
Serial Number:					03/20/06
	Radioframe Networks, Inc.			Temperature:	
Attendees:	Neil Ross		Tested by: Rod Peloquin	Humidity:	
Customer Ref. No.:			Power: -48 Vdc	Job Site:	Off-site
TEST SPECIFICATION	s				
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002
SAMPLE CALCULATION	ONS				
COMMENTS					
COMMENTS					
EUT OPERATING MOD	nes				
Modulated Carrier	723				
DEVIATIONS FROM TE	EST STANDARD				
None	EOT OTANDARD				
REQUIREMENTS					
	spurious emission must be atten-	uated below the specified emiss	ion mask. 0 dB reference is 13.84 dBm		
RESULTS					
Pass					
SIGNATURE					
Poeling be Relings					
DESCRIPTION OF TEST					
Emission Mask for EA-based Systems: Middle Channel @ Highest Output Power					



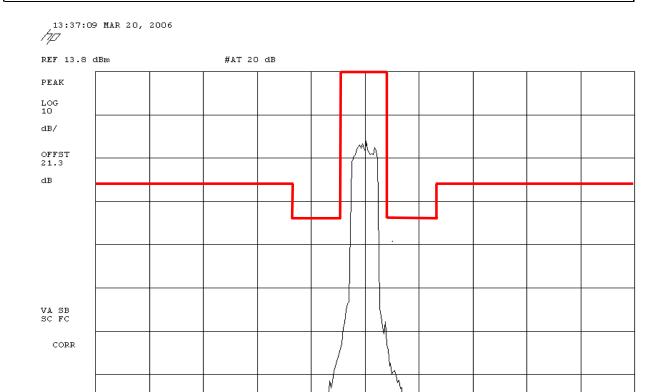
EMC EMISSIONS MASK Rev BETA 01/30/01						
EUT: MC Series System			Work Order	: RAFN0054		
Serial Number: Various			Date	: 03/20/06		
Customer: Radioframe Networks, Inc.			Temperature	: 23° C		
Attendees: Neil Ross		Tested by: Rod Pelo	oquin Humidity	: 40%		
Customer Ref. No.: None		Power: -48 Vdc	Job Site	: Off-site		
TEST SPECIFICATIONS						
Specification: 47 CFR 90.691 SAMPLE CALCULATIONS	Year: 2005	Method: TIA / EIA	- 603 Year	: 2002		
COMMENTS						
EUT OPERATING MODES						
Modulated Carrier						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS Maximum level of any spurious emission must be at	44	ii i- 42 04	-ID			
RESULTS	tendated below the specified en	ilssion mask. 0 dB reference is 13.84	ивііі			
Pass						
SIGNATURE						
Poeling le Relings						
DESCRIPTION OF TEST						
Emission Mask for EA-based Systems: Middle Channel @ Highest Output Power						

SWP 12.3 sec

NORTHWEST						
EMC		Livilooio	NO MACIT		01/30/01	
EUT:	MC Series System			Work Order:		
Serial Number:					03/20/06	
	Radioframe Networks, Inc.			Temperature:		
Attendees:	Neil Ross		Tested by: Rod Peloquin	Humidity:		
Customer Ref. No.:			Power: -48 Vdc	Job Site:	Off-site	
TEST SPECIFICATION	s					
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATION	ONS					
COMMENTS						
EUT OPERATING MOI	DES					
Modulated Carrier						
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS						
	spurious emission must be atten	uated below the specified emissi	on mask. 0 dB reference is 13.84 dBm			
RESULTS						
Pass						
SIGNATURE						
Rochy Le Reling						
DESCRIPTION OF TEST						
Emission Mask for EA-based Systems: Highest Channel @ Highest Output Power						
,						

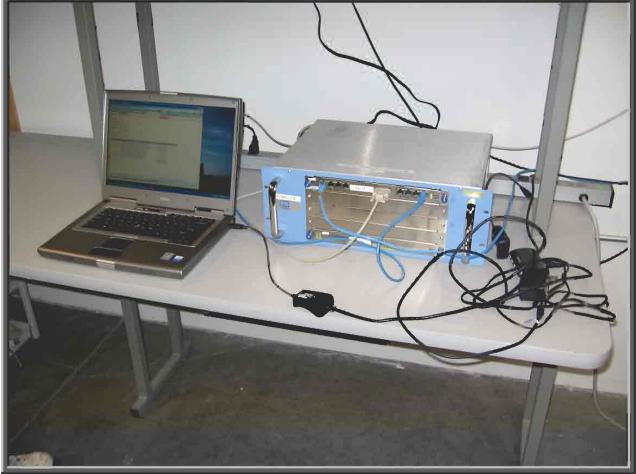


NORTHWEST						
EMC		Livilooio	NO MACIT		01/30/01	
EUT:	MC Series System			Work Order:		
Serial Number:					03/20/06	
	Radioframe Networks, Inc.			Temperature:		
Attendees:	Neil Ross		Tested by: Rod Peloquin	Humidity:		
Customer Ref. No.:			Power: -48 Vdc	Job Site:	Off-site	
TEST SPECIFICATION	s					
Specification:	47 CFR 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATION	ONS					
COMMENTS						
EUT OPERATING MOI	DES					
Modulated Carrier						
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS						
	spurious emission must be atten	uated below the specified emissi	on mask. 0 dB reference is 13.84 dBm			
RESULTS						
Pass						
SIGNATURE						
Rochy Le Reling						
DESCRIPTION OF TEST						
Emission Mask for EA-based Systems: Highest Channel @ Highest Output Power						
,						



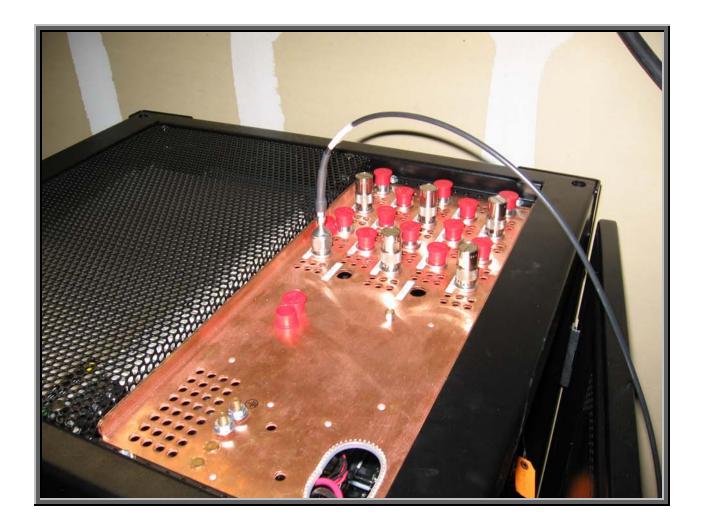
SWP 12.3 sec











Output Power

Revision 10/1/03

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:
Low Channel, 800MHz Band
Mid Channel, 800MHz Band
High Channel, 800MHz Band
Low Channel, 900MHz Band
Mid Channel, 900MHz Band
High Channel, 900MHz Band

Operating Modes Investigated:

Typical, Single channel

Data Rates Investigated:

96 kBps at 64-QAM

Output Power Setting(s) Investigated:

Maximum ~ 14 dBm

Minimum ~ 6 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			
Description	Manufacturer	Model/Part 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	Sorensen	DCR 60-45B	0144						

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					
Power Meter	Hewlett Packard	E4418A	SPA	07/23/2004	24 mo					
Power Sensor	Hewlett-Packard	8481H	SPB	07/23/2004	24 mo					
Signal Generator	Hewlett-Packard	8648D	TGC	01/27/2006	13 mo					

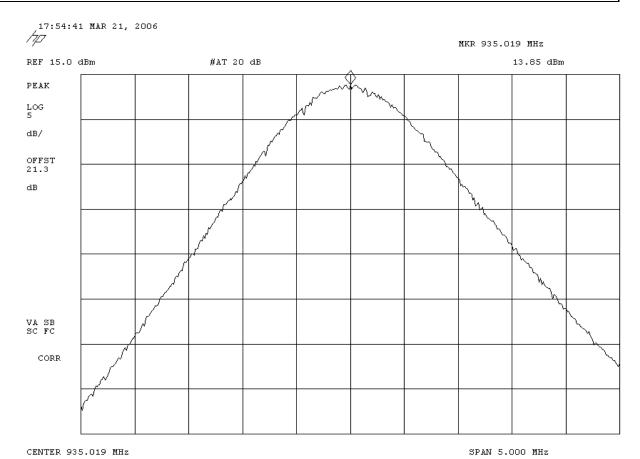
Test Description

Requirement: Per 47 CFR 2.1046 and 90.205, the conducted power output was measured at the RF output terminals after the tune-up procedure. The measured value, the value stated in the manual, and the value on Form 731 must agree.

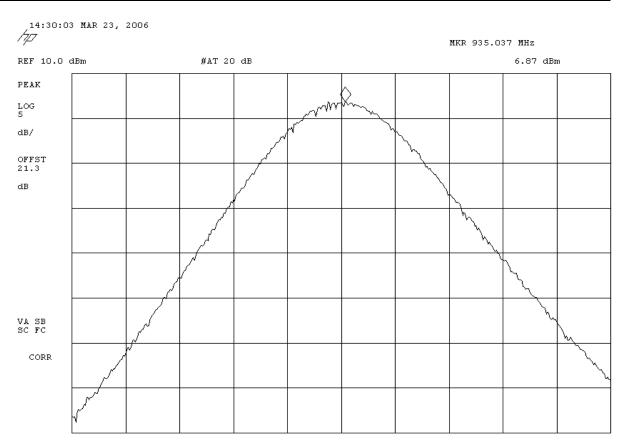
Configuration: The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and spectrum analyzer.

Completed by:

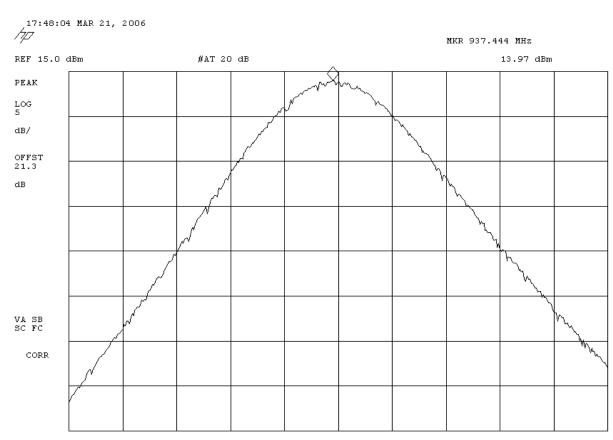
EMC		Output	t Power		Rev BETA 01/30/01
EUT:	MCRB			Work Order:	RAFN0060
Serial Number:	Various			Date:	03/20/06
Customer:	Radioframe Networks, Inc.			Temperature:	21° C
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	40%
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06
TEST SPECIFICATION	IS				
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method: TIA/EIA-603	Year:	2002
SAMPLE CALCULATION	ONS				
COMMENTS Tested in System confect OPERATING MOD With modulation DEVIATIONS FROM TI					
None	EOT OTANDARD				
REQUIREMENTS					
RESULTS			AMPLITUDE		
Pass			13.85 dBm		
SIGNATURE					
Tested By:	Poeling be Fielings				
DESCRIPTION OF TES	ST .				
	0	utput Power - Low	Channel, High Power		



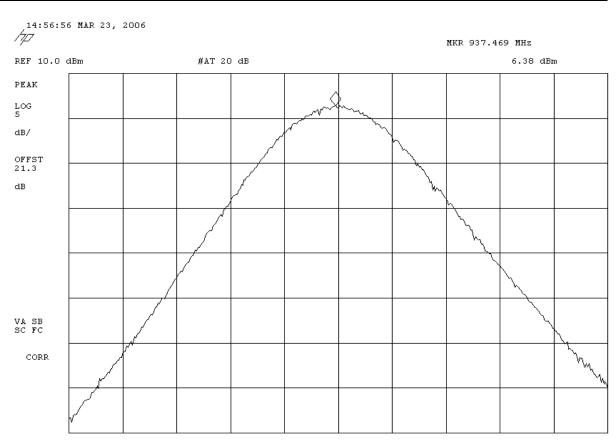
EMC							
	MCRB				Work Order:	01/30/01 RAFN0060	
Serial Number:	Various				Date:	03/20/06	
Customer:	Radioframe Networks, Inc.				Temperature:	21° C	
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	40%	
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06	
TEST SPECIFICATION	IS						
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method:	TIA/EIA-603	Year:	2002	
SAMPLE CALCULATION	ONS						
COMMENTS Tested in System conf EUT OPERATING MOD With modulation DEVIATIONS FROM TE None REQUIREMENTS							
RESULTS			AMPLITUDE				
Pass			6.9 dBm				
SIGNATURE Tested By:	Poeling la Rolings						
DESCRIPTION OF TES	ST						
JEGGIII FIGIL OF TEG	Output Power - Low Channel, Low Power						



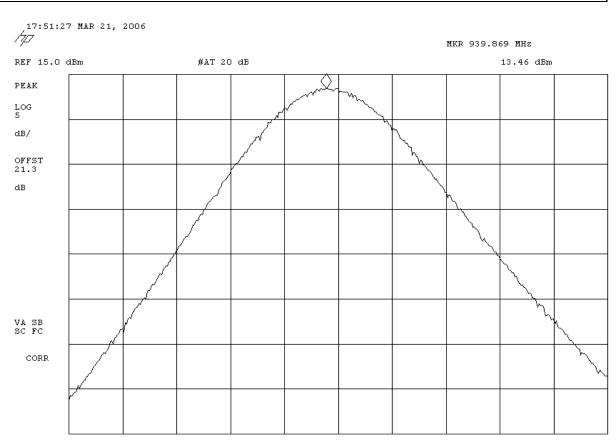
EMC		Output	t Power		Rev BETA 01/30/01
EUT:	MCRB			Work Order:	RAFN0060
Serial Number:	Various	·	·	Date:	03/20/06
Customer:	Radioframe Networks, Inc.			Temperature:	21° C
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	40%
Customer Ref. No.:	None	·	Power: -48 Vdc	Job Site:	EV06
TEST SPECIFICATION	s				
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method: TIA/EIA-603	Year:	2002
SAMPLE CALCULATION	ONS				
COMMENTS Tested in System conf EUT OPERATING MOD With modulation DEVIATIONS FROM TE					
None		<u> </u>	<u> </u>		
REQUIREMENTS					
RESULTS			AMPLITUDE		
Pass			13.97 dBm		
SIGNATURE					
Tested By:	Poeling le Felings				
DESCRIPTION OF TES	Т				
	Out	put Power - Mediui	m Channel, High Power		



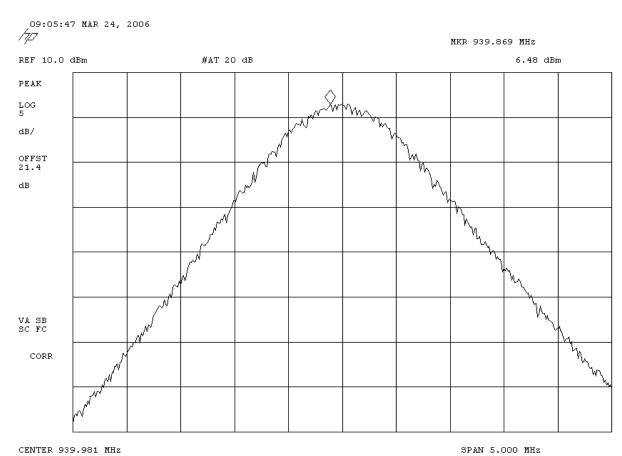
EMC		Outpu	t Power			Rev BETA 01/30/01
	MCRB				Work Order:	
Serial Number:	Various				Date:	03/20/06
Customer:	Radioframe Networks, Inc.				Temperature:	21° C
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	40%
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06
TEST SPECIFICATION	S					
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method:	TIA/EIA-603	Year:	2002
SAMPLE CALCULATION	ONS					
COMMENTS Tested in System conf EUT OPERATING MOD With modulation DEVIATIONS FROM TI None REQUIREMENTS						
DE0111 TO			AMPLITURE			
RESULTS Pass			AMPLITUDE 6.4 dBm			
SIGNATURE			6.4 ubili			
Tested By:	Rolly le Reley					
DESCRIPTION OF TES						
	Out	tput Power - Mediu	ım Channel, L	ow Power		



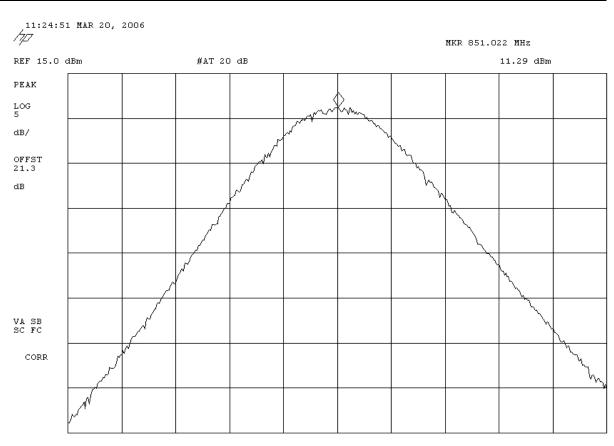
EMC		Output	Power			Rev BETA 01/30/01
	MCRB				Work Order:	RAFN0060
Serial Number:	Various				Date:	03/20/06
Customer:	Radioframe Networks, Inc.				Temperature:	21° C
Attendees:	Dean Busch		Tested by: Rod Pe	eloquin	Humidity:	40%
Customer Ref. No.:	None		Power: -48 Vd	ic	Job Site:	EV06
TEST SPECIFICATION	S					
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method: TIA/EI/	A-603	Year:	2002
SAMPLE CALCULATION	ONS					
COMMENTS						
	figuration, 900MHz band					
EUT OPERATING MOD	• •					
With modulation						
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS						
RESULTS			AMPLITUDE			
Pass	<u> </u>		13.46 dBm			
SIGNATURE						
Tested By:	Rody le Feling					
DESCRIPTION OF TES	ST .					
	Oı	utput Power - High	Channel, High Po	ower		



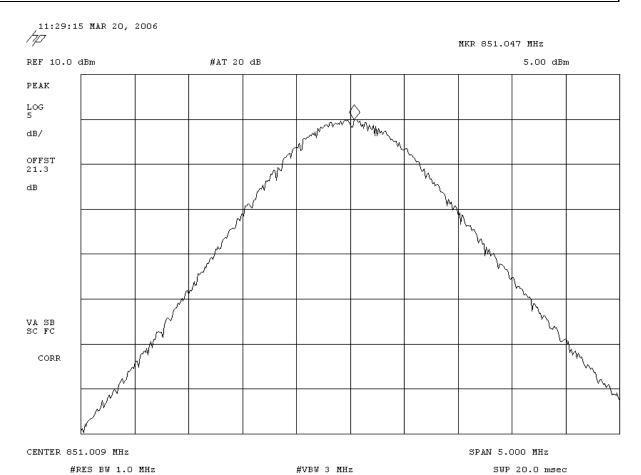
EMC		Output	t Power			Rev BETA 01/30/01
EUT:	MCRB				Work Order:	RAFN0060
Serial Number:	Various				Date:	03/20/06
Customer:	Radioframe Networks, Inc.				Temperature:	21° C
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	40%
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06
TEST SPECIFICATION	S					
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method:	TIA/EIA-603	Year:	2002
SAMPLE CALCULATION	ONS					
COMMENTS Tested in System cont	iguration, 900MHz band					
EUT OPERATING MOI	-					
With modulation						
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS						
RESULTS			AMPLITUDE			
Pass			6.5 dBm			
SIGNATURE Tested By:	Roeling be Fielings					
DESCRIPTION OF TES	T					
	0	utput Power - High	Channel, Lov	w Power		



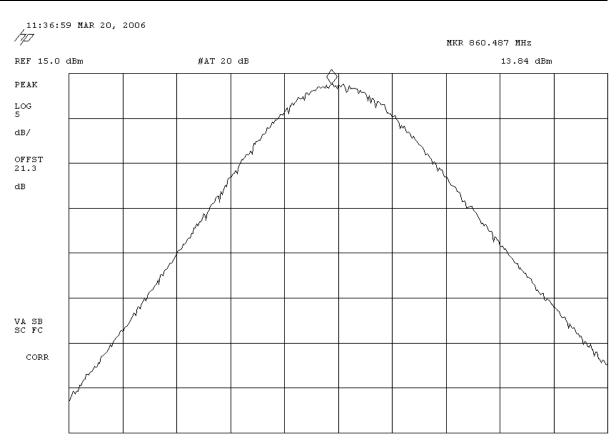
EMC		Output	Power			Rev BETA 01/30/01
	MCRB				Work Order:	RAFN0060
Serial Number:	Various				Date:	03/20/06
Customer:	Radioframe Networks, Inc.				Temperature:	21° C
Attendees:	Dean Busch		Tested by: Rod Pe	loquin	Humidity:	40%
Customer Ref. No.:	None		Power: -48 Vdc		Job Site:	EV06
TEST SPECIFICATION	IS					
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method: TIA/EIA	-603	Year:	2002
SAMPLE CALCULATION	ONS					
COMMENTS Tooled in System conf	figuration, 800MHz band					
EUT OPERATING MOD	•					
With modulation	DES					
DEVIATIONS FROM T	EST STANDARD					
None	EST STANDARD					
REQUIREMENTS						
REGUIREMENTO						
RESULTS			AMPLITUDE			
Pass			11.3 dBm			
SIGNATURE						
Tested By:	Rody le Reley					
DESCRIPTION OF TES	ST					
	0	utput Power - Low	Channel, High Po	wer		



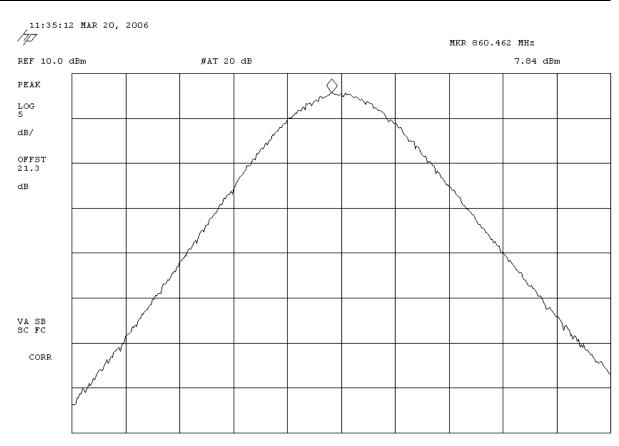
EMC		Output	Power		Rev BETA 01/30/01	
	MCRB			Work Order	RAFN0060	
Serial Number:	Various			Date:	03/20/06	
Customer:	Radioframe Networks, Inc.			Temperature:	21° C	
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	40%	
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06	
TEST SPECIFICATION	S					
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method: TIA/EIA-603	Year:	2002	
SAMPLE CALCULATION	ONS					
COMMENTS						
Tested in System conf						
EUT OPERATING MOD	DES					
With modulation						
DEVIATIONS FROM TI	EST STANDARD					
REQUIREMENTS						
REQUIREMENTS						
RESULTS			AMPLITUDE			
Pass			5.0 dBm			
SIGNATURE						
Tested By:	Rody le Feling					
DESCRIPTION OF TES	ST .					
	Output Power - Low Channel, Low Power					



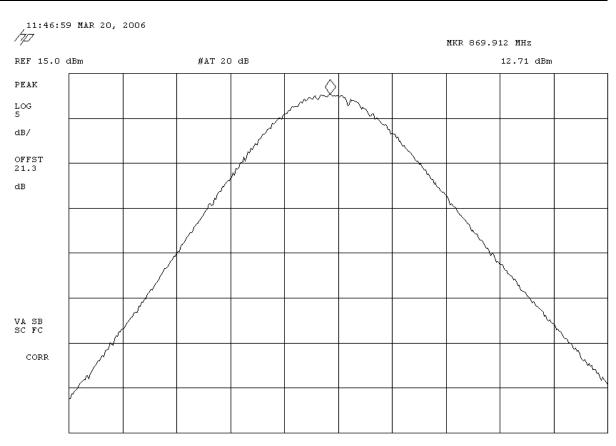
EMC Output Power								
EUT:	MCRB				Work Order:	RAFN0060		
Serial Number:	Various				Date:	03/20/06		
Customer:	Radioframe Networks, Inc.				Temperature:	21° C		
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	40%		
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATION	IS							
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method:	TIA/EIA-603	Year:	2002		
SAMPLE CALCULATION	ONS							
COMMENTS								
Tested in System con	-							
EUT OPERATING MOD	DES							
With modulation								
DEVIATIONS FROM T	EST STANDARD							
None								
REQUIREMENTS								
RESULTS			AMPLITUDE					
Pass			13.8 dBm					
SIGNATURE								
Roeley le Releys								
DESCRIPTION OF TES	ST							
Output Power - Medium Channel, High Power								



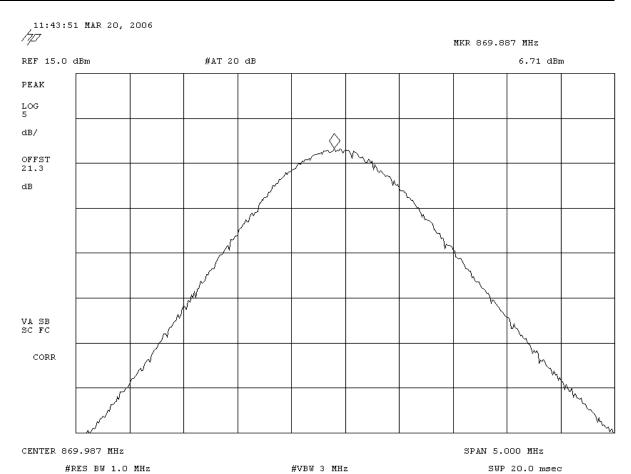
EMC								
	MCRB	<u> </u>			Work Order:	01/30/01 RAFN0060		
Serial Number:	Various					03/20/06		
Customer:	Radioframe Networks, Inc.				Temperature:	21° C		
	Dean Busch		Tested by:	Rod Peloquin	Humidity:			
Customer Ref. No.:	None			-48 Vdc	Job Site:	EV06		
TEST SPECIFICATION	is							
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method:	TIA/EIA-603	Year:	2002		
SAMPLE CALCULATION	ONS							
COMMENTS Tested in System conf EUT OPERATING MOD With modulation DEVIATIONS FROM TE None REQUIREMENTS	DES							
RESULTS			AMPLITUDE					
Pass			7.8 dBm					
SIGNATURE			1.0 UDIII					
Rocky be Feling								
DESCRIPTION OF TES								
	Output Power - Medium Channel, Low Power							

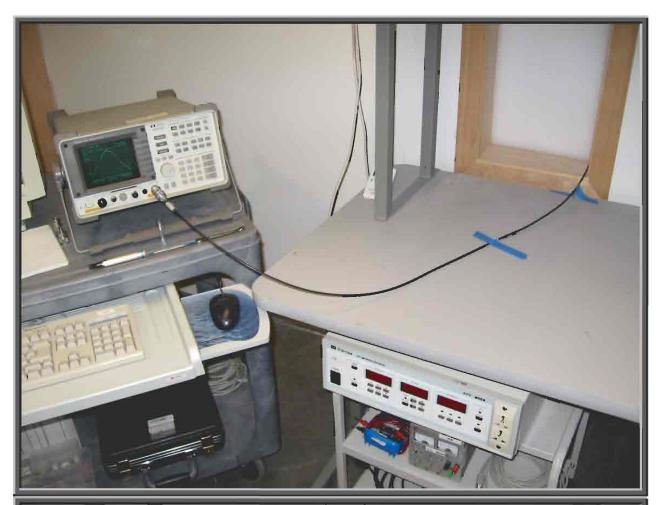


EMC	Output Power						
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/20/06	
Customer:	Radioframe Networks, Inc.				Temperature:	21° C	
Attendees:	Dean Busch		Tested by: Rod Pelo	oquin	Humidity:	40%	
Customer Ref. No.:	None		Power: -48 Vdc		Job Site:	EV06	
TEST SPECIFICATION	s						
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method: TIA/EIA-	603	Year:	2002	
SAMPLE CALCULATION	ONS						
COMMENTS							
Tested in System conf	-						
EUT OPERATING MOD	DES						
With modulation							
DEVIATIONS FROM TE	EST STANDARD						
REQUIREMENTS							
REQUIREMENTS							
RESULTS			AMPLITUDE				
Pass			12.7 dBm				
SIGNATURE							
Porly le Feley							
DESCRIPTION OF TES	ST						
	0	utput Power - High	Channel, High Po	wer			



EMC	Output Power							
	MCRB			Work Order:	RAFN0060			
Serial Number:	Various			Date:	03/20/06			
Customer:	Radioframe Networks, Inc.			Temperature:	21° C			
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	40%			
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06			
TEST SPECIFICATION	IS							
Specification:	47 CFR 2.1046 & 90.217	Year: 2005	Method: TIA/EIA-603	Year:	2002			
SAMPLE CALCULATION	ONS							
COMMENTS	Constant							
Tested in System conf	-							
EUT OPERATING MODE With modulation	DES							
DEVIATIONS FROM T	FOT OTANDARD							
None	EST STANDARD							
REQUIREMENTS								
REGUINEWENTS								
RESULTS			AMPLITUDE					
Pass			6.7 dBm					
SIGNATURE								
Norly le Reley								
DESCRIPTION OF TES	ST .							
	0	Output Power - High Channel, Low Power						

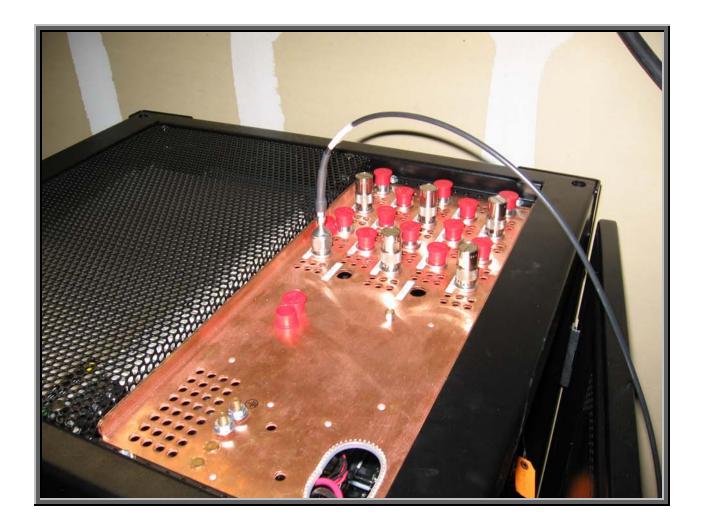












Frequency Stability

Revision 10/1/03

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			
Description	Manufacturer	Model/Part 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

Frequency Stability

Revision 10/1/03

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	TBA	08/24/2005	12 mo			
Chamber Temp. & Humidity Controller	ESZ / Eurotherm	Dimension II	TBC	08/24/2005	12 mo			

Test Description

Requirement: 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.



NORTHWEST EMC		FREQUENCY	Y STABIL	.ITY			Rev BETA 01/30/01
	MCRB				Work Order:		
Serial Number:	Various				Date:	03/21/06	
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							
Specification:	47 CFR 2.1055, 90.217	Year: 2005	Method:	TIA/EIA - 603	Year:	2002	
Transmitting mid 900N	EUT OPERATING MODES Transmitting mid 900MHz band DEVIATIONS FROM TEST STANDARD						
	ability of 1 part per million (ppm)	for variations of temperature and s	supply voltage (DC)				
RESULTS		· .	MINIMUM FREQUENC	Y STABILITY			
Pass	<u> </u>	<u> </u>	0.05 ppm				
Rochy le Releign Tested By:							
DESCRIPTION OF TES	Т						
		Frequenc	y Stability				

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

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (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

NORTHWEST EMC		FREQUENC'	Y STABIL	.ITY			Rev BETA 01/30/01
	MCRB				Work Order:		
Serial Number:	Various				Date:	03/21/06	
Customer:	Radioframe Networks, Inc.				Temperature:	21°C	
Attendees:	Dean Busch		Tested by:	Rod Pelqouin	Humidity:		
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	Off-site	
TEST SPECIFICATION							
Specification:	47 CFR 2.1055, 90.217	Year: 2005	Method:	TIA/EIA - 603	Year:	2002	
SAMPLE CALCULATION	ONS						
	EUT OPERATING MODES Transmitting mid band						
None							
REQUIREMENTS							
Minimum frequency st	ability of 1 part per million (ppm)	for variations of temperature and s	supply voltage (DC)				
RESULTS			MINIMUM FREQUENC	Y STABILITY			
Pass		_	0.3 ppm	•	•		
Rochy le Felings Tested By:							
DESCRIPTION OF TES	т						
	Frequency 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

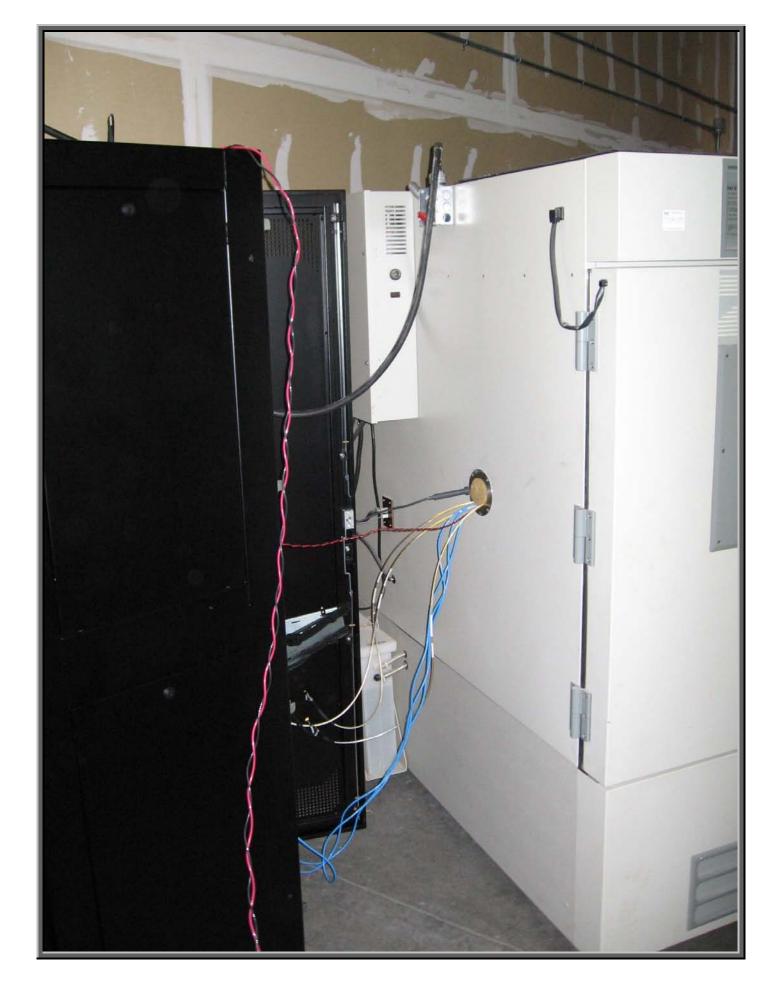
Frequency Stability with Variation of Primary Supply Voltage (Ambient Temperature = 20°C)

Voltage (Vdc)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (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

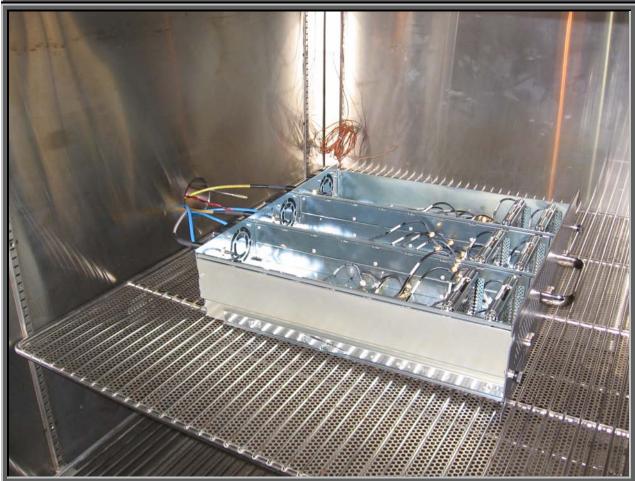












Spurious Conducted Emissions

Revision 10/1/03

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:
Low Channel, 800MHz Band
Mid Channel, 800MHz Band
High Channel, 800MHz Band
Low Channel, 900MHz Band
Mid Channel, 900MHz Band
High Channel, 900MHz Band

Operating Modes Investigated:
Typical, Single channel
Typical, 7 channel operation

Data Rates Investigated:	
96 kBps at 64-QAM	

Output Power Setting(s) Investigated:	
Maximum ~ 14 dBm	
Minimum ~ 6 dBm	

Power Input Settings Investigated:	
-48Vdc	

Other Settings Investigated:	
7 channel operation for Intermodulation product investigation, 800MHz and 900MHz band.	

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			
Description	Manufacturer	Model/Part 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 (ERTM)	Radioframe Networks, Inc.	176-7562-xx	14105320204
Ethernet Rear Transition Module (ERTM)	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	Sorensen	DCR 60-45B	0144					

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

Spurious Conducted Emissions

Revision 10/1/03

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

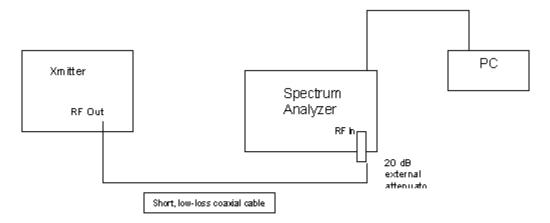
Measurement Equipment							
Description	Manufacturer	Model	Identifier	Last Cal	Interval		
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	01/25/2006	13 mo		

Test Description

Requirement: Per 47 CFR 90.217(b), any emission appearing on a frequency 25 kHz or more removed from the assigned frequency must be attenuated at least 30 dB below the un-modulated carrier. Per 47 CFR 2.1051, the spurious emissions were measured at the RF output terminals with analyzer plots made for each modulation type.

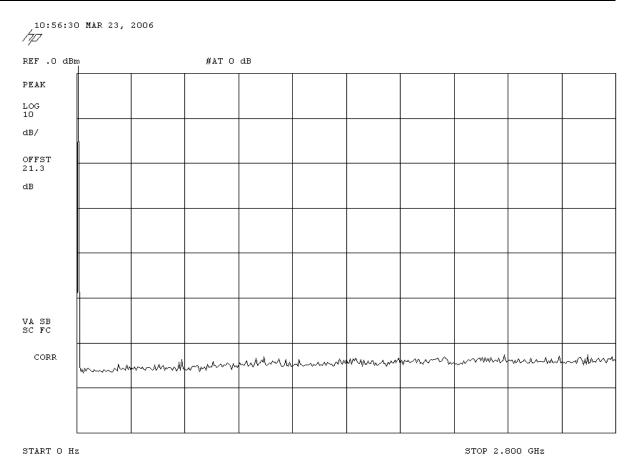
Configuration: A spectrum analyzer was used to scan from 0 to 9GHz or 10GHz depending on the band investigated. A 100kHz resolution bandwidth was used below 1GHz and 1MHz above 1GHz. No video filtering was employed. A 20dB external attenuator was used on the RF input of the spectrum analyzer.

Test Setup Diagram



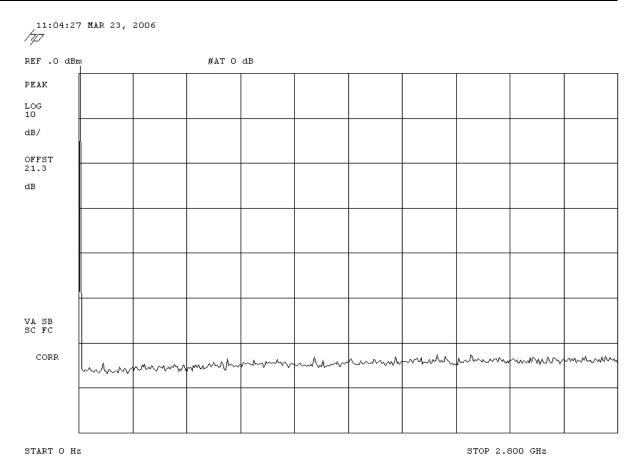
Completed by:

EMC	SPUF	RIOUS CONDL	JCTED EI	MISSIONS	S	Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/23/06	
Customer:	Radio Frame Networks				Temperature:	22°C	
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH	
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06	
TEST SPECIFICATION	S						
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2003	
SAMPLE CALCULATION	ONS						
COMMENTS 4 900MHz channels re							
EUT OPERATING MOD							
	nels (4 channels 800MHz band, 4 d	channels 900MHz band)					
DEVIATIONS FROM TE	EST STANDARD						
None							
REQUIREMENTS	and terminal at any frantional with	hin the range of measurements spe	seified in 45 444 aboll s	at aveced 2.0 nenews	tto / E7 dDm)		
RESULTS	ilia terminarat any frequency with	min the range of measurements spe	ecineu in 15.111 Shairi	iot exceed 2.0 Hallowa	itts (-57 dBill).		
Pass							
SIGNATURE							
Poeling le Relings Tested By:							
DESCRIPTION OF TES	ST						
	Antenna Conducted Spurious Emissions - 0Mz - 2.8GHz						



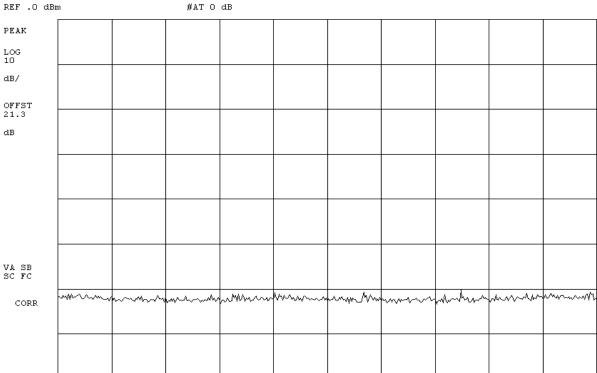
EMC	SPUF	RIOUS COND	UCTED EMISSIONS	3	Rev BETA 01/30/01		
EUT:	MCRB			Work Order:	RAFN0060		
Serial Number:	Various			Date:	03/23/06		
Customer:	Radio Frame Networks			Temperature:	22°C		
Attendees:	Dean Bush		Tested by: Rod Peloquin	Humidity:	36% RH		
Customer Ref. No.:	None		Power: -48 VDC	Job Site:	EV06		
TEST SPECIFICATION	S						
Specification:	47 CFR 15.111(a)	Year: 2005	Method: ANSI C63.4	Year:	2003		
SAMPLE CALCULATION	ONS						
COMMENTS							
4 900MHz channels re	ceive Sector 1 only						
EUT OPERATING MOD	DES						
Receive mode 8 chann	els (4 channels 800MHz band, 4 c	hannels 900MHz band)					
DEVIATIONS FROM TE	EST STANDARD						
None							
REQUIREMENTS							
The power at the anter	nna terminal at any frequency with	in the range of measurements	specified in 15.111 shall not exceed 2.0 nanowat	tts (-57 dBm).			
RESULTS							
Pass							
SIGNATURE Porly le Pieling Tested By:							
DESCRIPTION OF TES	т						
	Antenna Conducted Spurious Emissions - 2.8GHz - 5GHz						

EMC	SPUF	RIOUS CONDU	JCTED EI	MISSION	S	Rev BETA 01/30/01
EUT:	MCRB				Work Order: RAFN006	i0
Serial Number:	Various				Date: 03/23/06	
Customer:	Radio Frame Networks				Temperature: 22°C	
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity: 36% RH	
Customer Ref. No.:	None		Power:	-48 VDC	Job Site: EV06	
TEST SPECIFICATIONS	5					
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year: 2003	
SAMPLE CALCULATION	NS					
COMMENTS 4 channels 900MHz re EUT OPERATING MOD Receive mode 8 chann DEVIATIONS FROM TE None	ES els (4 channels 800MHz band, 4 d	channels 900MHz band)				
REQUIREMENTS						
The power at the anten	na terminal at any frequency with	hin the range of measurements sp	ecified in 15.111 shall r	not exceed 2.0 nanow	atts (-57 dBm).	
RESULTS						
Pass			<u> </u>			
SIGNATURE Tested By:	Porly le Feley					
DESCRIPTION OF TES	Т					
	Antenna Conducted Spurious Emissions - 0Mz - 2.8GHz					



NORTHWEST	CDLIE	MOUG CONDI	IOTED E	MICCIONIC	•			
EMC	SPUR	RIOUS CONDL	JC I ED EI	MISSIONS		Rev BETA 01/30/01		
EUT:	MCRB				Work Order:	RAFN0060		
Serial Number:	Various				Date:	03/23/06		
Customer:	Radio Frame Networks				Temperature:	22°C		
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH		
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06		
TEST SPECIFICATION	IS							
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2003		
SAMPLE CALCULATION	ONS							
COMMENTS								
4 channels 900MHz re	eceive Sector 2 only							
EUT OPERATING MOD								
	nels (4 channels 800MHz band, 4 c	channels 900MHz band)						
DEVIATIONS FROM T	, ,							
None	EOT OTANDARD							
REQUIREMENTS								
	nna terminal at any frequency with	hin the range of measurements sp	ecified in 15.111 shall r	not exceed 2.0 nanowat	ts (-57 dBm).			
RESULTS	, ,				,			
Pass								
SIGNATURE								
Rocky la Frelings								
DESCRIPTION OF TES	ST							
		Conducted Spuriou	s Fmissions	- 2 8GHz - 50	Hz.			
	Antenna Conducted Spurious Emissions - 2.8GHz - 5GHz							

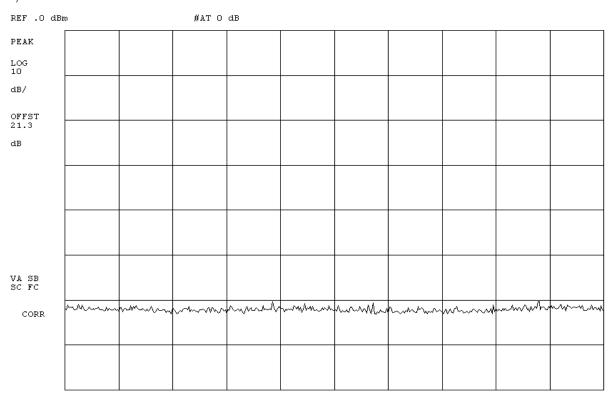
11:02:07 MAR 23, 2006



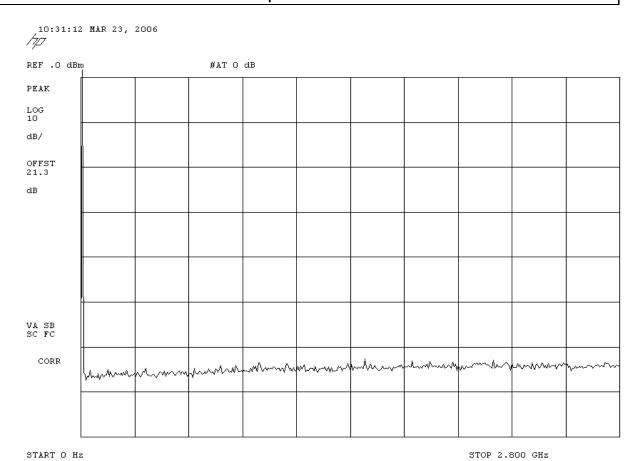
EMC	SPUF	RIOUS CONDL	JCTED EI	MISSIONS	S	Rev BETA 01/30/01	
	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/23/06	
Customer:	Radio Frame Networks				Temperature:	22°C	
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH	
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06	
TEST SPECIFICATION	S						
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2003	
SAMPLE CALCULATION	ONS						
COMMENTS 4 channels 900MHz re	againg Spater 2 only						
EUT OPERATING MOD							
	nels (4 channels 800MHz band, 4 c	channels 900MHz hand)					
DEVIATIONS FROM TE	•	Sharifiers 300MHz Baria)					
None	EST STANDARD						
REQUIREMENTS							
	nna terminal at any frequency with	hin the range of measurements spe	ecified in 15.111 shall r	not exceed 2.0 nanowa	tts (-57 dBm).		
RESULTS	, , ,	<u> </u>			, ,		
Pass							
SIGNATURE							
Rooley be Felings Tested By:							
DESCRIPTION OF TES	ST .						
	Antenna Conducted Spurious Emissions - 0Mz - 2.8GHz						

EMC SPUI	RIOUS CON	DUCTED EMIS	SIONS		Rev BETA	
EUT: MCRB				Work Order:	01/30/01 RAFN0060	
Serial Number: Various					03/23/06	
Customer: Radio Frame Networks				Temperature:		
Attendees: Dean Bush		Tested by: Rod Pel	loquin	Humidity:		
Customer Ref. No.: None		Power: -48 VDC		Job Site:		
TEST SPECIFICATIONS						
Specification: 47 CFR 15.111(a)	Year: 2005	Method: ANSI C	63.4	Year:	2003	
SAMPLE CALCULATIONS						
COMMENTS						
4 channels 900MHz receive Sector 3 only						
EUT OPERATING MODES						
Receive mode 8 channels (4 channels 800MHz band, 4	channels 900MHz band)					
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
The power at the antenna terminal at any frequency wi	thin the range of measuremen	ts specified in 15.111 shall not exce	ed 2.0 nanowatt	s (-57 dBm).		
RESULTS						
Pass						
SIGNATURE Rocky le Freley Tested By:)					
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - 2.8GHz - 5GHz						

11:12:50 MAR 23, 2006

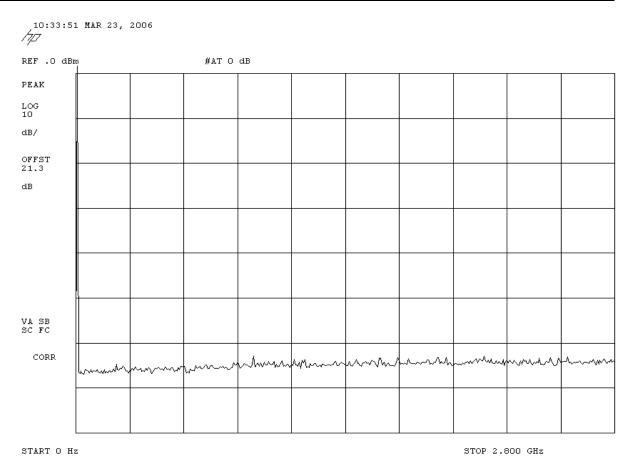


EMC	SPUF	RIOUS CONDL	JCTED EI	MISSIONS	S	Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/23/06	
Customer:	Radio Frame Networks				Temperature:	22° C	
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH	
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06	
TEST SPECIFICATION	S						
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2002	
SAMPLE CALCULATION	ONS						
COMMENTS 4 800MHz channels re EUT OPERATING MOD							
	nels (4 channels 800MHz band, 4 c	channels 900MHz band)					
DEVIATIONS FROM TE	EST STANDARD						
None							
REQUIREMENTS							
The power at the anter	nna terminal at any frequency with	hin the range of measurements spe	ecified in 15.111 shall r	not exceed 2.0 nanowa	tts (-57 dBm).		
RESULTS							
Pass							
SIGNATURE							
Tested By:	Rolly be Feling	<u> </u>					
DESCRIPTION OF TES	ST .						
	Antenna Conducted Spurious Emissions - 0Mz - 2.8GHz						



EMC	SPUF	RIOUS CONDU	JCTED EI	MISSIONS	3	Rev BETA		
						01/30/01		
	MCRB				Work Order:			
Serial Number:	Various					03/23/06		
Customer:	Radio Frame Networks			,	Temperature:			
Attendees:	Dean Bush			Rod Peloquin	Humidity:			
Customer Ref. No.:			Power:	-48 VDC	Job Site:	EV06		
TEST SPECIFICATION								
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2002		
SAMPLE CALCULATION	ONS							
COMMENTS								
4 800MHz channels re	eceive Sector 1 only							
EUT OPERATING MOD								
Receive mode 8 chann	nels (4 channels 800MHz band, 4 c	channels 900MHz band)						
DEVIATIONS FROM T	EST STANDARD							
None								
REQUIREMENTS								
	nna terminal at any frequency with	hin the range of measurements spe	ecified in 15.111 shall r	not exceed 2.0 nanowat	tts (-57 dBm).			
RESULTS								
Pass								
SIGNATURE								
Tested By:	Rochy le Reling	,						
DESCRIPTION OF TES	ST .							
	Antenna Conducted Spurious Emissions - 2.8GHz - 5GHz							

EMC	SPUF	RIOUS CONDL	JCTED EI	MISSIONS	S	Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/23/06	
Customer:	Radio Frame Networks				Temperature:	22° C	
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH	
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06	
TEST SPECIFICATION	S						
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2002	
SAMPLE CALCULATION	ONS						
COMMENTS							
4 channels 800MHz re							
EUT OPERATING MOD	DES nels (4 channels 800MHz band, 4 c	-h					
	•	channels 900MHz band)					
DEVIATIONS FROM TE	EST STANDARD						
REQUIREMENTS							
	ana terminal at any frequency with	hin the range of measurements spe	ocified in 15 111 shall r	not exceed 2.0 nanowa	tts (-57 dBm)		
RESULTS	ma terminal at any frequency with	min the range of measurements spe	scined iii 15.111 shaii i	iot exceed 2.0 Harlowa	itta (-57 ubiii).		
Pass							
SIGNATURE							
Tested By:	Rocky be Feling	,					
DESCRIPTION OF TES	ST						
	Antenna Conducted Spurious Emissions - 0Mz - 2.8GHz						



EMC	SPUR	RIOUS CONDU	JCTED EI	MISSIONS		Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number: \	Various				Date:	03/23/06	
Customer: F	Radio Frame Networks				Temperature:	22° C	
Attendees: [Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH	
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06	
TEST SPECIFICATIONS	6						
Specification: 4	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2002	
SAMPLE CALCULATIO	NS						
COMMENTS							
4 channels 800MHz red							
EUT OPERATING MODI	-						
	els (4 channels 800MHz band, 4 c	hannels 900MHz band)					
DEVIATIONS FROM TE	ST STANDARD						
None							
REQUIREMENTS							
	na terminal at any frequency with	in the range of measurements sp	ecified in 15.111 shall r	ot exceed 2.0 nanowatts	s (-57 dBm).		
RESULTS							
Pass							
SIGNATURE Tested By: _	Roeling la Relings						
DESCRIPTION OF TEST	Г						
	Antenna Conducted Spurious Emissions - 2.8GHz - 5GHz						

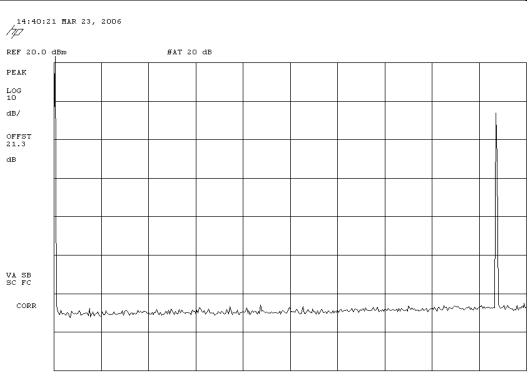
NORTHWEST

EMC	SPUF	RIOUS CONDL	JCTED EI	MISSIONS	S	Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/23/06	
Customer:	Radio Frame Networks				Temperature:	22° C	
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH	
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06	
TEST SPECIFICATION	S						
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2002	
SAMPLE CALCULATION	ONS						
COMMENTS 4 channels 800MHz re	eceive Sector 3 only						
EUT OPERATING MOD	DES						
Receive mode 8 chann	nels (4 channels 800MHz band, 4 d	channels 900MHz band)					
DEVIATIONS FROM TE	EST STANDARD						
None							
REQUIREMENTS							
The power at the anter	nna terminal at any frequency with	hin the range of measurements spe	ecified in 15.111 shall r	not exceed 2.0 nanowa	tts (-57 dBm).		
RESULTS							
Pass							
SIGNATURE Tested By:	Poeling la Fieling)					
DESCRIPTION OF TES	ST .						
	Antenna Conducted Spurious Emissions - 0Mz - 2.8GHz						

10:42:16 MAR 23, 2006 REF .O dBm #AT O dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

EMC	SPUF	RIOUS CONDL	JCTED EI	MISSIONS	5	Rev BETA 01/30/01
EUT:	MCRB				Work Order:	RAFN0060
Serial Number:	Various				Date:	03/23/06
Customer:	Radio Frame Networks				Temperature:	22° C
Attendees:	Dean Bush		Tested by:	Rod Peloquin	Humidity:	36% RH
Customer Ref. No.:	None		Power:	-48 VDC	Job Site:	EV06
TEST SPECIFICATION	ıs					
Specification:	47 CFR 15.111(a)	Year: 2005	Method:	ANSI C63.4	Year:	2002
SAMPLE CALCULATION	ONS					
COMMENTS						
4 channels 800MHz re						
EUT OPERATING MOI						
	nels (4 channels 800MHz band, 4	channels 900MHz band)				
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS	 					
	nna terminal at any frequency wit	hin the range of measurements spe	ecified in 15.111 shall r	not exceed 2.0 nanowa	tts (-57 dBm).	
RESULTS						
Pass						
SIGNATURE Tested By:	Rolly be Feling	,				
DESCRIPTION OF TES	ST					
Antenna Conducted Spurious Emissions - 2.8GHz - 5GHz						

EMC SPURI	OUS CONDU	JCTED EI	MISSIONS	5	Rev BETA 01/30/01			
EUT: MCRB				Work Order:	RAFN0060			
Serial Number: Various				Date:	03/20/06			
Customer: Radioframe Networks, Inc.				Temperature:				
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity:				
Customer Ref. No.: None		Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS								
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS								
COMMENTS								
Tested in System Configuration								
EUT OPERATING MODES								
With modulation at lowest output power level (approx. 7 dB	im)							
DEVIATIONS FROM TEST STANDARD								
None								
REQUIREMENTS								
Maximum level of any out of band spurious emission must	be attenuated below the limit of	-13 dBm.						
RESULTS								
Pass								
SIGNATURE								
Rocky be Feleys								
DESCRIPTION OF TEST								
Antenna Conducted Spurious Emissions - Low Channel 0MHz-1GHz								



START O Hz STOP 1.000 GHz #RES BW 100 kHz #VBW 300 kHz SWP 300 msec

EMC SPURIOUS COND	UCTED EI	MISSION	3	Rev BETA 01/30/01
EUT: MCRB			Work Order:	
Serial Number: Various			Date:	03/20/06
Customer: Radioframe Networks, Inc.			Temperature:	
Attendees: Dean Busch		Rod Peloquin	Humidity:	
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06
TEST SPECIFICATIONS				
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002
SAMPLE CALCULATIONS				
COMMENTS				
Tested in System Configuration				
EUT OPERATING MODES				
With modulation at lowest output power level (approx. 7 dBm)				
DEVIATIONS FROM TEST STANDARD				
None				
REQUIREMENTS				
Maximum level of any out of band spurious emission must be attenuated below the limit	t of -13 dBm.			
RESULTS				
Pass				
Rochy la Freling Tested By:				
DESCRIPTION OF TEST				
Antenna Conducted Spurious Er	nissions - Low	Channel 1G	Hz-2.8GHz	

14:42:20 MAR 23, 2006 REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

START 999 MHz STOP 2.800 GHz #VBW 300 kHz #RES BW 100 kHz SWP 540 msec

NORTHWEST EMC	SPUF	RIOUS COND	JCTED EI	MISSIONS	5	Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/20/06	
	Radioframe Networks, Inc.				Temperature:		
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%	
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06	
TEST SPECIFICATIONS							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATIO	NS						
COMMENTS Tested in System Confi EUT OPERATING MOD With modulation at low	•	(Bm)					
DEVIATIONS FROM TE		авііі)					
None	STSTANDARD						
REQUIREMENTS							
	out of hand spurious emission m	ust be attenuated below the limit o	f -13 dBm				
RESULTS	out of build oparious similation in	iot be attenuated below the mint o	. To abiiii				
Pass							
SIGNATURE							
	Rody to Reling						
DESCRIPTION OF TEST	Т						
	Antenna Conducted Spurious Emissions - Low Channel 2.8GHz-4GHz						

14:45:23 MAR 23, 2006

START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

EMC SPURIOUS CON	IDUCTED EI	MISSIONS	S	Rev BETA 01/30/01				
EUT: MCRB			Work Order:	RAFN0060				
Serial Number: Various			Date:	03/20/06				
Customer: Radioframe Networks, Inc.			Temperature:	22° C				
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%				
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06				
TEST SPECIFICATIONS								
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002				
SAMPLE CALCULATIONS								
COMMENTS								
Tested in System Configuration								
EUT OPERATING MODES								
With modulation at lowest output power level (approx. 7 dBm)								
DEVIATIONS FROM TEST STANDARD								
None								
REQUIREMENTS								
Maximum level of any out of band spurious emission must be attenuated below the	limit of -13 dBm.							
RESULTS								
Pass								
Roeley Le Prelings Tested By:								
DESCRIPTION OF TEST								
Antenna Conducted Spurious	Emissions - Low	Channel 4G	Hz-6.5GHz					

14:47:33 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

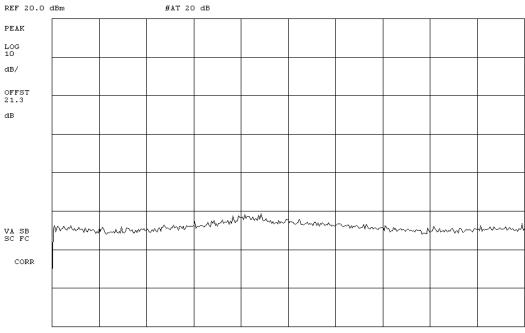
#VBW 300 kHz

SWP 753 msec

EMC SPURIC	OUS CONDU	JCTED EI	MISSIONS	3	Rev BETA 01/30/01			
EUT: MCRB				Work Order:	RAFN0060			
Serial Number: Various				Date:	03/20/06			
Customer: Radioframe Networks, Inc.				Temperature:	22° C			
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity:				
Customer Ref. No.: None		Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS								
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS								
COMMENTS								
Tested in System Configuration								
EUT OPERATING MODES								
With modulation at lowest output power level (approx. 7 dBm)								
DEVIATIONS FROM TEST STANDARD								
None								
REQUIREMENTS								
Maximum level of any out of band spurious emission must be	attenuated below the limit of	-13 dBm.						
RESULTS								
Pass								
SIGNATURE								
Rocky la Felings Tested By:								
DESCRIPTION OF TEST								
Antenna Conducted	Antenna Conducted Spurious Emissions - Low Channel 6.5GHz - 10GHz							

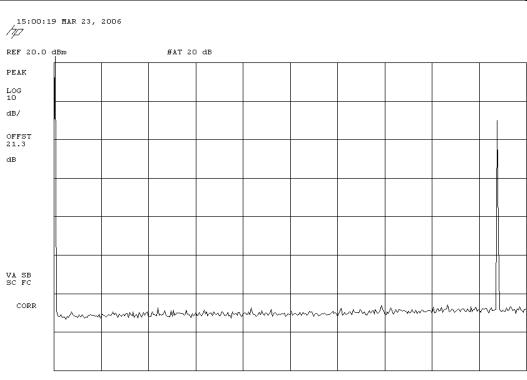
14:50:54 MAR 23, 2006

REF 20.0 dBm PEAK



START 6.499 GHz STOP 10.000 GHz #RES BW 100 kHz #VBW 300 kHz SWP 1.05 sec

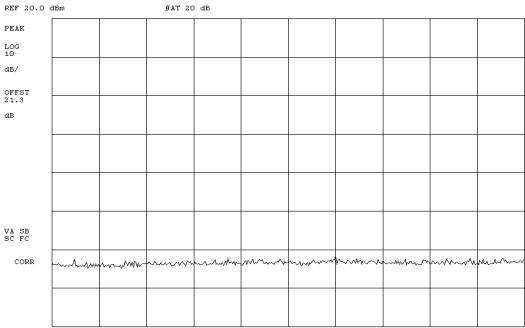
EMC SPURIOUS CONDUCTED EMISSIONS 80.00									
EUT: MCRB		Work Order: RAFN0060							
Serial Number: Various		Date: 03/20/06							
Customer: Radioframe Networks, Inc.		Temperature: 22° C							
Attendees: Dean Busch	Tested by: Rod Peloquin	Humidity: 31%							
Customer Ref. No.: None	Power: -48 Vdc	Job Site: EV06							
TEST SPECIFICATIONS									
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method: TIA / EIA - 603	Year: 2002							
SAMPLE CALCULATIONS									
COMMENTS									
Tested in System Configuration									
EUT OPERATING MODES									
With modulation at lowest output power level (approx. 7 dBm)									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
Maximum level of any out of band spurious emission must be attenuated below the	limit of -13 dBm.								
RESULTS									
Pass									
SIGNATURE Rolly Le Feling Tested By:									
DESCRIPTION OF TEST									
Antenna Conducted Spurious	s Emissions - Mid Channel 0M	Hz-1GHz							



START O Hz STOP 1.000 GHz #RES BW 100 kHz #VBW 300 kHz SWP 300 msec

EMC SPURIOUS CONDUCTED EMISSIONS											
EUT: MCRB				Work Order: RAFN006	0						
Serial Number: Various				Date: 03/20/06							
Customer: Radioframe Networks, Inc.				Temperature: 22° C							
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%							
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06							
TEST SPECIFICATIONS											
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002							
SAMPLE CALCULATIONS											
COMMENTS											
Tested in System Configuration											
EUT OPERATING MODES											
With modulation at lowest output power level (approx. 7	dBm)										
DEVIATIONS FROM TEST STANDARD											
None											
REQUIREMENTS											
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.									
RESULTS											
Pass											
SIGNATURE											
Roly la Feluy Tested By:											
DESCRIPTION OF TEST											
Antenna Cond	ucted Spurious Em	issions - Mid	Channel 1GI	Hz-2.8GHz	Antenna Conducted Spurious Emissions - Mid Channel 1GHz-2.8GHz						

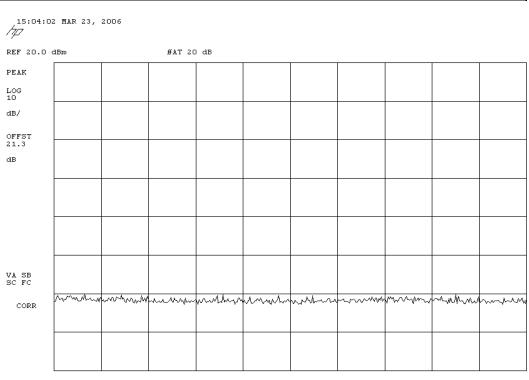
15:02:36 MAR 23, 2006



START 999 MHz STOP 2.800 GHz

#VBW 300 kHz #RES BW 100 kHz SWP 540 msec

EMC SPURIOU	S COND	JCTED EI	MISSIONS	5	Rev BETA 01/30/01		
EUT: MCRB				Work Order:	RAFN0060		
Serial Number: Various		Date:	03/20/06				
Customer: Radioframe Networks, Inc.							
Attendees: Dean Busch	Rod Peloquin	Humidity:					
Customer Ref. No.: None		Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year:	2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at lowest output power level (approx. 7 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be atten	uated below the limit of	f-13 dBm.					
RESULTS							
Pass							
SIGNATURE							
Rolly be Felly Tested By:							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - Mid Channel 2.8GHz-4GHz							



START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

EMC SPURIOUS	S CONDL	JCTED EI	MISSIONS	5	Rev BETA 01/30/01		
EUT: MCRB				Work Order:	RAFN0060		
Serial Number: Various							
Customer: Radioframe Networks, Inc.							
Attendees: Dean Busch	Rod Peloquin	Humidity:					
Customer Ref. No.: None		Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year:	2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at lowest output power level (approx. 7 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenu	rated below the limit of	-13 dBm.					
RESULTS							
Pass							
SIGNATURE							
Rolly to Felly Tested By:							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - Mid Channel 4GHz - 6.5GHz							

15:07:24 MAR 23, 2006

REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC for any warmen and the same warmen and the sam CORR

START 4.000 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 750 msec

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA (17/3001)							
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/20/06	
Customer:	Radioframe Networks, Inc.				Temperature:	22° C	
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%	
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06	
TEST SPECIFICATION							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATION	ONS						
COMMENTS							
Tested in System Conf	figuration						
EUT OPERATING MOD							
With modulation at lov	vest output power level (approx. 7	dBm)					
DEVIATIONS FROM TE	ST STANDARD						
None							
REQUIREMENTS							
	out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.				
RESULTS							
Pass							
Rochy la Frelings Tested By:							
ревскиртіом оғ теsт Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-10GHz							

15:09:06 MAR 23, 2006

#AT 20 dB

PEAK
LOG
10

dB/

OFFST
21.3

dB

VA SB SC FC

CORR

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA 01/30/01											
	MCRB			Work Order:	RAFN0060						
Serial Number:	Various			Date:	03/20/06						
Customer:	Radioframe Networks, Inc.			Temperature:	22° C						
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	31%						
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06						
TEST SPECIFICATION	S										
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002						
SAMPLE CALCULATION	ONS										
COMMENTS											
Tested in System Con	•										
EUT OPERATING MOD											
	vest output power level (approx. 7	dBm)									
DEVIATIONS FROM TE	EST STANDARD										
None											
REQUIREMENTS											
	out of band spurious emission m	ust be attenuated below the limi	t of -13 dBm.								
RESULTS											
Pass SIGNATURE											
Poeling les Relings Tested By:											
DESCRIPTION OF TES	DESCRIPTION OF TEST										
	Antenna Condu	ucted Spurious En	nissions - High Channel 0	MHz-1GHz	Antenna Conducted Spurious Emissions - High Channel 0MHz-1GHz						

09:16:00 MAR 24, 2006 REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.4 dB VA SB SC FC CORR

STOP 1.000 GHz START O Hz SWP 300 msec

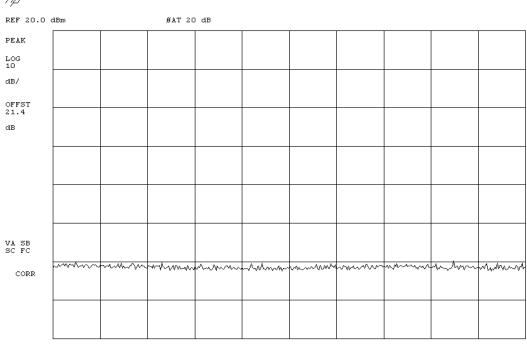
EMC SPURIOUS CONDUCTED EMISSIONS RevBETT (1900)						
EUT: MCRB			Work Order:	RAFN0060 03/20/06		
Serial Number: Various						
Customer: Radioframe Networks, Inc. Temperature: 22° C						
Attendees: Dean Busch	Rod Peloquin	Humidity:				
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at lowest output power level (approx. 7 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the	e limit of -13 dBm.					
RESULTS						
Pass						
Rochy le Fielings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious	Antenna Conducted Spurious Emissions - High Channel 1GHz-2.8GHz					

09:17:38 MAR 24, 2006

START 999 MHz STOP 2.800 GHz #VBW 300 kHz STOP 2.800 GHz

EMC SPURIOUS CONI	DUCTED EI	MISSION	3	Rev BETA 01/30/01		
EUT: MCRB			Work Order:			
Serial Number: Various		Date:	03/20/06			
Customer: Radioframe Networks, Inc.	Temperature:					
Attendees: Dean Busch	Humidity:					
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at lowest output power level (approx. 7 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the lin	nit of -13 dBm.					
RESULTS						
Pass						
Rocky la Fielings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - High Channel 2.8GHz-4GHz						

09:19:36 MAR 24, 2006



START 2.799 GHz

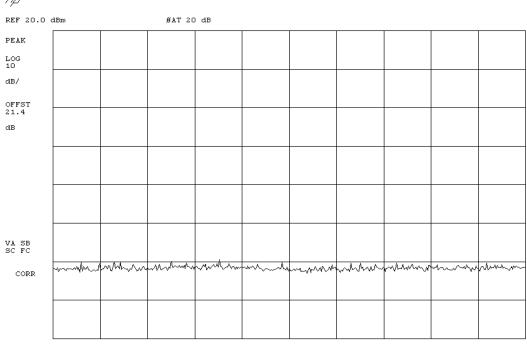
STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

EMC SPURIOUS CON	DUCTED EI	MISSIONS	S	Rev BETA 01/30/01			
EUT: MCRB			Work Order:	RAFN0060			
Serial Number: Various		Date:	03/20/06				
Customer: Radioframe Networks, Inc.	Temperature:						
Attendees: Dean Busch	Rod Peloquin	Humidity:					
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at lowest output power level (approx. 7 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenuated below the I	mit of -13 dBm.						
RESULTS							
Pass							
Rochy la Fieleng							
DESCRIPTION OF TEST	DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - High Channel 4GHz-6.5GHz							

09:21:20 MAR 24, 2006



START 3.990 GHz

STOP 6.500 GHz

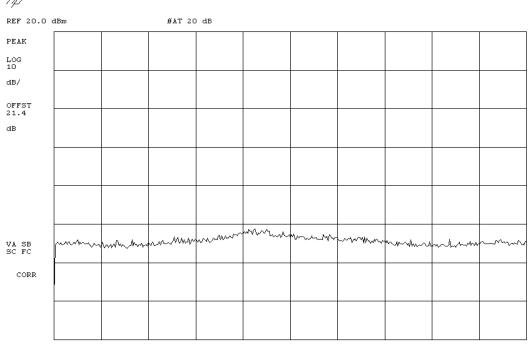
#RES BW 100 kHz

#VBW 300 kHz

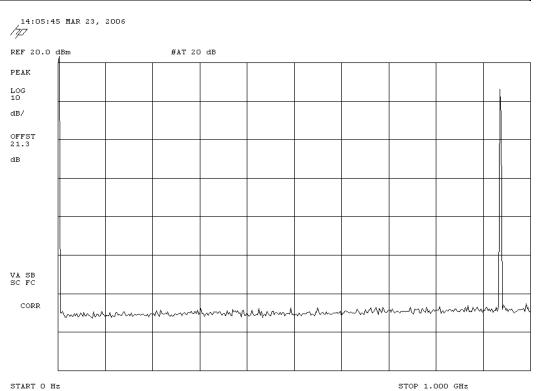
SWP 753 msec

NORTHWEST EMC	SPUF	RIOUS COND	UCTED EI	MISSIONS	5	Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/20/06	
	Radioframe Networks, Inc.				Temperature: Humidity:		
Attendees:	Attendees: Dean Busch Tested by: Rod Peloquin						
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06	
TEST SPECIFICATIONS							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATIO	NS						
	Tested in System Configuration EUT OPERATING MODES						
DEVIATIONS FROM TE		авііі)					
None	STSTANDARD						
REQUIREMENTS							
	out of band spurious emission mu	ist he attenuated below the limit	of -13 dBm				
RESULTS	out of build opurious simosion in	iot pe attenuated polen alle illini	0. 10 ubiiii				
Pass							
SIGNATURE							
Roly la Feling Tested By:							
DESCRIPTION OF TEST	Т						
	Antenna Condu	cted Spurious Emi	ssions - High	Channel 6.50	GHz-10GHz		

09:23:52 MAR 24, 2006



EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA (1/20/01/2017)							
EUT: MCRB		Work Order: RAFN0060					
Serial Number: Various		Date: 03/20/06					
Customer: Radioframe Networks, Inc.		Temperature: 22° C					
Attendees: Dean Busch	Tested by: Rod Peloquin	Humidity: 31%					
Customer Ref. No.: None	Power: -48 Vdc	Job Site: EV06					
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year: 2 SAMPLE CALCULATIONS	05 Method: TIA / EIA - 603	Year: 2002					
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx. 12 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenua	ed below the limit of -13 dBm.						
RESULTS							
Pass							
SIGNATURE Rochy la Pieley Tested By:							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - Low Channel 0MHz-1GHz							



#RES BW 100 kHz #VBW 300 kHz SWP 300 msec

EMC SPURIOUS CONDUCTED EMISSIONS REVBETA (17,000)							
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/20/06	
	Radioframe Networks, Inc.				Temperature:		
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%	
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06	
TEST SPECIFICATIONS							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATIO	NS						
EUT OPERATING MOD	COMMENTS Tested in System Configuration EUT OPERATING MODES						
	hest output power level (approx.	12 dBm)					
DEVIATIONS FROM TE None	SISIANDARD						
REQUIREMENTS							
	out of band anurious emission m	ust be attenuated below the limit of	6 42 dDm				
RESULTS	out of band spurious emission in	ist be attenuated below the limit o	1-13 UDIII.				
Pass							
SIGNATURE							
Rocky be Felings Tested By:							
DESCRIPTION OF TEST	т						
	Antenna Conducted Spurious Emissions - Low Channel 1GHz-2.8GHz						

14:07:30 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

START 999 MHz STOP 2.800 GHz #VBW 300 kHz STOP 2.800 GHz

NORTHWEST SPURIOUS CONDUCTED EMISSIONS RUBET ROUGHOUSE ROUGHOUSE						
EUT: MCRB			Work Order:	RAFN0060		
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:			
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 12 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the l	imit of -13 dBm.					
RESULTS						
Pass						
SIGNATURE						
Rocky be Feley Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 2.8GHz-4GHz						

14:10:15 MAR 23, 2006

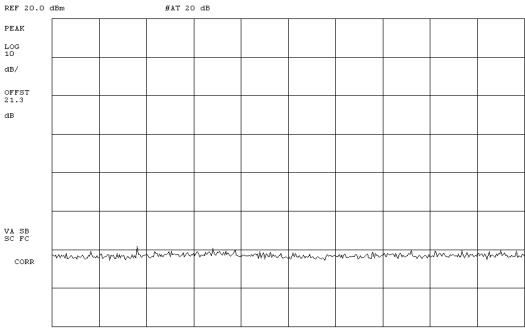
PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA CO 1/20/2017							
EUT: MCRB				Work Order: RAFN006	0		
Serial Number: Various				Date: 03/20/06			
Customer: Radioframe Networks, Inc.				Temperature: 22° C			
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%			
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx.	12 dBm)						
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.					
RESULTS							
Pass							
SIGNATURE							
Rolly be Feley Tested By:							
DESCRIPTION OF TEST	DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 4GHz-6.5GHz							

14:12:08 MAR 23, 2006

REF 20.0 dBm PEAK



START 3.990 GHz

STOP 6.500 GHz

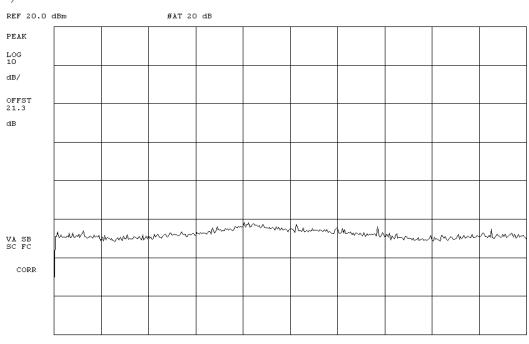
#RES BW 100 kHz

#VBW 300 kHz

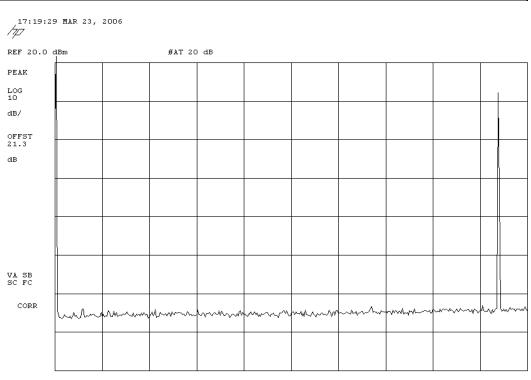
SWP 753 msec

EMC SPURIOUS CONDUCTED EMISSIONS REVBETA (17,000)							
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/20/06	
	Radioframe Networks, Inc.				Temperature:		
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%	
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06	
TEST SPECIFICATIONS							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002	
SAMPLE CALCULATIO	NS						
COMMENTS Tested in System Confi	Tested in System Configuration						
With modulation at high	hest output power level (approx.	l2 dBm)					
DEVIATIONS FROM TE	ST STANDARD						
None							
REQUIREMENTS							
	out of band spurious emission m	st be attenuated below the limit	of -13 dBm.				
RESULTS							
Pass							
SIGNATURE Rochy la Fieling Tested By:							
DESCRIPTION OF TEST	т						
	Antenna Conducted Spurious Emissions - Low Channel 6.5GHz - 10GHz						

14:19:31 MAR 23, 2006



EMC SPURIOUS CONDUCTED EMISSIONS REV BET A 01/20001							
	MCRB			Work Order:	RAFN0060		
Serial Number:	Various			Date:	03/20/06		
Customer:	Radioframe Networks, Inc.			Temperature:	22° C		
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	31%		
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06		
TEST SPECIFICATION							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATION	DNS						
COMMENTS							
Tested in System Con	figuration						
EUT OPERATING MOD	DES						
With modulation at hig	hest output power level (approx.	12 dBm)					
DEVIATIONS FROM TE	EST STANDARD						
None							
REQUIREMENTS							
Maximum level of any	out of band spurious emission m	ust be attenuated below the limit of	-13 dBm.				
RESULTS							
Pass							
SIGNATURE							
Rolly le Fieleys Tested By.							
DESCRIPTION OF TES	ST .						
Antenna Conducted Spurious Emissions - Mid Channel 0MHz-1GHz							



START O Hz STOP 1.000 GHz #RES BW 100 kHz #VBW 300 kHz SWP 300 msec

EMC SPURIOUS CONDUCTED EMISSIONS								
EUT: MCRB			Work Order:	RAFN0060				
Serial Number: Various			Date:	03/20/06				
Customer: Radioframe Networks, Inc.			Temperature:	22° C				
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%				
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06				
TEST SPECIFICATIONS								
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002				
SAMPLE CALCULATIONS								
COMMENTS	COMMENTS							
Tested in System Configuration								
EUT OPERATING MODES								
With modulation at highest output power level (approx. 12 dBm)								
DEVIATIONS FROM TEST STANDARD								
None								
REQUIREMENTS								
Maximum level of any out of band spurious emission must be attenuated below the limit of	of -13 dBm.							
RESULTS								
Pass								
Rocky la Fieleys Tested By:								
DESCRIPTION OF TEST								
Antenna Conducted Spurious Emissions - Mid Channel 1GHz-2.8GHz								

17:21:33 MAR 23, 2006

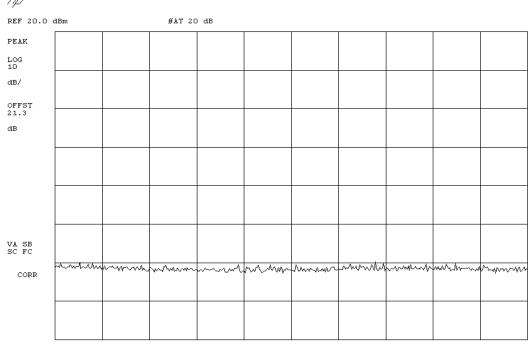
REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

START 999 MHz STOP 2.800 GHz SWP 540 msec

#VBW 300 kHz #RES BW 100 kHz

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA 61750011							
EUT: MCRB				Work Order: RAFN006	0		
Serial Number: Various				Date: 03/20/06			
Customer: Radioframe Networks, Inc.				Temperature: 22° C			
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%			
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx.	12 dBm)						
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission mu	ast be attenuated below the limit of	f -13 dBm.					
RESULTS							
Pass							
SIGNATURE							
Rolly le Fieleys Tested By:							
DESCRIPTION OF TEST	DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 2.8GHz-4GHz							

17:23:51 MAR 23, 2006



START 2.799 GHz

STOP 4.000 GHz

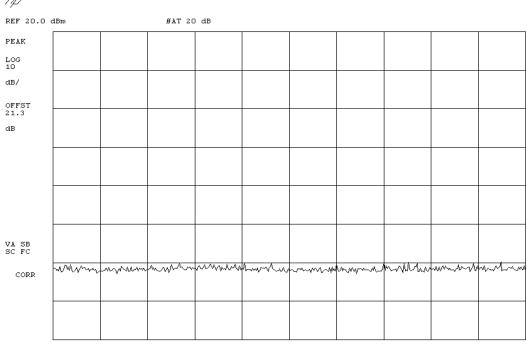
#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CONDUCTED EMISSIONS						
EUT: MCRB			Work Order:			
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:			
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 12 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the lim	it of -13 dBm.					
RESULTS						
Pass						
SIGNATURE						
Rocky be Felings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 4GHz - 6.5GHz						

17:26:06 MAR 23, 2006



START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 753 msec

EMC SPURIOUS CONDUCTED EMISSIONS RevBETT (1900)						
EUT: MCRB			Work Order:			
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:			
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 12 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the limi	t of -13 dBm.					
RESULTS						
Pass						
SIGNATURE						
Rochy le Felings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-10GHz						

17:28:34 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

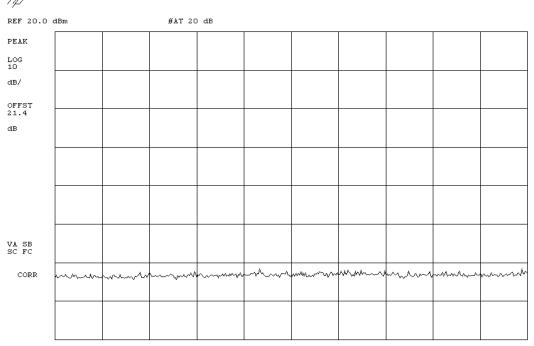
VA SB SC FC
CORR

EMC SPURIOUS CONDUCTED EMISSIONS								
EUT:	MCRB				Work Order:	RAFN0060		
Serial Number:	Various				Date:	03/20/06		
Customer:	Radioframe Networks, Inc.				Temperature:	22° C		
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%		
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATION	S							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATION	ONS							
EUT OPERATING MOD With modulation at hig	Tested in System Configuration EUT OPERATING MODES With modulation at highest output power level (approx. 12 dBm) DEVIATIONS FROM TEST STANDARD None							
RESULTS								
Pass								
SIGNATURE								
Rolly le Releys								
DESCRIPTION OF TES	ST .							
Antenna Conducted Spurious Emissions - High Channel 0MHz-1GHz								

08:43:51 MAR 24, 2006 REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.4 dB MA SB SC FC CORR

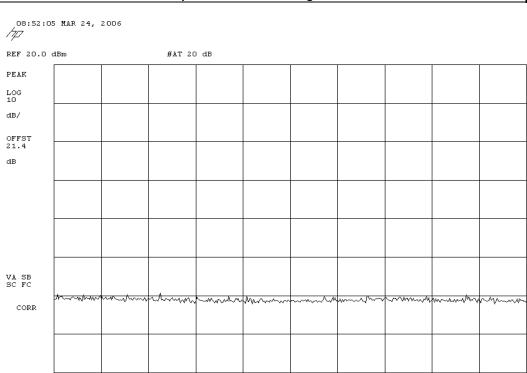
NORTHWEST SPURIOUS CONDUCTED EMISSIONS ROVBETA OTGODIES						
EUT: MCRB			Work Order:			
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:			
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%		
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 12 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the lim	it of -13 dBm.					
RESULTS						
Pass						
SIGNATURE						
Rolly to Felly Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - High Channel 1GHz-2.8GHz						

08:47:53 MAR 24, 2006



START 999 MHz STOP 2.800 GHz #VBW 300 kHz STOP 2.800 GHz

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA OTSODIT								
EUT: MCRB				Work Order: RAFN006	0			
Serial Number: Various				Date: 03/20/06				
Customer: Radioframe Networks, Inc.				Temperature: 22° C				
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%				
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06				
TEST SPECIFICATIONS								
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002				
SAMPLE CALCULATIONS								
COMMENTS								
Tested in System Configuration								
EUT OPERATING MODES								
With modulation at highest output power level (approx.	12 dBm)							
DEVIATIONS FROM TEST STANDARD								
None								
REQUIREMENTS								
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.						
RESULTS								
Pass								
SIGNATURE								
Roly to Feling Tested By:								
DESCRIPTION OF TEST								
Antenna Condu	ıcted Spurious Emi	ssions - High	Channel 2.8	GHz-4GHz				



START 2.799 GHz

STOP 4.000 GHz

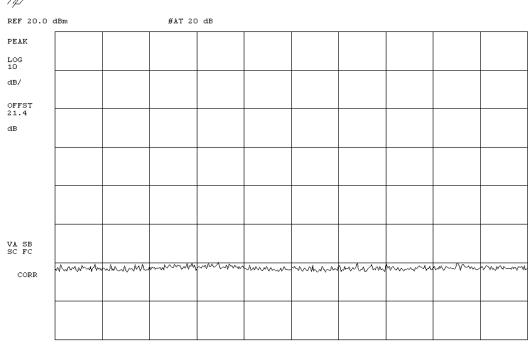
#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CONI	DUCTED EI	MISSION	3	Rev BETA 01/30/01				
EUT: MCRB			Work Order:					
Serial Number: Various			Date:	03/20/06				
Customer: Radioframe Networks, Inc.			Temperature:					
Attendees: Dean Busch		Rod Peloquin	Humidity:					
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06				
TEST SPECIFICATIONS								
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002				
SAMPLE CALCULATIONS								
COMMENTS								
Tested in System Configuration								
EUT OPERATING MODES								
With modulation at highest output power level (approx. 12 dBm)								
DEVIATIONS FROM TEST STANDARD								
None								
REQUIREMENTS								
Maximum level of any out of band spurious emission must be attenuated below the lin	nit of -13 dBm.							
RESULTS								
Pass								
Rochy la Feling Tested By:								
DESCRIPTION OF TEST								
Antenna Conducted Spurious E	missions - High	Channel 4G	Hz-6.5GHz					

08:54:39 MAR 24, 2006



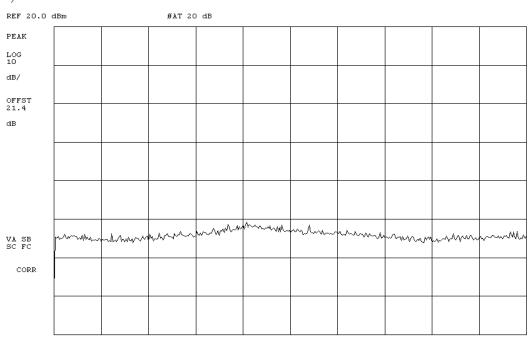
START 3.990 GHz

STOP 6.500 GHz

 SWP 753 msec

EMC SPURIOU	S CONDU	JCTED EI	MISSION	S	Rev BETA 01/30/01
EUT: MCRB				Work Order: RAFN0	
Serial Number: Various				Date: 03/20/0	6
Customer: Radioframe Networks, Inc.				Temperature: 22° C	
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%	
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 2.1051 & 90.691 Year:	2005	Method:	TIA / EIA - 603	Year: 2002	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in System Configuration					
EUT OPERATING MODES					
With modulation at highest output power level (approx. 12 dBm)					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS		. 40 ID			
Maximum level of any out of band spurious emission must be atten	luated below the limit of	-13 dBm.			
Pass					
SIGNATURE					
Hooling la Fielings Tested By:					
DESCRIPTION OF TEST					
Antenna Conducted S	purious Emis	sions - High	Channel 6.5	GHz-10GHz	

08:57:24 MAR 24, 2006



EMC	SPU	RIOUS COND	UCTED EMISSIONS		Rev BETA 01/30/01
EUT:	MCRB			Work Order: RAFN00	060
Serial Number:	Various			Date: 03/23/06	6
Customer:	Radioframe Networks, Inc.			Temperature: 22° C	
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity: 31%	
Customer Ref. No.:	None		Power: -48 Vdc	Job Site: EV06	
TEST SPECIFICATION	S				
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year: 2002	
SAMPLE CALCULATION	ONS				
COMMENTS Tested in System Con EUT OPERATING MOD 7 channels transmittin		on at highest output power level			
DEVIATIONS FROM TE	EST STANDARD				
None					
REQUIREMENTS					
Maximum level of any	out of band spurious emission n	nust be attenuated below the limit	of -13 dBm.		
RESULTS					
Pass					
SIGNATURE Tested By:	Roely le Fieley				
DESCRIPTION OF TES	ST .				
		ucted Spurious Em	nissions - 7 Signal IM Test,	In Band	

13:12:35 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB SC FC
CORR

START 933.000 MHz

STOP 942.000 MHz

SWP 270 msec

#RES BW 10 kHz #VBW 10 kHz

EMC SPURIOUS CONDUCTED EMISSIONS									
	MCRB				Work Order:	RAFN0060			
Serial Number:	Various Date: 03/23/06								
Customer:	Radioframe Networks, Inc.	dioframe Networks, Inc. Temperature: 22° C							
Attendees:	Dean Busch		Tested by: Ro	od Peloquin	Humidity:	31%			
Customer Ref. No.:	None		Power: -4	8 Vdc	Job Site:	EV06			
TEST SPECIFICATION	S								
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TI	IA / EIA - 603	Year:	2002			
SAMPLE CALCULATION	ONS								
DEVIATIONS FROM TO None REQUIREMENTS	DES ig in 900MHz band with modulation								
	out of band spurious emission n	ust be attenuated below the limit of	f -13 dBm.						
RESULTS Pass									
Mochy Le Prelings Tested By:									
DESCRIPTION OF TES									
	Antenna Cond	ucted Spurious Emi	issions - 7 Sig	nal IM Test,	In Band				

13:14:52 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

CENTER 935.0397 MHz

SPAN 500.0 kHz

#RES BW 3.0 kHz

EMC SPURIOUS CONDUCTED EMISSIONS								
						01/30/01		
	MCRB				Work Order:			
Serial Number:						03/23/06		
	Radioframe Networks, Inc.				Temperature:			
	Dean Busch			Rod Peloquin	Humidity:			
Customer Ref. No.:			Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATION	IS							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATION	ONS							
COMMENTS								
Tested in System Con	figuration							
EUT OPERATING MOD								
	ng in 900MHz band with modulati	on at highest output power level						
DEVIATIONS FROM T	EST STANDARD	.						
None								
REQUIREMENTS								
Maximum level of any	out of band spurious emission n	nust be attenuated below the limit of	of -13 dBm.					
RESULTS								
Pass								
SIGNATURE								
Poeling le Relings Tested By:								
DESCRIPTION OF TES	ST							
		ucted Spurious Em	issions - 7 Si	anal IM Test	In Band			
	Antenna Conducted Spurious Emissions - 7 Signal IM Test, In Band							

13:18:17 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB SC FC
CORR

CENTER 939.9325 MHz #VBW 10 kHz #VBW 10 kHz

SPAN 500.0 kHz

SWP 167 msec

EMC	SPU	RIOUS CONDI	JCTED EI	MISSIONS	5	Rev BETA 01/30/01
EUT:	MCRB				Work Order:	RAFN0060
Serial Number:	Various				Date:	03/23/06
Customer:	Radioframe Networks, Inc.				Temperature:	22° C
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06
TEST SPECIFICATION	S					
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002
SAMPLE CALCULATION	DNS					
DEVIATIONS FROM TE None REQUIREMENTS	DES g in 900MHz band with modulation	•	of 42 dPm			
	out of band spurious emission n	nust be attenuated below the limit	of -13 dBm.			
RESULTS			_			
Pass SIGNATURE						
	Poeling le Feling					
DESCRIPTION OF TES	ST .					
	Antenna Condu	cted Spurious Emis	ssions - 7 Sigi	nal IM Test, 0	MHz-1GHz	

START O Hz STOP 1.000 GHz

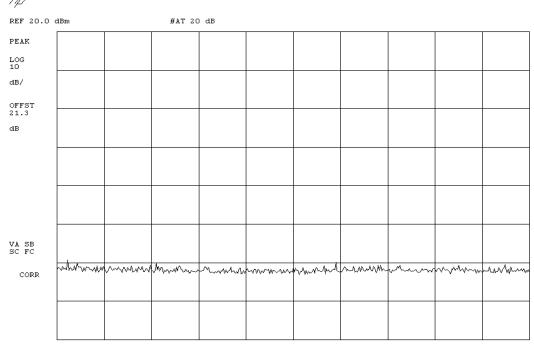
NORTHWEST	SPUF	RIOUS CONDU	JCTED EI	MISSIONS	S	Rev BETA 01/30/01		
EUT:	MCRB				Work Order:	RAFN0060		
Serial Number:	Various				Date:	03/23/06		
Customer:	Radioframe Networks, Inc.				Temperature:	22° C		
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%		
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS	S							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIO	NS							
COMMENTS Tested in System Conf EUT OPERATING MOD 7 channels transmitting DEVIATIONS FROM TE None	JES g in 900MHz band with modulation	n at highest output power level						
REQUIREMENTS								
	out of hand enurious omission mu	ust be attenuated below the limit of	-12 dBm					
RESULTS	out of band spurious emission int	ist be attenuated below the limit of	-13 abili.					
Pass								
SIGNATURE								
Rocky le Rolly								
DESCRIPTION OF TES	т							
	Antenna Conduc	ted Spurious Emiss	sions - 7 Sigr	nal IM Test, 1	GHz-2.8GHz	_		

13:25:21 MAR 23, 2006 REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

START 999 MHz STOP 2.800 GHz #VBW 300 kHz #RES BW 100 kHz SWP 540 msec

EMC SPURIC	US CONDU	JCTED EI	MISSIONS	S	Rev BETA 01/30/01
EUT: MCRB				Work Order: RAFN00	
Serial Number: Various				Date: 03/23/06	6
Customer: Radioframe Networks, Inc.				Temperature: 22° C	
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%	
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in System Configuration					
EUT OPERATING MODES					
7 channels transmitting in 900MHz band with modulation at high	ghest output power level				
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS		. 40 dD			
Maximum level of any out of band spurious emission must be RESULTS	attenuated below the limit of	-13 abm.			
Pass					
SIGNATURE					
Portry le Relings Tested By:					
DESCRIPTION OF TEST					
Antenna Conducted	Spurious Emiss	sions - 7 Sign	al IM Test, 2	.8GHz-4GHz	

13:26:53 MAR 23, 2006



START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CON	DUCTED EN	MISSION	S	Rev BETA 01/30/01				
EUT: MCRB			Work Order:	RAFN0060				
Serial Number: Various			Date:	03/23/06				
Customer: Radioframe Networks, Inc.			Temperature:	22° C				
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%				
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06				
TEST SPECIFICATIONS								
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002				
SAMPLE CALCULATIONS								
COMMENTS								
Tested in System Configuration								
EUT OPERATING MODES								
7 channels transmitting in 900MHz band with modulation at highest output power levels to the control of the con	vel							
DEVIATIONS FROM TEST STANDARD								
None								
REQUIREMENTS								
Maximum level of any out of band spurious emission must be attenuated below the	limit of -13 dBm.							
RESULTS								
Pass								
SIGNATURE								
Pooly le Relings								
DESCRIPTION OF TEST								
Antenna Conducted Spurious Er	nissions - 7 Sign	al IM Test, 4	GHz-6.5GHz					

13:28:54 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

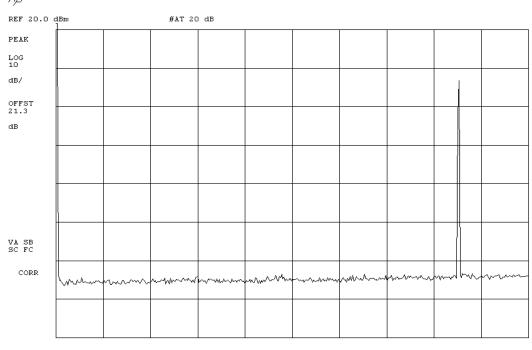
SWP 753 msec

EMC SPURIOUS	CONDUCTED E	MISSIONS	Rev BETA 01/30/01		
EUT: MCRB	<u> </u>		Work Order: RAFN0060		
Serial Number: Various			Date: 03/23/06		
Customer: Radioframe Networks, Inc.			Temperature: 22° C		
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity: 31%		
Customer Ref. No.: None	Power:	-48 Vdc	Job Site: EV06		
TEST SPECIFICATIONS					
Specification: 47 CFR 2.1051 & 90.691 Year: 200	5 Method:	TIA / EIA - 603	Year: 2002		
SAMPLE CALCULATIONS					
COMMENTS					
Tested in System Configuration					
EUT OPERATING MODES					
7 channels transmitting in 900MHz band with modulation at highest outp	put power level				
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS	d below the limit of 40 dDm				
Maximum level of any out of band spurious emission must be attenuated RESULTS	d below the limit of -13 dbm.				
Pass					
SIGNATURE					
Pooling le Rolings Tested By:					
DESCRIPTION OF TEST					
Antenna Conducted Spurious Emissions - 7 Signal IM Test, 6.5GHz-10GHz					

13:33:03 MAR 23, 2006

NORTHWEST EMC	SPUI	RIOUS CONDU	JCTED EI	MISSIONS	S	Rev BETA 01/30/01			
EUT:	MCRB				Work Order:	RAFN0060			
Serial Number:	Various				Date:	03/20/06			
Customer:	Radioframe Networks, Inc.				Temperature:	22° C			
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%			
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATION	5								
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATION	NS								
EUT OPERATING MOD With modulation at hig	Tested in System Configuration EUT OPERATING MODES With modulation at highest output power level (approx. 5 dBm) DEVIATIONS FROM TEST STANDARD None								
Maximum level of any	out of band spurious emission m	ust be attenuated below the limit of	-13 dBm.						
RESULTS									
Pass									
Rocly le Releys Tested By:									
DESCRIPTION OF TES	Т								
	Antenna Cond	lucted Spurious Em	issions - Lov	v Channel 0N	/Hz-1GHz				

16:42:07 MAR 20, 2006



START 0 Hz STOP 1.000 GHz #VBW 300 kHz SVP 300 msec

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA						
EUT: MCRB			Work Order:	RAFN0060		
Serial Number: Various		Date:	03/20/06			
Customer: Radioframe Networks, Inc.		Temperature:				
Attendees: Dean Busch		Tested by: Rod Peloquin	Humidity:	31%		
Customer Ref. No.: None		Power: -48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS	<u></u>					
COMMENTS Tested in System Configuration						
EUT OPERATING MODES With modulation at highest output power level (approx. 5	dDm\					
DEVIATIONS FROM TEST STANDARD	авііі)					
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission mus	at he attenuated below the limit of	i 42 dBm				
RESULTS	st be attenuated below the limit of	-13 uBiii.				
Pass						
SIGNATURE						
Rocky le Felings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 1GHz-2.8GHz						

16:43:54 MAR 20, 2006

START 999 MHz STOP 2.800 GHz

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA (1/3001)						
EUT: MCRB			Work Order:			
Serial Number: Various		Date:	03/20/06			
Customer: Radioframe Networks, Inc.		Temperature:				
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 5 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the lim	it of -13 dBm.					
RESULTS						
Pass						
SIGNATURE						
Rochy le Prelings Tosted By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 2.8GHz-4GHz						

16:46:19 MAR 20, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

#AT 20 dB

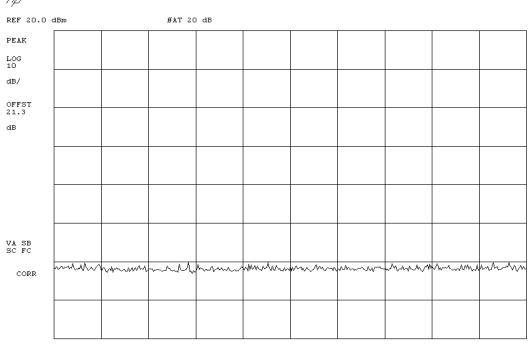
START 2.799 GHz #RES BW 100 kHz STOP 4.000 GHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CONDUCTED EMISSIONS						
EUT: MCRB			Work Order:	RAFN0060		
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:	22° C		
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%		
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 5 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the	limit of -13 dBm.					
RESULTS						
Pass						
Rocky le Pieleys Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 4GHz-6.5GHz						

16:49:27 MAR 20, 2006



START 4.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 453 msec

EMC SPURIOUS CONDUCTED EMISSIONS REVBETA O1/3/2017						
EUT: MCRB			Work Order:			
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.		Temperature:				
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 5 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.					
RESULTS						
Pass						
SIGNATURE Rocky le Rolings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 6.5GHz - 9GHz						

16:51:06 MAR 20, 2006

START 6.499 GHz

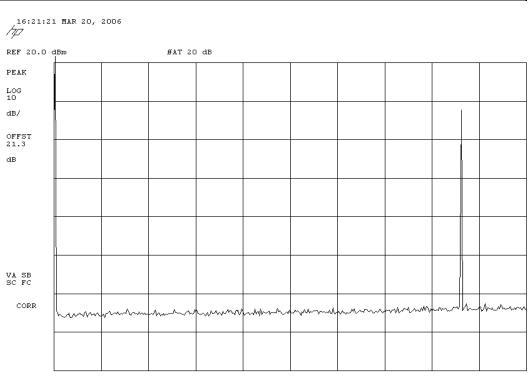
STOP 9.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 750 msec

EMC SPURIOUS CONDUCTED EMISSIONS							
EUT: MCRB			Work Order:	RAFN0060			
Serial Number: Various			Date:	03/20/06			
Customer: Radioframe Networks, Inc.			Temperature:	22° C			
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx. 7.8 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenuated below the I	imit of -13 dBm.						
RESULTS							
Pass							
SIGNATURE Porly le Releys Tested By:							
DESCRIPTION OF TEST	DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 0MHz-1GHz							



START O Hz STOP 1.000 GHz #RES BW 100 kHz #VBW 300 kHz SWP 300 msec

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA (1/2001)						
EUT: MCRB				Work Order: RAFN006	0	
Serial Number: Various				Date: 03/20/06		
Customer: Radioframe Networks, Inc.				Temperature: 22° C		
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%		
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx.	7.8 dBm)					
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.				
RESULTS						
Pass						
SIGNATURE						
Rochy le Peleys Tested By:						
DESCRIPTION OF TEST	DESCRIPTION OF TEST					
Antenna Conducted Spurious Emissions - Mid Channel 1GHz-2.8GHz						

16:26:36 MAR 20, 2006

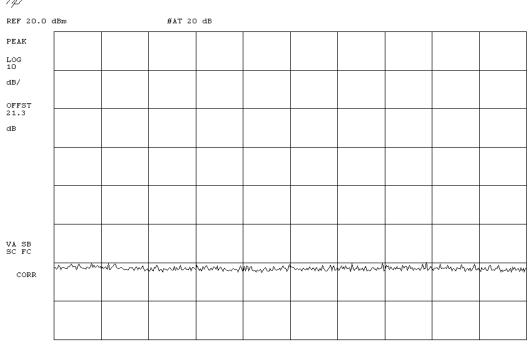
PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

START 999 MHz STOP 2.800 GHz #VBW 300 kHz STOP 2.800 GHz

EMC SPURIOUS CONDUCTED EMISSIONS ROVBETA OTGODIES						
EUT: MCRB			Work Order:			
Serial Number: Various		Date:	03/20/06			
Customer: Radioframe Networks, Inc.		Temperature:				
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 7.8 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.					
RESULTS						
Pass						
SIGNATURE Porly le Relings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 2.8GHz-4GHz						

16:29:43 MAR 20, 2006



START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA (1/20/12)						
EUT: MCRB				Work Order: RAFN0060)	
Serial Number: Various				Date: 03/20/06		
Customer: Radioframe Networks, Inc.				Temperature: 22° C		
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%		
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx.	7.8 dBm)					
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission me	ast be attenuated below the limit of	f -13 dBm.				
RESULTS						
Pass						
SIGNATURE						
Rocky be Feley Tested By:						
DESCRIPTION OF TEST	DESCRIPTION OF TEST					
Antenna Conducted Spurious Emissions - Mid Channel 4GHz - 6.5GHz						

16:31:46 MAR 20, 2006

START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 753 msec

EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA (1/20/01)						
EUT: MCRB			Work Order:			
Serial Number: Various		Date:	03/20/06			
Customer: Radioframe Networks, Inc.		Temperature:				
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 7.8 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.					
RESULTS						
Pass						
SIGNATURE Porly le Relings Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-9GHz						

16:34:38 MAR 20, 2006

START 6.499 GHz

STOP 9.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 750 msec

EMC	SPUF	RIOUS COND	UCTED EMIS	SSIONS		Rev BETA 01/30/01	
EUT:	MCRB				Work Order:	RAFN0060	
Serial Number:	Various				Date:	03/20/06	
Customer:	Radioframe Networks, Inc.				Temperature:	22° C	
Attendees:	Dean Busch		Tested by: Rod P	Peloquin	Humidity:	31%	
Customer Ref. No.:	None		Power: -48 Vo	dc	Job Site:	EV06	
TEST SPECIFICATION	IS						
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / E	EIA - 603	Year:	2002	
SAMPLE CALCULATION	ONS						
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES With modulation at highest output power level (approx. 6.7 dBm)							
	, , , , , , , , , , , , , , , , , , , ,	6.7 dBm)					
DEVIATIONS FROM TO	EST STANDARD						
None							
REQUIREMENTS			t of 40 dDm				
	out of band spurious emission m	ust be attenuated below the lim	it or -13 dBm.				
RESULTS	·						
Pass SIGNATURE							
Rocky le Relings Tested By:							
DESCRIPTION OF TES	DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - High Channel 0MHz-1GHz							

NORTHWEST

16:01:08 MAR 20, 2006 REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

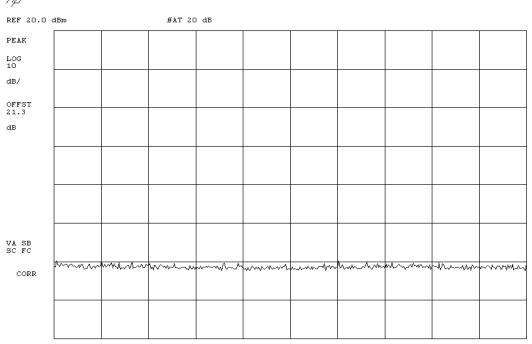
EMC SPURIOUS CONDUCTED EMISSIONS Rev BETA 01/2001							
EUT: MCRB			Work Order:				
Serial Number: Various		Date:	03/20/06				
Customer: Radioframe Networks, Inc.		Temperature:					
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx. 6.7 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.						
RESULTS							
Pass							
SIGNATURE							
Rocky be Fieleys Tested By:							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - High Channel 1GHz-2.8GHz							

16:05:23 MAR 20, 2006 REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

START 999 MHz STOP 2.800 GHz #VBW 300 kHz #RES BW 100 kHz SWP 540 msec

EMC SPURIOUS CONDUCTED EMISSIONS						
EUT: MCRB			Work Order:	RAFN0060		
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:	22° C		
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%		
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 6.7 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the lim	t of -13 dBm.					
RESULTS						
Pass						
Rocky le Pieleys Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - High Channel 2.8GHz-4GHz						

16:07:55 MAR 20, 2006



START 2.799 GHz

STOP 4.000 GHz

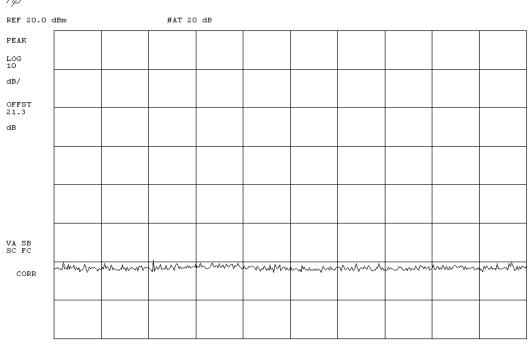
#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CONI	DUCTED EI	MISSION	3	Rev BETA 01/30/01			
EUT: MCRB			Work Order:				
Serial Number: Various			Date:	03/20/06			
Customer: Radioframe Networks, Inc.			Temperature:				
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx. 6.7 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenuated below the lir	nit of -13 dBm.						
RESULTS							
Pass							
SIGNATURE Rolly le Rolly Tested By:							
DESCRIPTION OF TEST	DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - High Channel 4GHz-6.5GHz							

16:09:44 MAR 20, 2006



START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 753 msec

EMC SPURIOL	IS CONDUC	CTED EN	MISSIONS	S	Rev BETA 01/30/01
EUT: MCRB				Work Order: RAFN00	
Serial Number: Various				Date: 03/20/06	
Customer: Radioframe Networks, Inc.				Temperature: 22° C	
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%	
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 2.1051 & 90.691 Yea	: 2005	Method:	TIA / EIA - 603	Year: 2002	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in System Configuration					
EUT OPERATING MODES					
With modulation at highest output power level (approx. 6.7 dBm)					
DEVIATIONS FROM TEST STANDARD None					
REQUIREMENTS					
Maximum level of any out of band spurious emission must be atte	austed below the limit of -12	dBm			
RESULTS	idated below the limit of -13	don.			
Pass					
SIGNATURE					
Pooling la Relings	-				
DESCRIPTION OF TEST					
Antenna Conducted	Spurious Emiss	ions - High	Channel 6.5	GHz-9GHz	

16:12:49 MAR 20, 2006

START 6.499 GHz

STOP 9.000 GHz

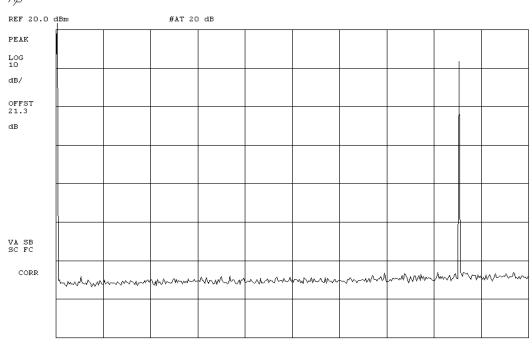
#RES BW 100 kHz

#VBW 300 kHz

SWP 750 msec

EMC SPURIOUS CONDUCTED EMISSIONS							
EUT: MCRB				Work Order: RAF	N0060		
Serial Number: Various				Date: 03/20)/06		
Customer: Radioframe Networks, Inc.				Temperature: 22° C			
Attendees: Dean Busch			Rod Peloquin	Humidity: 31%			
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06	i		
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx.	12 dBm)						
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission n	ust be attenuated below the limit of	f -13 dBm.					
RESULTS							
Pass							
SIGNATURE							
Rochy be Felings							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - Low Channel 0MHz-1GHz							

14:55:59 MAR 20, 2006

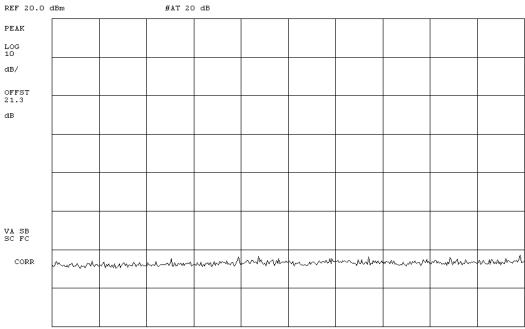


START 0 Hz STOP 1.000 GHz #VBW 300 kHz SVP 300 msec

EMC SPURIOUS COND	UCTED EI	MISSIONS	3	Rev BETA 01/30/01		
EUT: MCRB			Work Order:			
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:			
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 12 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.					
RESULTS						
Pass						
SIGNATURE Norling la Fieling Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 1GHz-2.8GHz						

14:58:19 MAR 20, 2006

#AT 20 dB



START 999 MHz

STOP 2.800 GHz

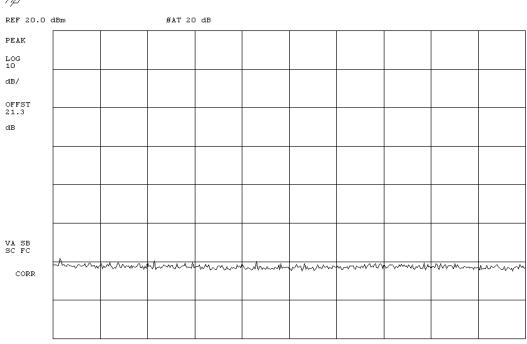
#RES BW 100 kHz

#VBW 300 kHz

SWP 540 msec

EMC SPURIOUS CONDUCTED EMISSIONS						
EUT: MCRB				Work Order: RAFN006	0	
Serial Number: Various				Date: 03/20/06		
Customer: Radioframe Networks, Inc.				Temperature: 22° C		
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%		
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx.	12 dBm)					
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.				
RESULTS						
Pass						
SIGNATURE						
Rolly le Fieley						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 2.8GHz-4GHz						

15:01:21 MAR 20, 2006



START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CONDUCTED EMISSIONS						
EUT: MCRB				Work Order: RAFN006	0	
Serial Number: Various				Date: 03/20/06		
Customer: Radioframe Networks, Inc.				Temperature: 22° C		
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%		
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx.	12 dBm)					
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.				
RESULTS						
Pass						
SIGNATURE						
Rolly le Fieley						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 4GHz-6.5GHz						

15:06:34 MAR 20, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

MA SB
SC PC
CORR

START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 753 msec

EMC SPURIOUS COND	UCTED EI	MISSIONS	3	Rev BETA 01/30/01		
EUT: MCRB			Work Order:			
Serial Number: Various			Date:	03/20/06		
Customer: Radioframe Networks, Inc.			Temperature:			
Attendees: Dean Busch		Rod Peloquin	Humidity:			
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx. 12 dBm)						
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.					
RESULTS						
Pass						
SIGNATURE						
Porly le Roley Tested By:						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Low Channel 6.5GHz - 9GHz						

15:08:30 MAR 20, 2006 #AT 20 dB REF 20.0 dBm PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

START 6.499 GHz

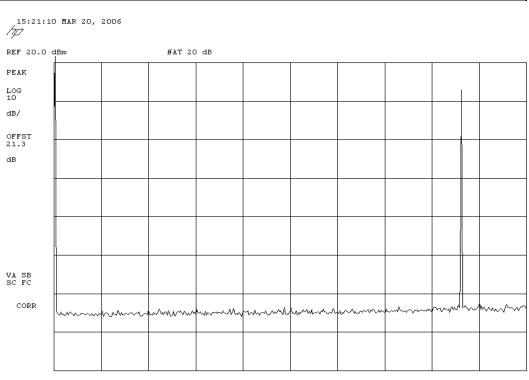
STOP 9.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 750 msec

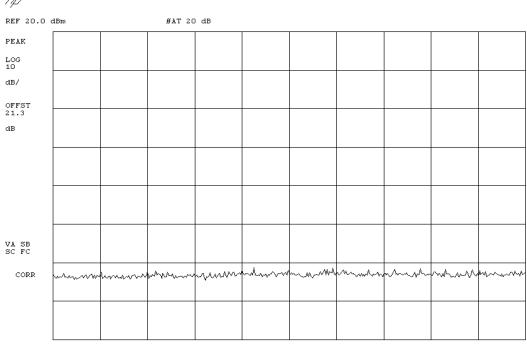
NORTHWEST EMC	SPUI	RIOUS CONDU	JCTED EMISSIONS	5	Rev BETA 01/30/01			
EUT:	MCRB			Work Order:	RAFN0060			
Serial Number:	Various			Date:	03/20/06			
Customer:	Radioframe Networks, Inc.			Temperature:	22° C			
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	31%			
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06			
TEST SPECIFICATION	S							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATION	ONS							
COMMENTS Tested in System Con	llaurakka n							
EUT OPERATING MOD	•							
	hest output power level (approx.	12 dBm)						
DEVIATIONS FROM TE		12 45,						
None	OTOTANDARD							
REQUIREMENTS								
	out of band spurious emission m	ust be attenuated below the limit of	-13 dBm.					
RESULTS	The state of the s							
Pass								
SIGNATURE								
Rocky be Feling								
DESCRIPTION OF TES	т							
	Antenna Conducted Spurious Emissions - Mid Channel 0MHz-1GHz							



START O Hz STOP 1.000 GHz #RES BW 100 kHz #VBW 300 kHz SWP 300 msec

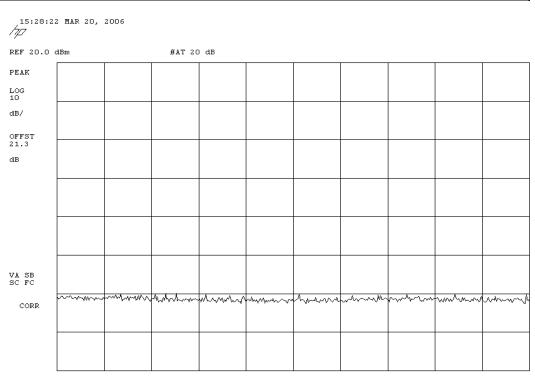
EMC SPURIOUS CONE	OUCTED EI	MISSIONS	3	Rev BETA 01/30/01			
EUT: MCRB			Work Order:				
Serial Number: Various			Date:	03/20/06			
Customer: Radioframe Networks, Inc.			Temperature:				
Attendees: Dean Busch		Rod Peloquin	Humidity:				
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx. 12 dBm)							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenuated below the lim	it of -13 dBm.						
RESULTS							
Pass							
SIGNATURE Rocky le Fieling Tested By:							
DESCRIPTION OF TEST	DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 1GHz-2.8GHz							

15:25:42 MAR 20, 2006



START 999 MHz STOP 2.800 GHz #VBW 300 kHz STOP 2.800 GHz

EMC SPURIOUS CONDUCTED EMISSIONS							
EUT: MCRB				Work Order: RAFN006	0		
Serial Number: Various				Date: 03/20/06			
Customer: Radioframe Networks, Inc.				Temperature: 22° C			
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%			
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx.	12 dBm)						
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission mu	ast be attenuated below the limit of	f -13 dBm.					
RESULTS							
Pass							
SIGNATURE							
Poly le Fieley							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - Mid Channel 2.8GHz-4GHz							



START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

EMC SPURIOUS CONDUCTED EMISSIONS REVBETA (1)23011							
EUT: MCRB				Work Order:	RAFN0060		
Serial Number: Various				Date:	03/20/06		
Customer: Radioframe Networks, Inc.				Temperature:	22° C		
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity:			
Customer Ref. No.: None		Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
With modulation at highest output power level (approx. 12	dBm)						
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission mus	t be attenuated below the limit of	-13 dBm.					
RESULTS							
Pass							
SIGNATURE Rocky la Fieley Tested By:							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - Mid Channel 4GHz - 6.5GHz							

15:31:12 MAR 20, 2006

START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 753 msec

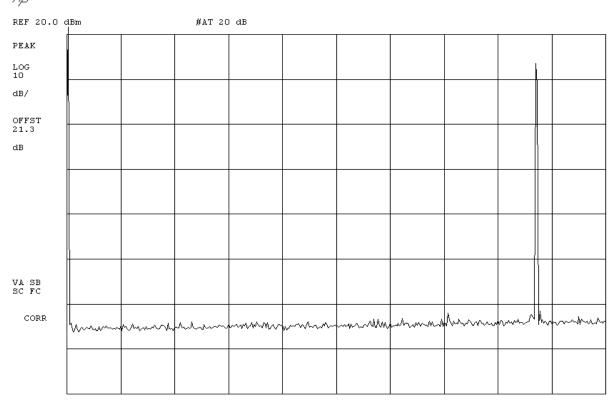
EMC SPURIOUS CONDUCTED EMISSIONS						
EUT: MCRB				Work Order: RAFN006	0	
Serial Number: Various				Date: 03/20/06		
Customer: Radioframe Networks, Inc.				Temperature: 22° C		
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%		
Customer Ref. No.: None		Power:	-48 Vdc	Job Site: EV06		
TEST SPECIFICATIONS						
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002		
SAMPLE CALCULATIONS						
COMMENTS						
Tested in System Configuration						
EUT OPERATING MODES						
With modulation at highest output power level (approx.	12 dBm)					
DEVIATIONS FROM TEST STANDARD						
None						
REQUIREMENTS						
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	f -13 dBm.				
RESULTS						
Pass						
SIGNATURE						
Rolly le Fieley						
DESCRIPTION OF TEST						
Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-9GHz						

15:39:04 MAR 20, 2006

START 6.499 GHz STOP 9.000 GHz

EMC	SPUF	RIOUS COND	UCTED EMISSIONS		Rev BETA 01/30/01				
	MCRB			Work Order:	RAFN0060				
Serial Number:	Various			Date:	03/20/06				
Customer:	Radioframe Networks, Inc.			Temperature:	22° C				
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	31%				
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06				
TEST SPECIFICATION	S								
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002				
SAMPLE CALCULATION	ONS								
COMMENTS									
Tested in System Con	•								
EUT OPERATING MOD									
With modulation at hig	ghest output power level (approx.	12 dBm)							
DEVIATIONS FROM TE	EST STANDARD								
None									
REQUIREMENTS									
	out of band spurious emission m	ust be attenuated below the limit	t of -13 dBm.						
RESULTS									
Pass									
SIGNATURE Poly le Peleys Tested By:									
DESCRIPTION OF TES	DESCRIPTION OF TEST								
	Antenna Condu	icted Spurious Em	nissions - High Channel 0MI	Hz-1GHz					

15:45:00 MAR 20, 2006



START O Hz STOP 1.000 GHz

EMC SPURIOUS CONDUCTED EMISSIONS REVEETA 01/28/017										
EUT: MCRB				Work Order:	RAFN0060					
Serial Number: Various Date: 03/20/06										
Customer: Radioframe Networks, Inc.	Customer: Radioframe Networks, Inc. Temperature: 22° C									
Attendees: Dean Busch		Tested by:	Rod Peloquin	Humidity:						
Customer Ref. No.: None		Power:	-48 Vdc	Job Site:	EV06					
TEST SPECIFICATIONS										
Specification: 47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002					
SAMPLE CALCULATIONS										
COMMENTS										
Tested in System Configuration										
EUT OPERATING MODES										
With modulation at highest output power level (approx.	12 dBm)									
DEVIATIONS FROM TEST STANDARD										
None										
REQUIREMENTS										
Maximum level of any out of band spurious emission m	ust be attenuated below the limit of	-13 dBm.								
RESULTS										
Pass										
Rolly le Reley Tested By:										
DESCRIPTION OF TEST										
Antenna Condu	ucted Spurious Emi	ssions - High	Channel 1G	Hz-2.8GHz						

15:47:46 MAR 20, 2006

REF 20.0 dBm #AT 20 dB PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

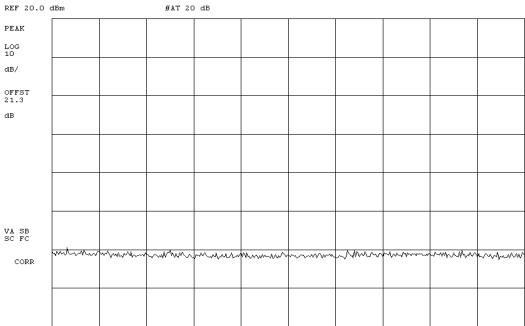
START 999 MHz STOP 2.800 GHz SWP 540 msec

#VBW 300 kHz #RES BW 100 kHz

SPURIOUS CONDUCTED EMISSIONS Rev BETA (1/2001)									
EUT: MCRB Work Order: RAFN00									
Serial Number: Various Date: 03/2									
Customer: Radioframe Networks, Inc.	Customer: Radioframe Networks, Inc. Temperature: 22° C								
Attendees: Dean Busch		Rod Peloquin	Humidity:						
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06					
TEST SPECIFICATIONS									
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002					
SAMPLE CALCULATIONS									
COMMENTS									
Tested in System Configuration									
EUT OPERATING MODES									
With modulation at highest output power level (approx. 12 dBm)									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
Maximum level of any out of band spurious emission must be attenuated below the lim	it of -13 dBm.								
RESULTS									
Pass									
SIGNATURE									
Hoely la Feley Tested By:									
DESCRIPTION OF TEST									
Antenna Conducted Spurious Er	nissions - High	Channel 2.8	GHz-4GHz						

15:50:06 MAR 20, 2006

REF 20.0 dBm PEAK



START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

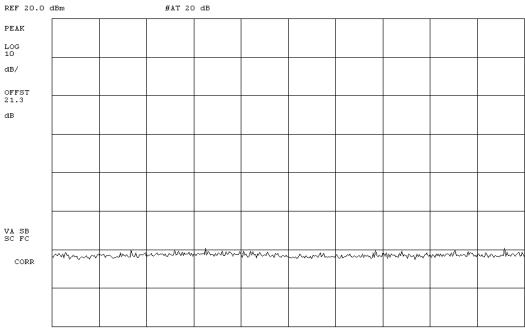
#VBW 300 kHz

SWP 360 msec

NORTHWEST EMC										
EUT:	MCRB				Work Order:	RAFN0060				
Serial Number:	Various				Date:	03/20/06				
Customer:	Radioframe Networks, Inc.				Temperature:	22° C				
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%				
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06				
TEST SPECIFICATIONS										
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002				
COMMENTS										
Tested in System Conf	•									
EUT OPERATING MOD										
- u	hest output power level (approx.	12 dBm)								
DEVIATIONS FROM TE	ST STANDARD									
None										
REQUIREMENTS										
	out of band spurious emission m	ist be attenuated below the limit of	-13 dBm.							
RESULTS										
Pass										
	Aorly la Relays Tested By:									
DESCRIPTION OF TES	т									
	Antenna Condu	cted Spurious Emi	ssions - High	Channel 4G	Hz-6.5GHz					

15:53:10 MAR 20, 2006

REF 20.0 dBm PEAK



START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 753 msec

SPURIOUS CONDUCTED EMISSIONS REVEETA O1/201011									
EUT: MCRB Work Order: RAFN0060									
Serial Number: Various			Date:	03/20/06					
Customer: Radioframe Networks, Inc.	Customer: Radioframe Networks, Inc.								
Attendees: Dean Busch	Tested by:	Rod Peloquin	Humidity:	31%					
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06					
TEST SPECIFICATIONS									
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002					
SAMPLE CALCULATIONS									
COMMENTS									
Tested in System Configuration									
EUT OPERATING MODES									
With modulation at highest output power level (approx. 12 dBm)									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
Maximum level of any out of band spurious emission must be attenuated below the li	mit of -13 dBm.								
RESULTS									
Pass									
SIGNATURE									
Roly la Feluy Tested By:									
DESCRIPTION OF TEST									
Antenna Conducted Spurious E	missions - High	Channel 6.5	GHz-9GHz						

15:57:01 MAR 20, 2006

START 6.499 GHz

STOP 9.000 GHz

#RES BW 100 kHz

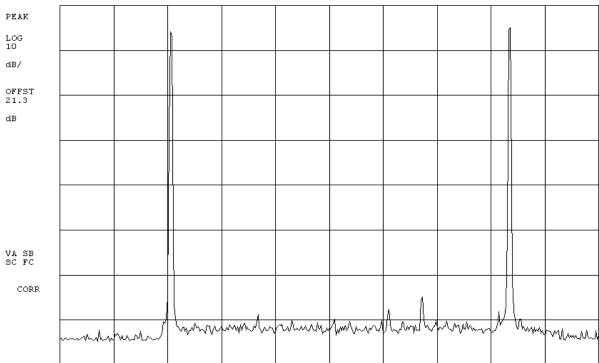
#VBW 300 kHz

SWP 750 msec

NORTHWEST EMC	SPUI	RIOUS COND	UCTED EMISSIONS		Rev BETA 01/30/01			
EUT:	MCRB			Work Order:	RAFN0060			
Serial Number:	Various			Date:	03/23/06			
Customer:	Radioframe Networks, Inc.			Temperature:	22° C			
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:				
Customer Ref. No.:			Power: -48 Vdc	Job Site:	EV06			
TEST SPECIFICATION								
Specification: SAMPLE CALCULATION	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002			
COMMENTS								
Tested in System Con	figuration							
EUT OPERATING MOD	<u> </u>							
	ng with modulation at highest out	put power level						
DEVIATIONS FROM T	<u> </u>	Procedure of the second						
None								
REQUIREMENTS								
Maximum level of any	out of band spurious emission r	nust be attenuated below the limi	it of -13 dBm.					
RESULTS								
Pass	_			-				
SIGNATURE								
Rolly be Relegy								
DESCRIPTION OF TES	ST							
	Antenna Cond	lucted Spurious Er	missions - 7 Signal IM Test,	In Band				

12:45:45 MAR 23, 2006

REF 15.0 dBm #AT 20 dB PEAK



START 845.00 MHz

STOP 875.00 MHz

#RES BW 10 kHz #VBW 10 kHz SWP 900 msec

SPURIOUS CONDUCTED EMISSIONS								
EMC		COUC COMPC				01/30/01		
EUT:	MCRB				Work Order:	RAFN0060		
Serial Number:	Various					03/23/06		
Customer:	Radioframe Networks, Inc.				Temperature:	22° C		
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity:	31%		
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATION	S							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATION	ONS							
COMMENTS	e							
Tested in System Con	<u> </u>							
EUT OPERATING MOD								
	g with modulation at highest out	put power level						
DEVIATIONS FROM T	EST STANDARD							
None								
REQUIREMENTS								
	out of band spurious emission n	nust be attenuated below the limit of	of -13 dBm.					
RESULTS								
Pass								
SIGNATURE								
Roly le Releys								
Tested By:								
DESCRIPTION OF TES	ST .							
	Antenna Cond	ucted Spurious Em	issions - 7 Si	gnal IM Test.	In Band			
	Antenna Conducted Spurious Emissions - 7 Signal IM Test, In Band							

12:48:49 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB SC FC
CORR

CENTER 851.0595 MHz

SPAN 500.0 kHz

#RES BW 3.0 kHz

#VBW 10 kHz

SWP 167 msec

EMC	SPU	RIOUS CONDU	JCTED EI	MISSION	S	Rev BETA 01/30/01		
EUT:	MCRB				Work Order: RAFN006	60		
Serial Number:	Various				Date: 03/23/06			
Customer:	Radioframe Networks, Inc.				Temperature: 22° C			
Attendees:	Dean Busch		Tested by:	Rod Peloquin	Humidity: 31%			
Customer Ref. No.:	None		Power:	-48 Vdc	Job Site: EV06			
TEST SPECIFICATION	S							
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method:	TIA / EIA - 603	Year: 2002			
SAMPLE CALCULATION	DNS							
COMMENTS Tested in System Conf	DES							
	g with modulation at highest out	put power level						
DEVIATIONS FROM TE	EST STANDARD							
None								
REQUIREMENTS			(40 ID					
	out of band spurious emission n	nust be attenuated below the limit of	of -13 dBm.					
RESULTS								
Pass								
Rocky be Release. Tested By:								
DESCRIPTION OF TES	т							
_	Antenna Cond	ucted Spurious Em	issions - 6 Si	gnal IM Test	, In Band			

12:51:26 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB SC FC
CORR

CENTER 869.9510 MHz

SPAN 500.0 kHz

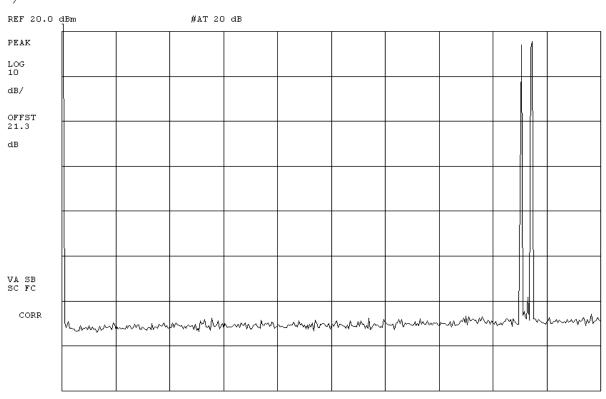
#RES BW 3.0 kHz

#VBW 10 kHz

SWP 167 msec

EMC	SPUF	RIOUS COND	UCTED EMISSION	S	Rev BETA 01/30/01				
	MCRB			Work Order:	RAFN0060				
Serial Number:	Various	arious Date: 03/23/							
Customer:	Radioframe Networks, Inc.			Temperature:	22° C				
Attendees:	Dean Busch		Tested by: Rod Peloquin	Humidity:	31%				
Customer Ref. No.:	None		Power: -48 Vdc	Job Site:	EV06				
TEST SPECIFICATION	IS								
Specification:	47 CFR 2.1051 & 90.691	Year: 2005	Method: TIA / EIA - 603	Year:	2002				
SAMPLE CALCULATION	ONS								
COMMENTS									
Tested in System Con	•								
EUT OPERATING MOD									
	ng with modulation at highest outp	out power level							
DEVIATIONS FROM T	EST STANDARD								
None									
REQUIREMENTS									
	out of band spurious emission m	ust be attenuated below the limit	t of -13 dBm.						
RESULTS									
Pass									
Rocky be Relenge Tested By:									
DESCRIPTION OF TES	DESCRIPTION OF TEST								
	Antenna Conduc	ted Spurious Emi	ssions - 7 Signal IM Test, (0MHz-1GHz					

12:54:50 MAR 23, 2006



EMC SPURIOUS CONDUCTED EMISSIONS REVBETA (17,000)										
EUT: MCRB	Work Order:	RAFN0060								
Serial Number: Various		Date:	03/23/06							
Customer: Radioframe Networks, Inc.		Temperature:	22° C							
Attendees: Dean Busch	Tested by: Rod Peloquin	Humidity:	31%							
Customer Ref. No.: None	Power: -48 Vdc	Job Site:	EV06							
TEST SPECIFICATIONS										
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method: TIA / EIA - 603	Year:	2002							
SAMPLE CALCULATIONS										
COMMENTS Tested in System Configuration EUT OPERATING MODES	Tested in System Configuration									
7 channels transmitting with modulation at highest output power level										
DEVIATIONS FROM TEST STANDARD										
None										
REQUIREMENTS										
Maximum level of any out of band spurious emission must be attenuated below the li	mit of -13 dBm.									
RESULTS										
Pass										
SIGNATURE										
Rochy la Felings Tested By:										
DESCRIPTION OF TEST										
Antenna Conducted Spurious En	nissions - 7 Signal IM Test, 10	GHz-2.8GHz								

12:56:43 MAR 23, 2006

PEAK
LOG
10
dB/
OFFST
21.3
dB

VA SB
SC FC
CORR

START 999 MHz STOP 2.800 GHz #VBW 300 kHz STOP 2.800 GHz

EMC SPURIOUS CONDUCTED EMISSIONS REVEETA 01/28/017									
EUT:	MCRB					Work Order:	RAFN0060		
Serial Number:	Various					Date:	03/23/06		
	Radioframe Networks, Inc.					Temperature:			
Attendees:	Dean Busch			Tested by:	Rod Peloquin	Humidity:	31%		
Customer Ref. No.:	None			Power:	-48 Vdc	Job Site:	EV06		
TEST SPECIFICATIONS									
Specification:	47 CFR 2.1051 & 90.691	Year: 20	005	Method:	TIA / EIA - 603	Year:	2002		
SAMPLE CALCULATIO	NS								
COMMENTS Tested in System Conf	•								
7 channels transmitting	g with modulation at highest outp	ut power level	I						
DEVIATIONS FROM TE	ST STANDARD								
None									
REQUIREMENTS									
Maximum level of any of	out of band spurious emission mu	ust be attenuat	ted below the limit of	-13 dBm.					
RESULTS									
Pass									
SIGNATURE Tested By:	Rolly be Religy								
DESCRIPTION OF TEST	т								
	Antenna Conduc	ted Spu	rious Emiss	ions - 7 Sign	nal IM Test, 2.	8GHz-4GHz			

12:59:10 MAR 23, 2006

#AT 20 dB REF 20.0 dBm PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC CORR

START 2.799 GHz

STOP 4.000 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 360 msec

SPURIOUS CONDUCTED EMISSIONS Rev BETA OTIGORIO									
EUT: MCRB Work Order: RAFN00									
Serial Number: Various Date: 03/23									
Customer: Radioframe Networks, Inc.									
Attendees: Dean Busch		Rod Peloquin	Humidity:						
Customer Ref. No.: None	Power:	-48 Vdc	Job Site:	EV06					
TEST SPECIFICATIONS		•							
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method:	TIA / EIA - 603	Year:	2002					
SAMPLE CALCULATIONS									
COMMENTS									
Tested in System Configuration									
EUT OPERATING MODES									
7 channels transmitting with modulation at highest output power level									
DEVIATIONS FROM TEST STANDARD None									
REQUIREMENTS	(40 ID								
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.								
RESULTS									
Pass									
Rochy be Roley Tested By:									
DESCRIPTION OF TEST									
Antenna Conducted Spurious Emis	sions - 7 Sigr	nal IM Test, 4	GHz-6.5GHz						

13:01:34 MAR 23, 2006 #AT 20 dB REF 20.0 dBm PEAK LOG 10 dB/ OFFST 21.3 dB VA SB SC FC more and the second was the second was a second was a second with the second was a second was a second was a second with the second was a second was a second with the second was a second was a second with the second was a second was a second with the second was a second was a second with the second was a second was a second with the CORR

START 3.990 GHz

STOP 6.500 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 753 msec

EMC SPURIOUS COND	UCTED EM	IISSIONS		Rev BETA 01/30/01			
EUT: MCRB	·		Work Order:	RAFN0060			
Serial Number: Various	Date:	03/23/06					
Customer: Radioframe Networks, Inc.	Temperature:	22° C					
Attendees: Dean Busch	Humidity:	31%					
Customer Ref. No.: None	Power: -4	8 Vdc	Job Site:	EV06			
TEST SPECIFICATIONS							
Specification: 47 CFR 2.1051 & 90.691 Year: 2005	Method: TI	IA / EIA - 603	Year:	2002			
SAMPLE CALCULATIONS							
COMMENTS							
Tested in System Configuration							
EUT OPERATING MODES							
7 channels transmitting with modulation at highest output power level							
DEVIATIONS FROM TEST STANDARD							
None							
REQUIREMENTS							
Maximum level of any out of band spurious emission must be attenuated below the limit	of -13 dBm.						
RESULTS							
Pass							
SIGNATURE							
Rocky be Roley							
DESCRIPTION OF TEST							
Antenna Conducted Spurious Emissions - 7 Signal IM Test, 6.5GHz-9GHz							

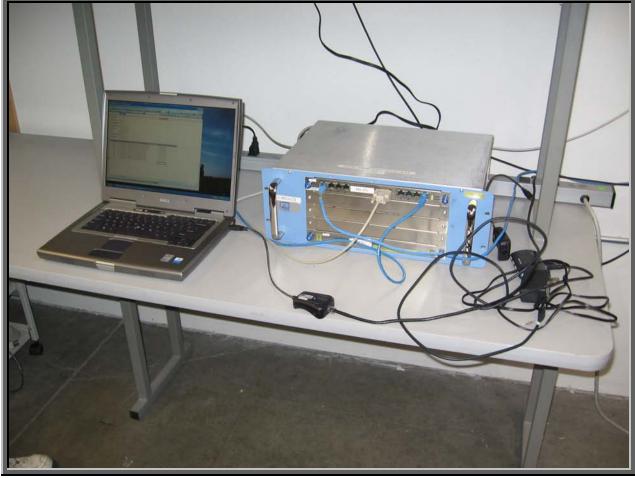
13:05:47 MAR 23, 2006

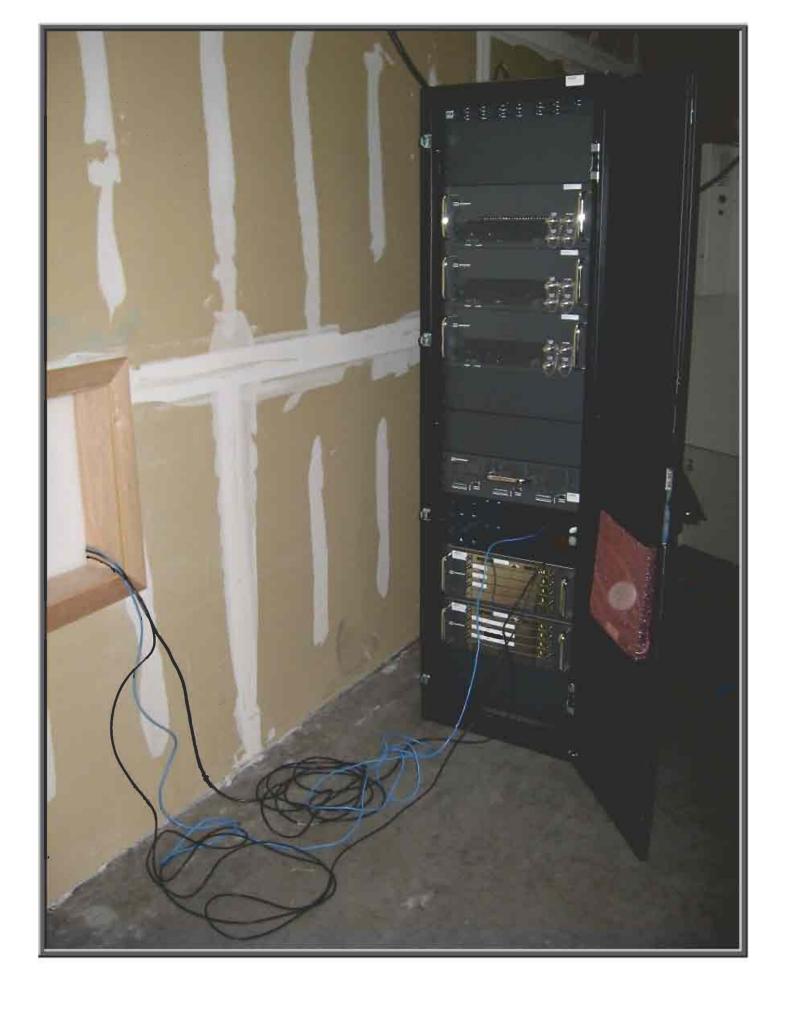
REF 20.0 dBm #AT 20 dB

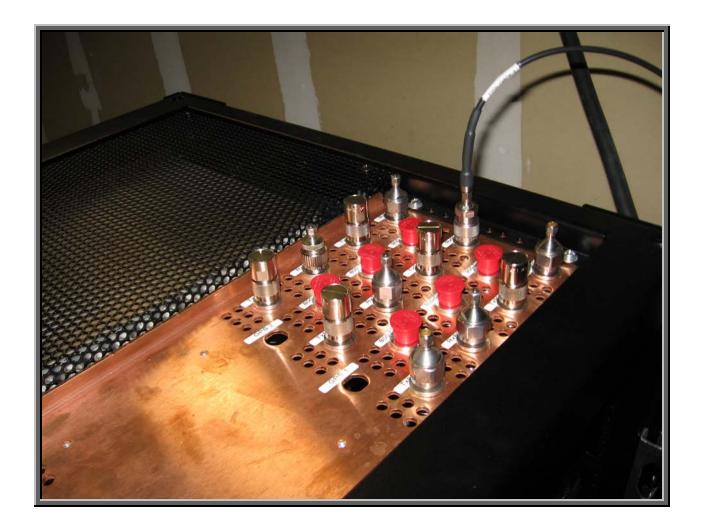
PEAK
LOG
10
dB/
OFFST
21.3
dB

MA SB
SC FC
CORR









PSA 2006.03.15

EMC

Spurious Radiated Emissions

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

MODES OF OPERATION

24 Channel, 3 sector, 8 channel per sector (4 at 800MHz, 4 at 900MHz)

MODE USED FOR FINAL DATA

24 Channel, 3 sector, 8 channel per sector (4 at 800MHz, 4 at 900MHz)

POWER SETTINGS INVESTIGATED

-48VDC

POWER SETTINGS USED FOR FINAL DATA

-48VDC

FREQUENCY RANGE INVESTIGATED

Start Frequency 30MHz Stop Frequency 10GHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	7/15/2005	12
High Pass Filter 1.2 - 18 GHz	Micro-Tronics	HPM50108	HFV	9/28/2005	13
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Pre-Amplifier	Miteq	AM-1616-1000	AOL	1/4/2006	13
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Signal Generator	Hewlett Packard	8341B	TGN	1/26/2006	13
Antenna, Horn	EMCO	3115	AHJ	5/20/2005	24

ASUREMEN	T 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
	Aeasurements were made us	sing the bandwidths and deter	ctors 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 **Spurious Radiated Emissions EMC** EUT: MCRB Work Order: RAFN0060 Serial Number: Various Date: 03/22/06 Customer: Radioframe Networks, Inc. Temperature: 22 Attendees: Dean Busch Humidity: 32% Project: None Barometric Pres.: 30.12 Tested by: Rod Peloquin Power: 48VDC Job Site: EV01 Test Method FCC 90.691 and 2.1053 Spurious Emissions:2005 TIA/EIA-603-B:2002 TEST PARAMETERS Test Distance (m) 3 Antenna Height(s) (m) 1 - 4 COMMENTS Full system configuration EUT OPERATING MODES 24 Channel, 3 sector, 8 channel per sector (4 at 800MHz, 4 at 900MHz) DEVIATIONS FROM TEST STANDARD No deviations. Rocky la Feling Run# Configuration # 3 Results Pass NVLAP Lab Code 200630-0 Signature 0.0 -10.0 -20.0 -30.0 **40.0** -50.0 • -60.0 -70.0 -80.0 10.000 100.000 1000.000 MHz Compared to Freq Azimuth Heiaht Polarity EIRP EIRP Spec. Limit Detector (degrees) (meters) (Watts) (dBm) (dBm) (dB) (MHz) H-Bilog PK 1.72E-08 1.5 -47.6 -13.0 375.013 106.0 -34.6 PΚ 349.955 106.0 1.5 H-Bilog 5.82E-09 -52.4 -13.0 -39.4 674.955 212.0 1.0 H-Bilog PΚ 3.92E-09 -54.1 -13.0 -41.1 799.925 296.0 1.0 H-Bilog PΚ 3.00E-09 -55.2 -13.0 -42.2 125.002 237.0 H-Bilog 2.25E-09 -56.5 -13.0 -43.5 1.8

H-Bilog

H-Bilog

PΚ

1.87E-09

1.15E-09

-57.3

-59.4

-13.0

-13.0

-44.3

-46.4

325.016

109.347

199.0

196.0

1.8

2.0

Spurious Radiated Emissions EMC Work Order: RAFN0060 EUT: MCRB Serial Number: Various Date: 03/22/06 Customer: Radioframe Networks, Inc. Temperature: 22 Attendees: Dean Busch Humidity: 32% Project: None Barometric Pres.: 30.12 Tested by: Rod Peloquin Power: 48VDC Job Site: EV01 Test Method

FCC 90.691 and 2.1053 Spurious Emissions:2005

TIA/EIA-603-B:2002

TEST PARAMETERS

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

COMMENTS

Full system configuration

EUT OPERATING MODES

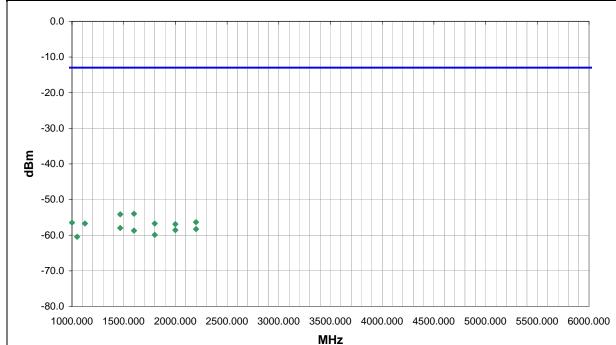
24 Channel, 3 sector, 8 channel per sector (4 at 800MHz, 4 at 900MHz) DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	3
Daguita	Page

NVLAP Lab Code 200630-0

Signature



									Compared to
Freq	Azimuth	Height		Polarity	Detector	EIRP	EIRP	Spec. Limit	Spec.
(MHz)	(degrees)	(meters)				(Watts)	(dBm)	(dBm)	(dB)
1599.731	335.0	1.0		V-Horn	PK	3.99E-09	-54.0	-13.0	-41.0
1466.624	345.0	1.0		V-Horn	PK	3.85E-09	-54.2	-13.0	-41.2
2199.348	301.0	1.0		V-Horn	PK	2.32E-09	-56.3	-13.0	-43.3
1000.352	97.0	1.4		H-Horn	PK	2.25E-09	-56.5	-13.0	-43.5
1124.942	176.0	1.1		V-Horn	PK	2.13E-09	-56.7	-13.0	-43.7
1799.685	333.0	1.0		V-Horn	PK	2.13E-09	-56.7	-13.0	-43.7
1999.759	211.0	1.0		V-Horn	PK	2.04E-09	-56.9	-13.0	-43.9
1466.556	135.0	1.3		H-Horn	PK	1.59E-09	-58.0	-13.0	-45.0
2199.606	58.0	1.3		H-Horn	PK	1.48E-09	-58.3	-13.0	-45.3
1999.798	44.0	1.3		H-Horn	PK	1.39E-09	-58.6	-13.0	-45.6
1599.769	75.0	1.3		H-Horn	PK	1.34E-09	-58.7	-13.0	-45.7
1800.001	287.0	1.3		H-Horn	PK	1.02E-09	-59.9	-13.0	-46.9
1049.802	96.0	1.3		H-Horn	PK	9.02E-10	-60.4	-13.0	-47.4

Spurious Radiated Emissions



