Masimo Corporation

Rad-87

Report No. MASI0063

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

Last Date of Test: October 5, 2010
Masimo Corporation
Model: Rad-87

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Spurious Radiated Emissions	FCC 15.247:2010	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.209:2010	ANSI C63.10:2009	Pass
AC Powerline Conducted Emissions	FCC 15.207:2010	ANSI C63.10:2009	Pass

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

Test Facility

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

Northwest EMC, Inc. 41 Tesla Ave. Irvine, CA 92618

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834B-2).

Approved By:

Don Facteau, IS Manager

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NVLAP Lab Code: 200676-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.



Revision History

Revision 06/29/09

Revision Description		Date	Page Number
00	None		



Accreditations and Authorizations

FCC

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



NVLAP

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



NVLAP LAB CODE 200881-0

Industry Canada

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



CAB

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



NEMKO

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





Accreditations and Authorizations

Australia/New Zealand

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



VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).



BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017). License No.SL2-IN-E-1017.



GOST

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



KCC

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



VIETNAM

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



SCOPE

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



Northwest EMC Locations





Oregon Labs EV01-EV12 22975 NW Evergreen Pkwy Suite 400 Hillsboro, OR 97124 (503) 844-4066 California Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918 Minnesota Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281 Washington Labs SU01-SU07 14128 339th Ave. SE Sultan, WA 98294 (360) 793-8675 New York Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796







Rev 11/17/06

Party Requesting the Test

Company Name:	Masimo Corporation
Address:	40 Parker
City, State, Zip:	Irvine, CA 92618
Test Requested By:	Paul Lewandowski
Model:	Rad-87
First Date of Test:	August 26, 2010
Last Date of Test:	October 5, 2010
Receipt Date of Samples:	August 25, 2010
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

One 802.11a/b/g radio module installed in a medical monitoring device that will be connected to hospital wireless network. Radio module previously certified under FCC ID: N6C-SXSDCAG

Testing Objective:

Seeking to demonstrate compliance under FCC 15.247 for operation in the 2.4 and 5.8 GHz bands

Configurations

Revision 9/21/05

CONFIGURATION 1 MASI0063

Software/Firmware Running during test	
Description	Version
RadioCfg SX-560	1.0.0.1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Pulse CO-Oximeter	Masimo Corporation	Rad-87	R02384

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Cable	Yes	2.8m	No	Pulse CO-Oximeter	AC Mains
MS-200 Compatible cable	No	2.0m	No	Pulse CO-Oximeter	Unterminated
Serial Cable	Yes	1.8m	Yes	Pulse CO-Oximeter	Laptop
Ground Cable	Yes	2.0m	No	Pulse CO-Oximeter	Ground
Audio Cable	Yes	4.6m	Yes	Pulse CO-Oximeter	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Revision 4/28/03

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	8/27/2010	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	10/5/2010	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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.

CHANNELS TESTED	
Chan 1 (2412 MHz)	
Chan 6 (2437 MHz)	
Chan 11 (2462 MHz)	
Chan 149 (5745 MHz	
Chan 157 (5785 MHz)	
Chan 165 (5825 MHz)	

POWER SETTINGS INVESTIGATED

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED				
Start Frequency	1 GHz	Stop Frequency	40 GHz	

CLOCKS AND OSCILLATORS

2412 MHz, 2437 MHz, 2462 MHz, 5745 MHz, 5785 MHz, 5825 MHz

SAMPLE CALCULATIONS

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

EST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
High Pass Filter	Micro-Tronics	HPM50111	HGC	11/20/2009	13
Pre-Amplifier	Miteq	JS4-26004000-50-5A	AON	8/19/2009	16
Antenna, Horn	EMCO	3160-10	AHI	NCR	0
OC Cable	ESM Cable Corp.	KMKM-72	OCV	11/3/2009	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	5/3/2010	13
Antenna, Horn	EMCO	3160-09	AHN	NCR	0
OC floating Cable	N/A	18-26GHz RE Cables	OCK	5/3/2010	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVP	12/21/2009	13
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	8/25/2010	13
Antenna, Horn	ETS	3160-07	AHX	NCR	0
OC11 Cables	N/A	12-18GHz RE Cables	ocs	4/11/2010	13
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVJ	9/10/2009	13
Antenna, Horn	EMCO	3115	AHB	9/11/2009	24
Antenna, Horn	ETS	3160-08	AHV	NCR	0
OC11 Cables	N/A	1-8GHz RE Cables	OCR	3/19/2010	13
Spectrum Analyzer	Agilent	E4440A	AFA	2/9/2010	12

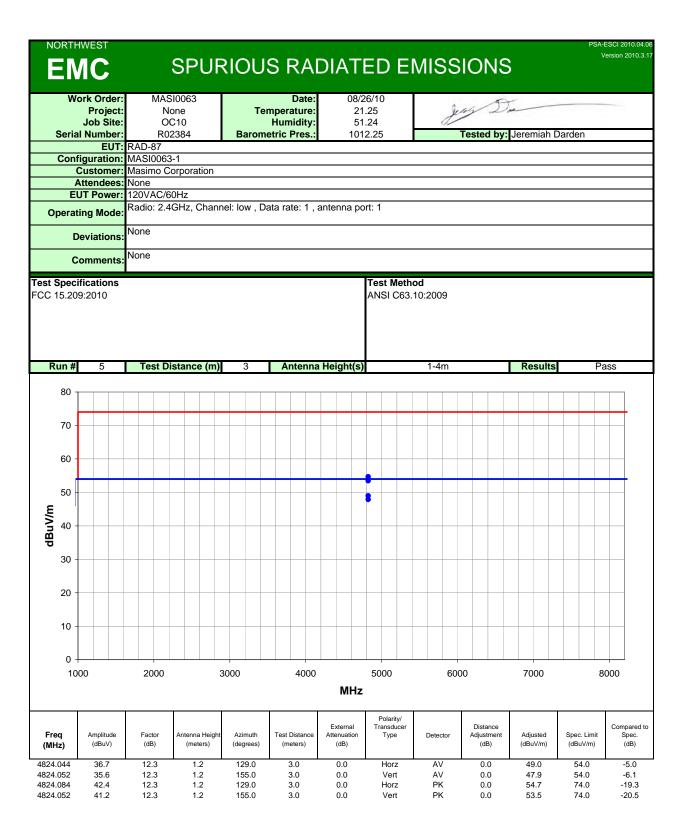
MEASUREMENT BANDWIDTHS				
	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
Above 1000 1000.0 N/A 1000.0				
Measurements were made using the bandwidths and detectors specified. No video filter was used.				

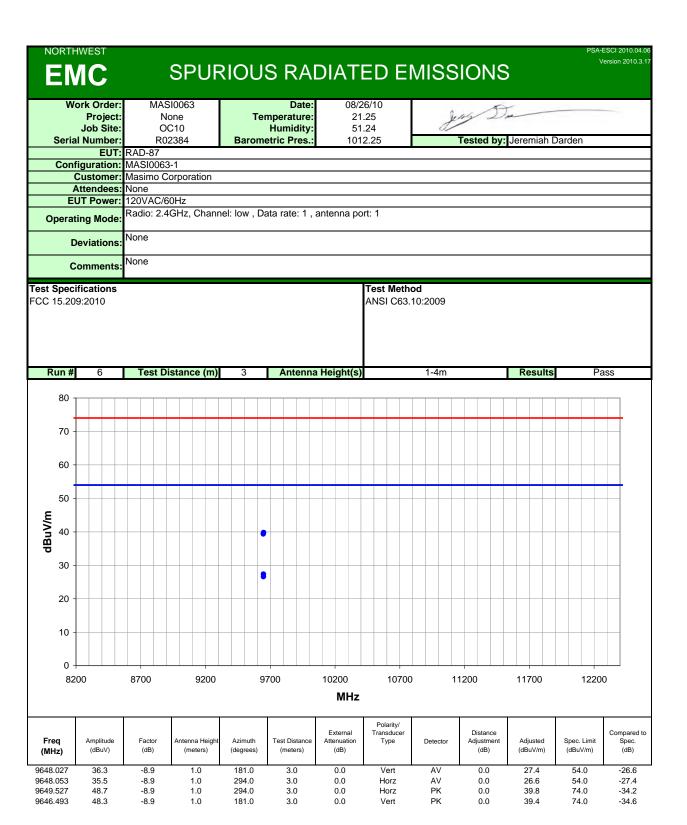
MEASUREMENT UNCERTAINTY

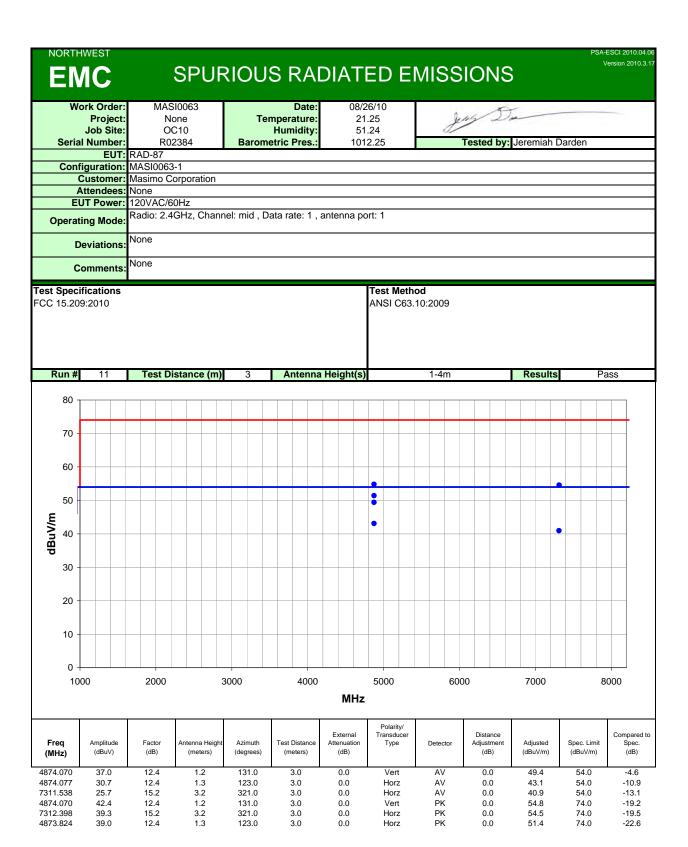
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

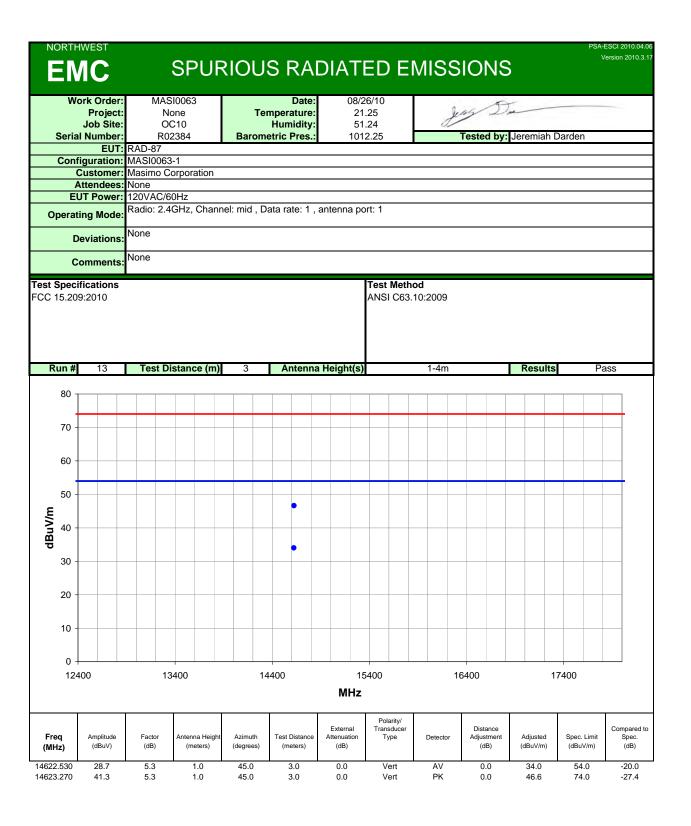
TEST DESCRIPTION

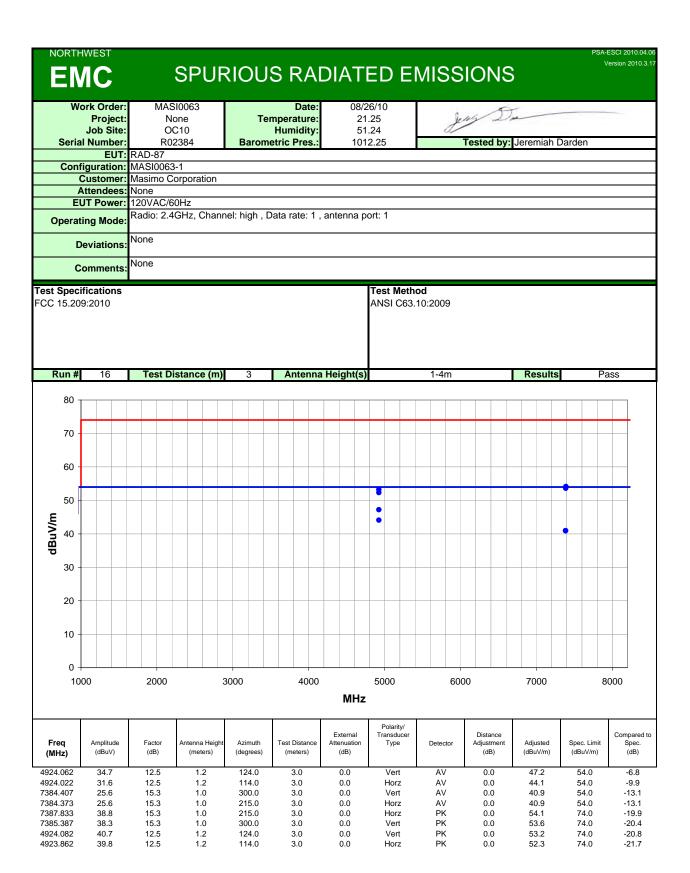
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

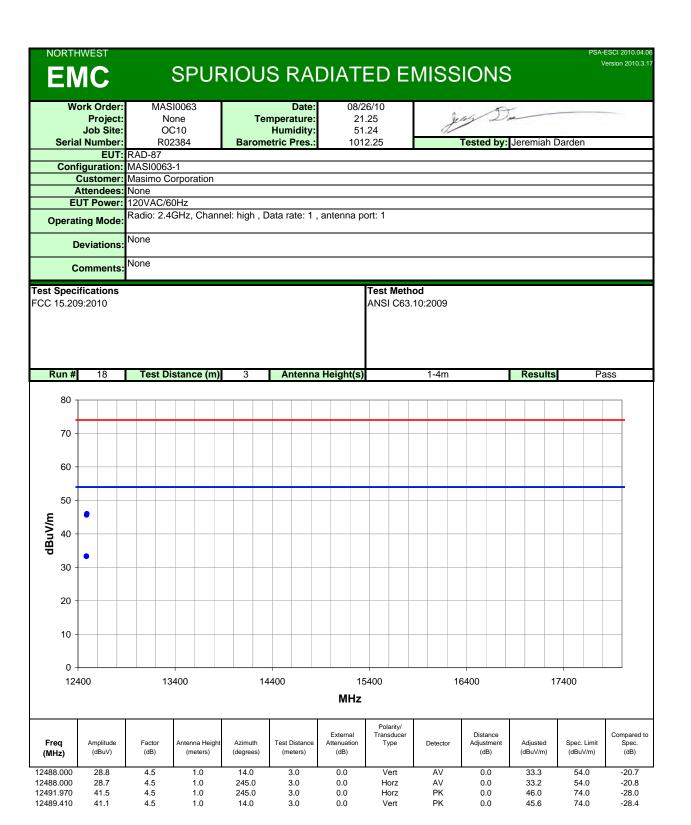




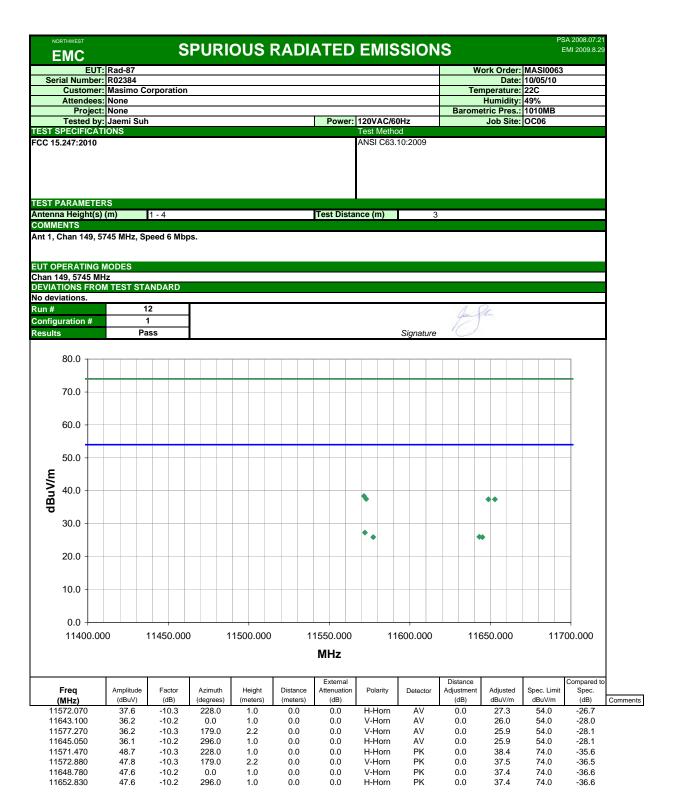


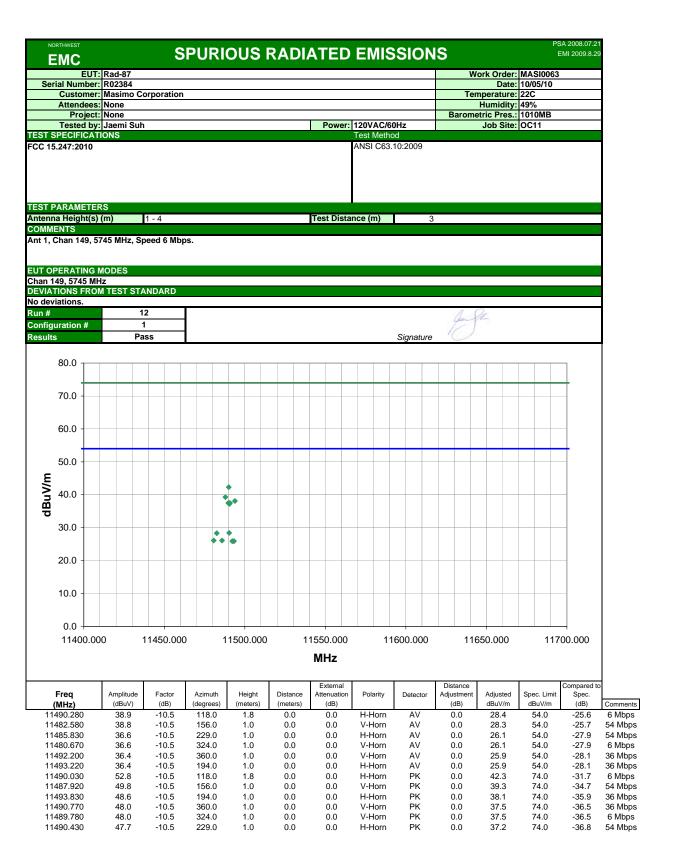






NORTHWEST SPURIOUS RADIATED EMISSIONS **EMC** MASI0063 Work Order: Date: 08/27/10 21.25 Project: None Temperature: Job Site: OC10 . Humidity: 51.24 Barometric Pres. Serial Number: R02384 1012.25 Tested by: Jeremiah Darden EUT: RAD-87 Configuration: MASI0063-1 **Customer:** Masimo Corporation Attendees: None 120VAC/60Hz **EUT Power:** Radio: 2.4GHz, Channel: mid , Data rate: see comments , antenna port: 1 **Operating Mode: Deviations** None Comments Test Specifications Test Method FCC 15.209:2010 ANSI C63.10:2009 Run# 20 Test Distance (m) Antenna Height(s) 1-4m Results Pass 80 70 60 50 dBuV/m 40 30 20 10 3000 4000 1000 2000 5000 6000 7000 8000 MHz Polarity/ Transducer Type Compared to Spec. External Distance Amplitude Azimuth Test Distance Adjustment Adjusted Spec. Limit Freq Detector (MHz) (dBuV) (dB) (meters) (degrees) (meters) (dB) (dB) (dBuV/m) (dBuV/m) (dB) 4872.000 28.7 12.4 31.0 0.0 Vert 54.0 -12.9 3.0 ΑV 0.0 41.1 1.0 4872.853 12.4 142.0 ΑV 40.9 54.0 28.5 1.2 3.0 0.0 Vert 0.0 -13.1 4874.127 12.4 ΑV 39.2 54.0 -14.8 26.8 1.0 30.0 3.0 0.0 Vert 0.0 4872.140 33.0 26.7 12.4 1.0 3.0 0.0 Vert ΑV 0.0 39.1 54.0 -14.9 4873.253 306.0 4874.513 26.0 12.4 1.0 239.0 3.0 0.0 Horz ΑV 0.0 38.4 54.0 -15.6 4874.607 25.1 12.4 242.0 3.0 Horz 0.0 37.5 54.0 -16.5 4872.333 24.7 12.4 1.0 203.0 3.0 0.0 Horz ΑV 0.0 37.1 54.0 -16.9 4872.740 4874.807 PK PK 41.6 12.4 1.0 31.0 3.0 0.0 Vert 0.0 54.0 74.0 -20.0 142.0 0.0 53.6 74 0 41 2 124 1.2 3.0 Vert 0.0 -20.4 0.0 PK 4874.093 12.4 30.0 53.2 74.0 -20.8 40.8 1.0 3.0 Vert 0.0 4873.067 239.0 PK 74.0 39.9 12.4 1.0 3.0 0.0 Horz 0.0 52.3 -21.7 4873.580 39.8 33.0 0.0 PK 52.2 74.0 -21.8 12.4 1.0 3.0 Vert 0.0 PK 74.0 4875.567 39.2 12.4 1.0 306.0 3.0 0.0 Horz 0.0 51.6 -22.4 4874.107 242.0 38.8 12.4 1.0 3.0 0.0 Horz PΚ 0.0 51.2 74.0 -22.8 4875.560





NORTHWEST SPURIOUS RADIATED EMISSIONS **EMC** EUT: Rad-87 Work Order: MASI0063 Date: 10/05/10 Serial Number: R02384 Customer: Masimo Corporation Temperature: 22C Attendees: None Humidity: 49% Project: None Barometric Pres.: 1010MB Tested by: Jaemi Suh Power: 120VAC/60Hz Job Site: OC06 FCC 15.247:2010 ANSI C63.10:2009 TEST PARAMETERS Antenna Height(s) (m) Test Distance (m) 3 COMMENTS Ant 2, Chan (149, 157, 165), Speed 6 Mbps. EUT OPERATING MODES Transmitting DEVIATIONS FROM TEST STANDARD No deviations. Run# 13 Configuration # 1 Results Pass Signature 80.0 70.0 60.0 50.0 dBuV/m 40.0 • • 30.0 • 20.0 10.0 0.0 11400.000 11450.000 11500.000 11550.000 11600.000 11650.000 11700.000 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) (degrees) (meters) (MHz) 37.5 3.0 V-Horn ΑV 27.0 11489.780 -10.5 161.0 1.9 0.0 0.0 54.0 -27.0 11574.490 36.4 -10.3 196.0 1.0 3.0 0.0 H-Horn ΑV 0.0 26.1 54.0 -27.9 11492.740 36.4 -10.5 334.0 1.0 3.0 0.0 H-Horn ΑV 0.0 25.9 54.0 -28.1 11644.420 36.0 -10.2 243.0 1.0 3.0 0.0 H-Horn ΑV 0.0 25.8 54.0 -28.2 11645.110 -10.2 143.0 V-Horn 54.0 36.0 1.0 3.0 0.0 ΑV 0.0 25.8 -28.2 11575.750 36.1 -10.3 30.0 2.2 3.0 V-Horn ΑV 0.0 25.8 54.0 -28.2 0.0 243.0 H-Horn PΚ 74.0 -34.5 11646.120 49.7 -10.2 3.0 0.0 0.0 39.5 1.0 11489.400 V-Horn PΚ 74.0 49.6 -10.5 161.0 1.9 3.0 0.0 0.0 39.1 -34.9

11490.120

11574.900

11567.280

11646.700

48.7

48.1

47.8

47.6

-10.5

-10.3

-10.3

-10.2

334.0

30.0

196.0

143.0

1.0

2.2

1.0

1.0

3.0

3.0

3.0

3.0

0.0

0.0

0.0

0.0

H-Horn

V-Horn

H-Horn

V-Horn

PΚ

PΚ

PΚ

0.0

0.0

0.0

0.0

38.2

37.8

37.5

74.0

74.0

74.0

74.0

-35.8

-36.2

-36.5

-36.6

FCC 15.247:2010

ANSI C63.10:2009

TEST PARAMETERS

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

COMMENTS

Ant 1, Chan 149, 157, 165. Speed 6 Mbps

EUT OPERATING MODES

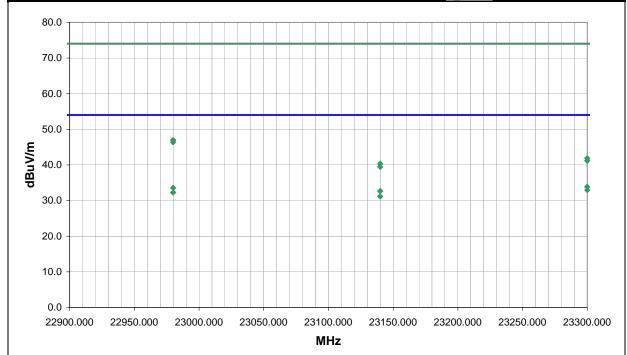
Transmit Mode.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	14
Configuration #	1
Results	Pass

Signature



						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
23300.000	43.8	-0.4	0.0	1.0	1.0	0.0	H-High Horr	ΑV	-9.5	33.9	54.0	-20.1
22980.000	43.4	-0.3	0.0	1.0	1.0	0.0	H-High Horr	AV	-9.5	33.6	54.0	-20.4
23300.000	42.9	-0.4	0.0	1.0	1.0	0.0	√-High Horr	AV	-9.5	33.0	54.0	-21.0
23140.000	42.6	-0.4	0.0	1.0	1.0	0.0	√-High Horr	AV	-9.5	32.7	54.0	-21.3
22980.000	42.1	-0.3	0.0	1.0	1.0	0.0	√-High Horr	AV	-9.5	32.3	54.0	-21.7
23140.000	41.1	-0.4	0.0	1.0	1.0	0.0	H-High Horr	AV	-9.5	31.2	54.0	-22.8
22980.000	56.8	-0.3	0.0	1.0	1.0	0.0	H-High Horr	PK	-9.5	47.0	74.0	-27.0
22980.000	56.2	-0.3	0.0	1.0	1.0	0.0	√-High Horr	PK	-9.5	46.4	74.0	-27.6
23300.000	51.8	-0.4	0.0	1.0	1.0	0.0	√-High Horr	PK	-9.5	41.9	74.0	-32.1
23300.000	51.1	-0.4	0.0	1.0	1.0	0.0	H-High Horr	PK	-9.5	41.2	74.0	-32.8
23140.000	50.3	-0.4	0.0	1.0	1.0	0.0	√-High Horr	PK	-9.5	40.4	74.0	-33.6
23140.000	49.4	-0.4	0.0	1.0	1.0	0.0	H-High Horr	PK	-9.5	39.5	74.0	-34.5



AC POWERLINE CONDUCTED EMISSIONS

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

MODES OF OPERATION	
Radio: 5.8GHz, Channel: 161, Data rate: 6, antenna port: 1	
Radio: 5.8GHz, Channel: 153, Data rate: 6, antenna port: 1	
Radio: 5.8GHz, Channel: 149, Data rate: 6, antenna port: 1	
Radio: 2.4GHz, Channel: 11 , Data rate: 1 , antenna port: 1	
Radio: 2.4GHz, Channel: 6 , Data rate: 1 , antenna port: 1	
Radio: 2.4GHz, Channel: 1, Data rate: 1, antenna port: 1	

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

MASI0063-1

SAMPLE CALCULATIONS

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
LISN	Solar	9252-50-24-BNC	LIB	5/5/2010	12 mo
Attenuator	Pasternack	6N10W-20	AWC	1/27/2010	13 mo
High Pass Filter	TTE	H97-100K-50-720B	HFP	3/8/2010	13 mo
OC06 Cables	N/A	Telecom Cables	OCP	3/8/2010	13 mo
OC06 Cables	N/A	CE Cables	OCM	3/8/2010	13 mo
Receiver	Rohde & Schwarz	ESCI	ARF	3/30/2010	12 mo

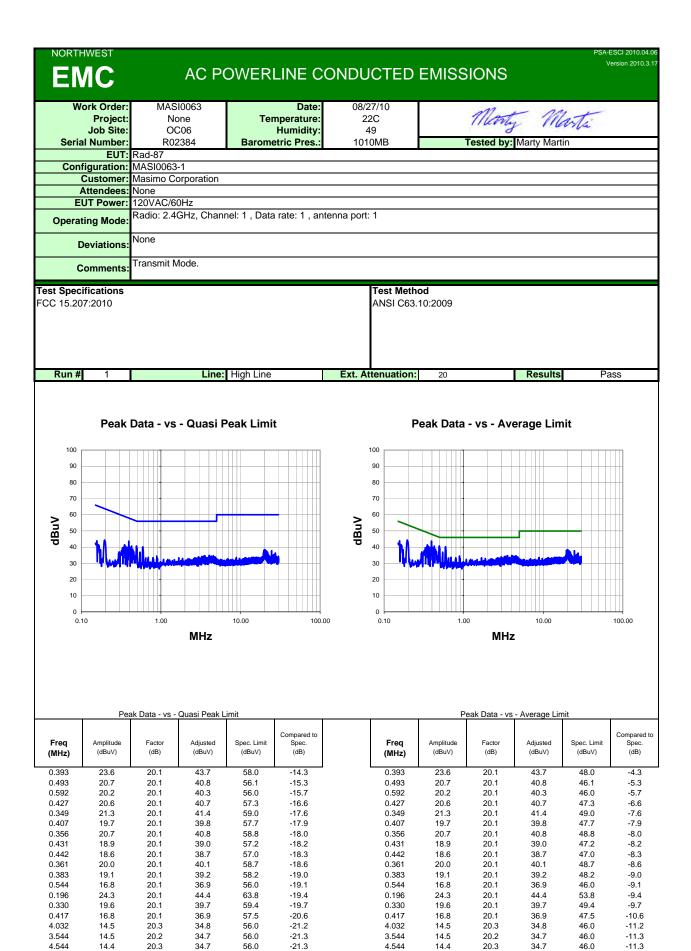
MEASUREMENT BANDWIDTHS											
Freque	ncy Range	Peak Data	Quasi-Peak Data	Average Data							
1)	MHz)	(kHz)	(kHz)	(kHz)							
0.01	I - 0.15	1.0	0.2	0.2							
0.15	5 - 30.0	10.0	9.0	9.0							
30.0	- 1000	100.0	120.0	120.0							
Abov	ve 1000	1000.0	N/A	1000.0							
Measuremen	Measurements were made using the bandwidths and detectors specified. No video filter was used.										

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

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



0.886

16.9

14.4

21.6

20.1

38.5

34.5

60.0

56.0

-21.5

-21.5

20.200

0.886

16.9

14.4

21.6

20.1

38.5

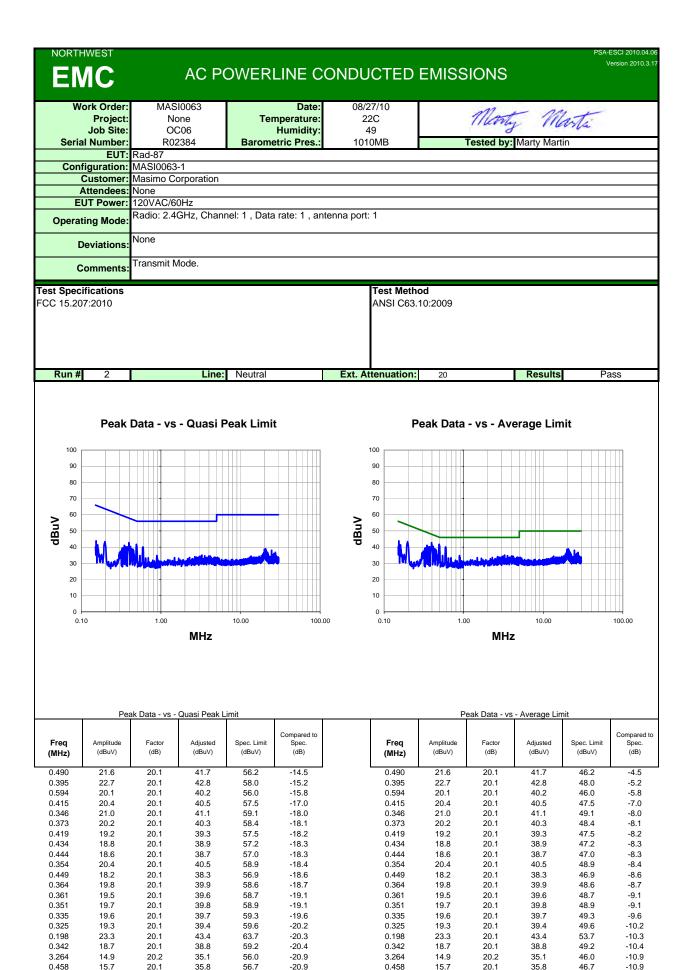
34.5

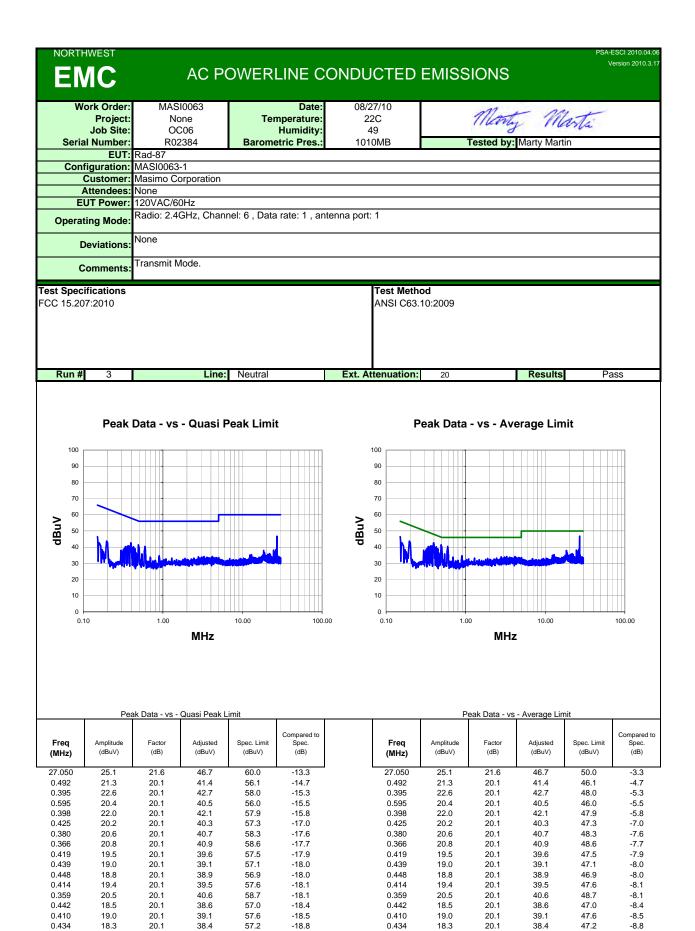
50.0

46.0

-11.5

-11.5





0.354

0.150

0.196

20.3

19.8

26.4

23.6

20.1

20.1

20.1

20.1

40.4

39.9

46.5

43.7

58.9

66.0

63.8

-18.8

-19.0

-19.5

-20.1

0.339

0.354

0.150

0.196

20.3

19.8

26.4

23.6

20.1

20.1

20.1

20.1

40.4

39.9

46.5

43.7

49.2

48.9

56.0

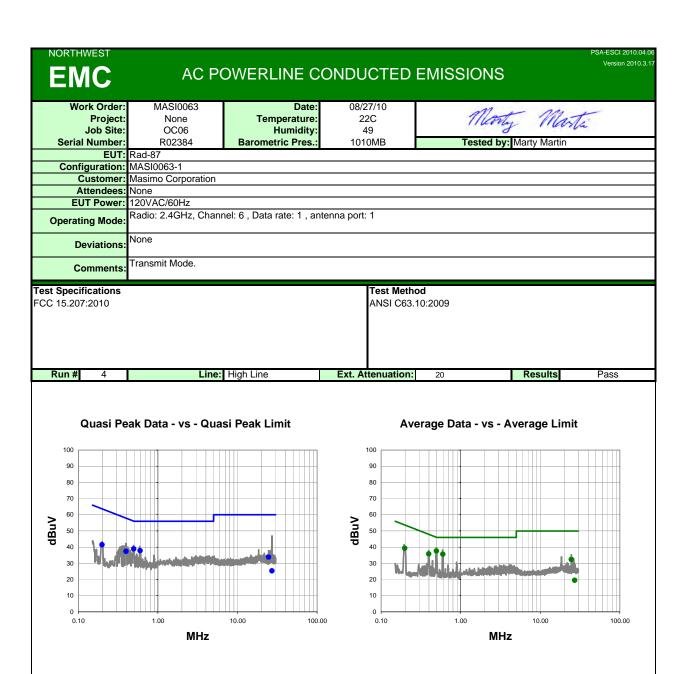
53.8

-8.8

-9.0

-9.5

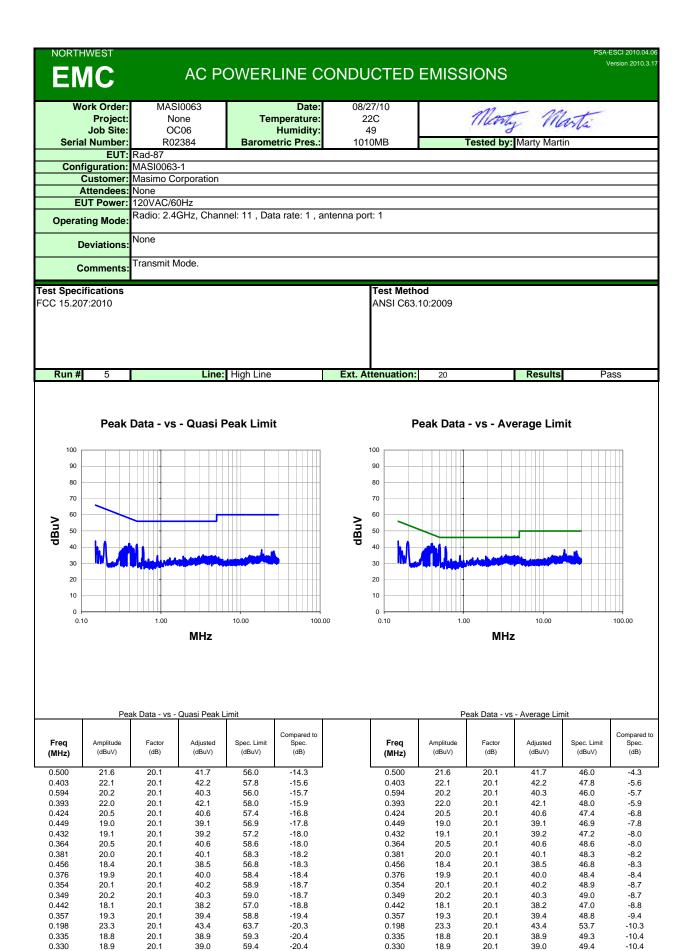
-10.1



Quasi Peak Data - vs - Quasi Peak Limit

Average	Data - vs -	Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)	Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.497	18.8	20.1	38.9	56.0	-17.1	0.497	17.5	20.1	37.6	46.0	-8.4
0.598	17.7	20.1	37.8	56.0	-18.2	0.598	15.5	20.1	35.6	46.0	-10.4
0.397	17.3	20.1	37.4	57.9	-20.5	0.397	15.7	20.1	35.8	47.9	-12.1
0.198	21.3	20.1	41.4	63.7	-22.3	0.198	19.2	20.1	39.3	53.7	-14.4
24.576	12.2	21.6	33.8	60.0	-26.2	24.576	10.7	21.6	32.3	50.0	-17.7
27.052	3.7	21.6	25.3	60.0	-34.7	27.052	-2.1	21.6	19.5	50.0	-30.5



3.384

15.7

15.0

20.1

20.2

35.8

35.2

56.5

56.0

-20.7

-20.8

0.470

3.384

15.7

15.0

20.1

20.2

35.8

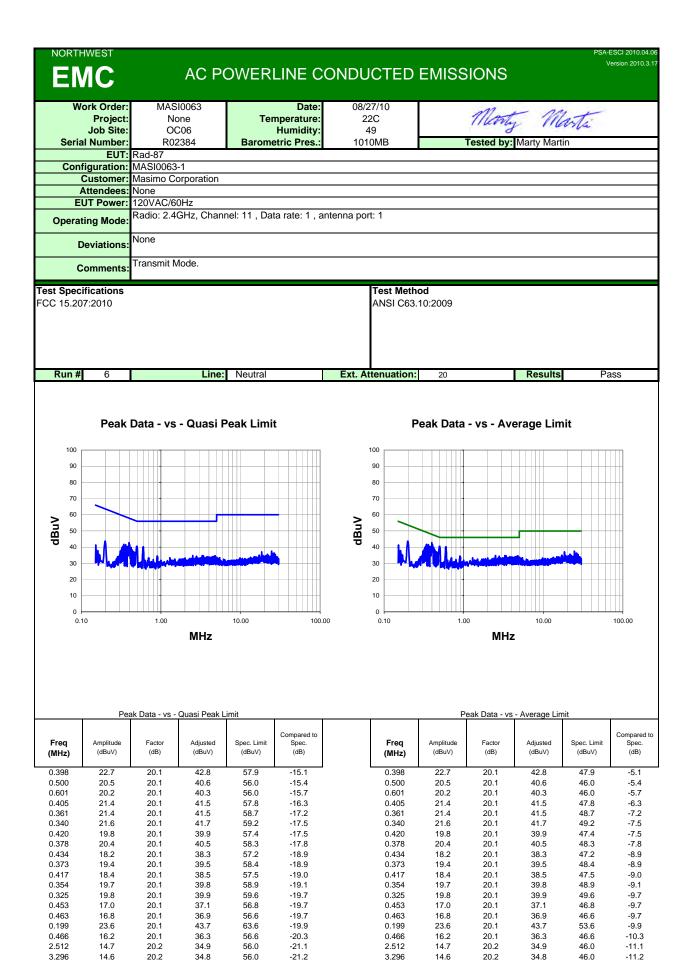
35.2

46.5

46.0

-10.7

-10.8



14.5

20.2

34.7

56.0

-21.3

3.408

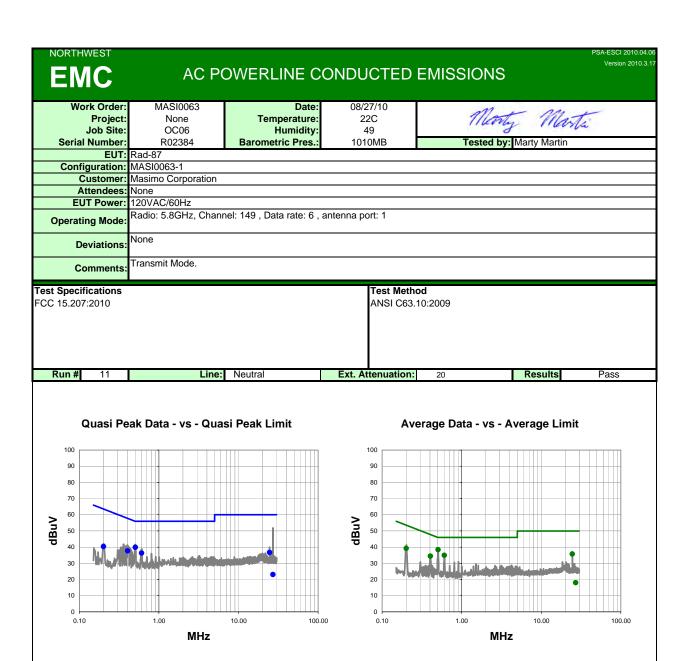
14.5

20.2

34.7

46.0

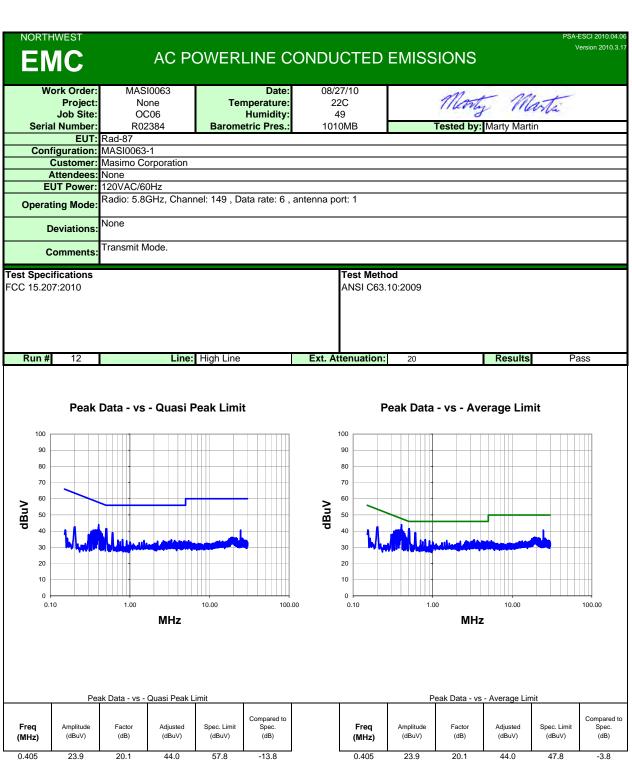
-11.3



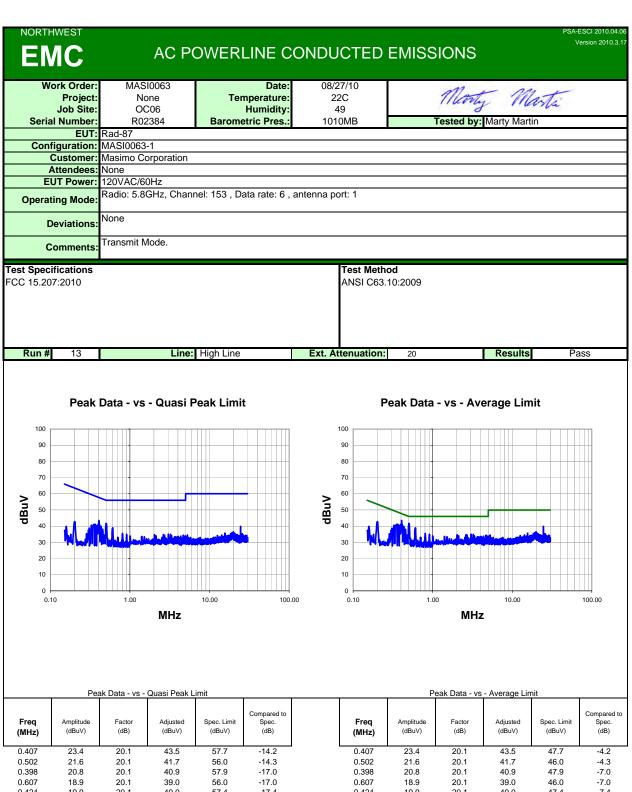
Quasi Peak Data - vs - Quasi Peak Limit

Average	Data - vs -	Average Limit

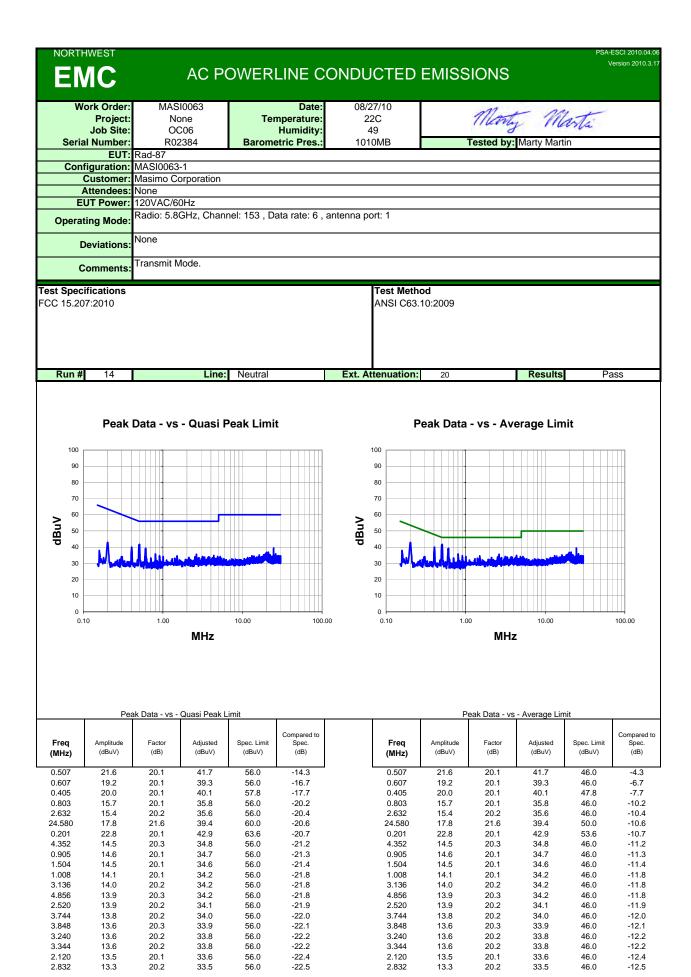
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)	Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.505	19.8	20.1	39.9	56.0	-16.1	 0.505	18.3	20.1	38.4	46.0	-7.6
0.606	16.2	20.1	36.3	56.0	-19.7	0.606	14.8	20.1	34.9	46.0	-11.1
0.405	17.6	20.1	37.7	57.8	-20.1	0.405	14.3	20.1	34.4	47.8	-13.4
0.201	20.3	20.1	40.4	63.6	-23.2	24.576	14.1	21.6	35.7	50.0	-14.3
24.576	15.1	21.6	36.7	60.0	-23.3	0.201	19.1	20.1	39.2	53.6	-14.4
27.052	1.4	21.6	23.0	60.0	-37.0	27.052	-3.6	21.6	18.0	50.0	-32.0

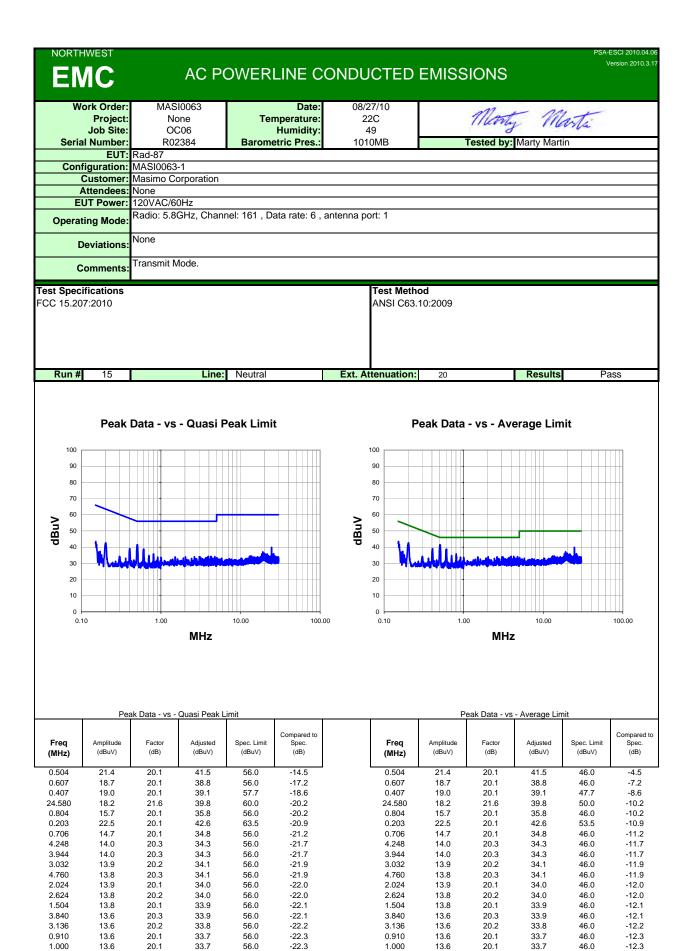


i ear bata - vs - Quasi i ear Einiit							r ear bata - vs - Average Limit					
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)		Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.405	23.9	20.1	44.0	57.8	-13.8		0.405	23.9	20.1	44.0	47.8	-3.8
0.502	21.4	20.1	41.5	56.0	-14.5		0.502	21.4	20.1	41.5	46.0	-4.5
0.412	20.7	20.1	40.8	57.6	-16.8		0.412	20.7	20.1	40.8	47.6	-6.8
0.599	18.9	20.1	39.0	56.0	-17.0		0.599	18.9	20.1	39.0	46.0	-7.0
0.388	20.7	20.1	40.8	58.1	-17.3		0.388	20.7	20.1	40.8	48.1	-7.3
0.429	19.7	20.1	39.8	57.3	-17.5		0.429	19.7	20.1	39.8	47.3	-7.5
0.371	20.7	20.1	40.8	58.5	-17.7		0.371	20.7	20.1	40.8	48.5	-7.7
0.357	20.5	20.1	40.6	58.8	-18.2		0.357	20.5	20.1	40.6	48.8	-8.2
0.381	19.8	20.1	39.9	58.3	-18.4		0.381	19.8	20.1	39.9	48.3	-8.4
0.346	20.6	20.1	40.7	59.1	-18.4		0.346	20.6	20.1	40.7	49.1	-8.4
0.444	18.4	20.1	38.5	57.0	-18.5		0.444	18.4	20.1	38.5	47.0	-8.5
0.395	19.2	20.1	39.3	58.0	-18.7		0.395	19.2	20.1	39.3	48.0	-8.7
0.391	19.2	20.1	39.3	58.0	-18.7		0.391	19.2	20.1	39.3	48.0	-8.7
24.580	19.0	21.6	40.6	60.0	-19.4		24.580	19.0	21.6	40.6	50.0	-9.4
0.449	17.3	20.1	37.4	56.9	-19.5		0.449	17.3	20.1	37.4	46.9	-9.5
0.325	19.9	20.1	40.0	59.6	-19.6		0.325	19.9	20.1	40.0	49.6	-9.6
0.466	16.0	20.1	36.1	56.6	-20.5		0.466	16.0	20.1	36.1	46.6	-10.5
0.203	22.6	20.1	42.7	63.5	-20.8		0.203	22.6	20.1	42.7	53.5	-10.8
0.470	15.2	20.1	35.3	56.5	-21.2		0.470	15.2	20.1	35.3	46.5	-11.2
0.803	14.6	20.1	34.7	56.0	-21.3		0.803	14.6	20.1	34.7	46.0	-11.3



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)		Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.407	23.4	20.1	43.5	57.7	-14.2	-	0.407	23.4	20.1	43.5	47.7	-4.2
0.502	21.6	20.1	41.7	56.0	-14.3		0.502	21.6	20.1	41.7	46.0	-4.3
0.398	20.8	20.1	40.9	57.9	-17.0		0.398	20.8	20.1	40.9	47.9	-7.0
0.607	18.9	20.1	39.0	56.0	-17.0		0.607	18.9	20.1	39.0	46.0	-7.0
0.424	19.9	20.1	40.0	57.4	-17.4		0.424	19.9	20.1	40.0	47.4	-7.4
0.434	19.7	20.1	39.8	57.2	-17.4		0.434	19.7	20.1	39.8	47.2	-7.4
0.366	21.0	20.1	41.1	58.6	-17.5		0.366	21.0	20.1	41.1	48.6	-7.5
0.386	20.5	20.1	40.6	58.1	-17.5		0.386	20.5	20.1	40.6	48.1	-7.5
0.351	20.9	20.1	41.0	58.9	-17.9		0.351	20.9	20.1	41.0	48.9	-7.9
0.374	20.1	20.1	40.2	58.4	-18.2		0.374	20.1	20.1	40.2	48.4	-8.2
0.454	18.0	20.1	38.1	56.8	-18.7		0.454	18.0	20.1	38.1	46.8	-8.7
0.327	20.5	20.1	40.6	59.5	-18.9		0.327	20.5	20.1	40.6	49.5	-8.9
24.580	18.2	21.6	39.8	60.0	-20.2		24.580	18.2	21.6	39.8	50.0	-10.2
0.806	15.4	20.1	35.5	56.0	-20.5		0.806	15.4	20.1	35.5	46.0	-10.5
0.203	22.7	20.1	42.8	63.5	-20.7		0.203	22.7	20.1	42.8	53.5	-10.7
3.032	14.8	20.2	35.0	56.0	-21.0		3.032	14.8	20.2	35.0	46.0	-11.0
3.232	14.7	20.2	34.9	56.0	-21.1		3.232	14.7	20.2	34.9	46.0	-11.1
0.910	14.7	20.1	34.8	56.0	-21.2		0.910	14.7	20.1	34.8	46.0	-11.2
2.632	14.6	20.2	34.8	56.0	-21.2		2.632	14.6	20.2	34.8	46.0	-11.2
0.308	18.7	20.1	38.8	60.0	-21.2		0.308	18.7	20.1	38.8	50.0	-11.2





0.152

13.4

23.4

20.3

20.1

33.7

43.5

56.0

65.9

-22.3

-22.4

4.728

0.152

13.4

23.4

20.3

20.1

33.7

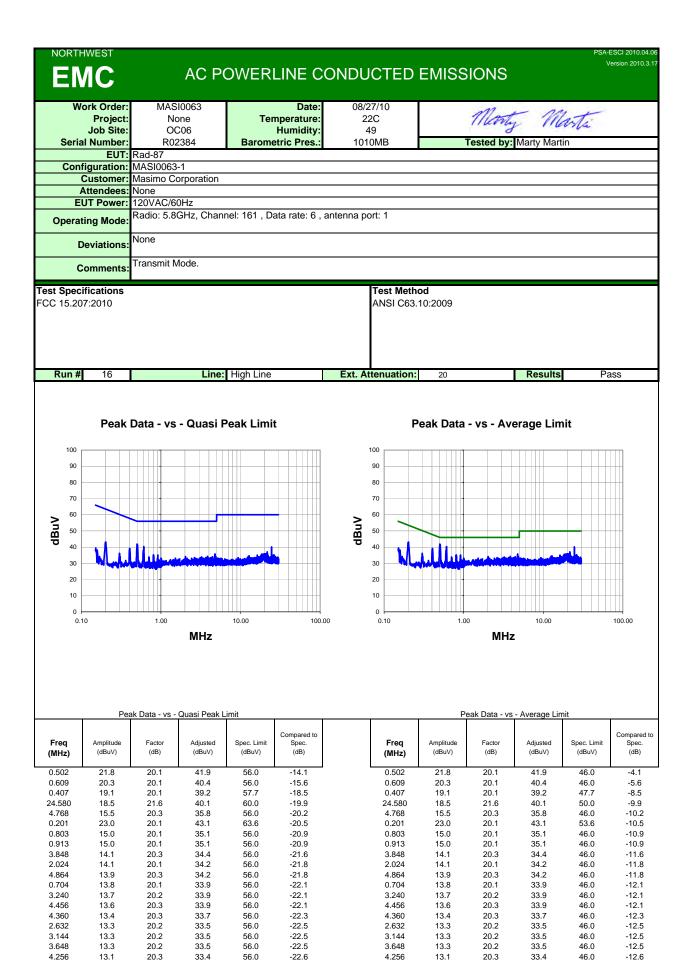
43.5

46.0

55.9

-12.3

-12.4



13.1

20.2

33.3

56.0

-22.7

3.744

13.1

20.2

33.3

46.0

-12.7