

Rex Plastics

Audio Fox

Report No. REXP0001

Report Prepared By



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

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EMC Test Report

Certificate of Test

Last Date of Test: September 15, 2010
Rex Plastics
Model: Audio Fox

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Channel Spacing	FCC 15.247:2010	ANSI C63.10:2009	Pass
Dwell Time	FCC 15.247:2010	ANSI C63.10:2009	Pass
Number of Hopping Frequencies	FCC 15.247:2010	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2010	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2010	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2010	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2010	ANSI C63.10:2009	Pass
Radiated Output Power	FCC 15.247:2010	ANSI C63.10:2009	Pass
AC Powerline Conducted Emissions	FCC 15.207:2010	ANSI C63.10:2009	Pass
AC Powerline Conducted Emissions	FCC 15.107:2010 Class B	ANSI C63.4:2003	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.
9349 W Broadway Ave.
Brooklyn Park, MN 55445

Phone: (763) 425-2281 Fax: (763) 424-3469

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834E-1).

Approved By:



Don Fecteau, IS Manager



NVLAP Lab Code: 200881-0

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

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

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

FCC

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



NVLAP

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



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

Industry Canada

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



CAB

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



NEMKO

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



Australia/New Zealand

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



VCCI

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



BSMI

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



GOST

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



KCC

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



VIETNAM

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



SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>



Northwest EMC Locations



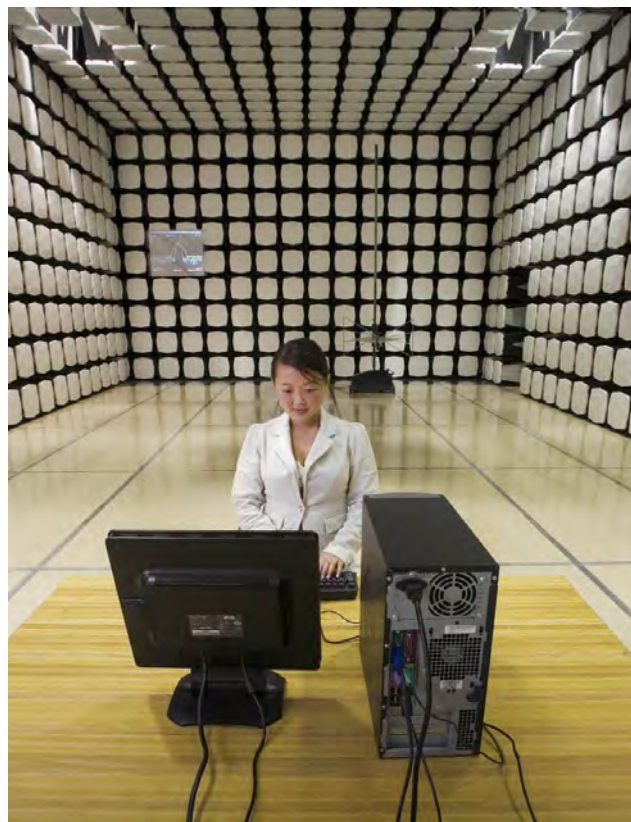
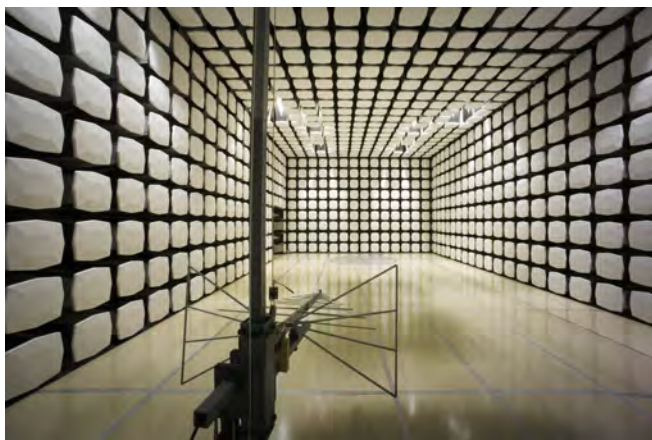
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

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

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

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

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



Party Requesting the Test

Company Name:	Rex Plastics
Address:	12515 NE 95th St
City, State, Zip:	Vancouver, WA 98682
Test Requested By:	Rich Clark
Model:	Audio Fox
First Date of Test:	September 10, 2010
Last Date of Test:	September 15, 2010
Receipt Date of Samples:	August 20, 2010
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test
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Functional Description of the EUT (Equipment Under Test):
2.4 GHz ISM radio

Testing Objective:
Seeking approval by a TCB under FCC 15.247.

CONFIGURATION 1 REXP0001

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Audio Fox Tx Device	Rex Plastics	IA2	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Brick	Rex Plastics	FE 4126 120D060	None
IA2 Development Tool	Ascendtek	None	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Lenovo	7417TPU	L3-A9994 08/09
Laptop Brick	Lenovo	PA-1650-17I	11S92P1160Z1ZBGH88WJHE
DC Power Supply	EZ	GP-4303D	0907005

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.1m	No	Power Brick	AC Mains
AC Power Laptop	No	0.97 m	No	Laptop Brick	AC Mains
DC Power	No	2.10 m	No	Audio Fox Tx Module	Power Brick
DC Power Laptop	No	1.80 m	Yes	Laptop	Laptop Brick
Serial Cable	Yes	12.2m	No	IA2 Development Tool	Laptop
DC Power	No	1.50 m	No	IA2 Development Tool	DC Power Supply
AC Power	No	1.80 m	No	DC Power Supply	AC Mains
4 Wires	No	0.14 m	No	Audio Fox Tx Module	IA2 Development Tool
RCA	No	1.80 m	No	Audio Fox Tx Module	Unterminated
Coax - BNC	Yes	0.90 m	No	Audio Fox Tx Module	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	9/10/2010	Radiated Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	9/10/2010	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	9/10/2010	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	9/13/2010	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	9/13/2010	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	9/14/2010	Channel Spacing	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	9/14/2010	Dwell Time	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	9/14/2010	Number of Hopping Frequencies	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	9/15/2010	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	7/19/2010	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The channel carrier frequencies in the 2400-2483.5MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Or, if the output power is less than 125 mW, the channel separation can be 25 kHz or 2/3 of the 20dB bandwidth. The EUT was operated in pseudorandom hopping mode. The spectrum was scanned across two adjacent peaks. The separation between the peaks of these channels was measured.

EMC

Channel Spacing

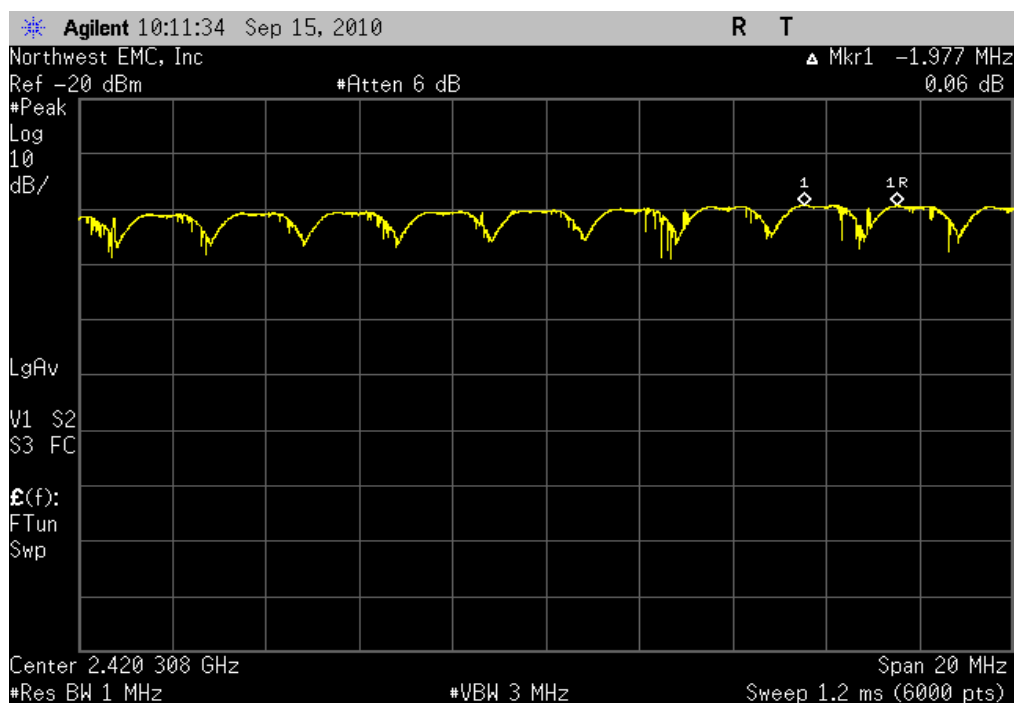
EUT: Audio Fox		Work Order: REXP0001	
Serial Number: None		Date: 09/14/10	
Customer: Rex Plastics		Temperature: 23.68°C	
Attendees: None		Humidity: 44%	
Project: None		Barometric Pres.: 1020.8	
Tested by: Trevor Buls		Power: 120VAC/60Hz	Job Site: MN05
TEST SPECIFICATIONS			
FCC 15.247:2010		Test Method	
		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
No Deviations			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
Group 1		1.977 MHz	> 1 MHz
Group 2		2.010 MHz	> 1 MHz
Group 3		1.997 MHz	> 1 MHz
Group 4		2.044 MHz	> 1 MHz
			Results
			Pass
			Pass
			Pass
			Pass

Group 1

Result: Pass

Value: 1.977 MHz

Limit: > 1 MHz

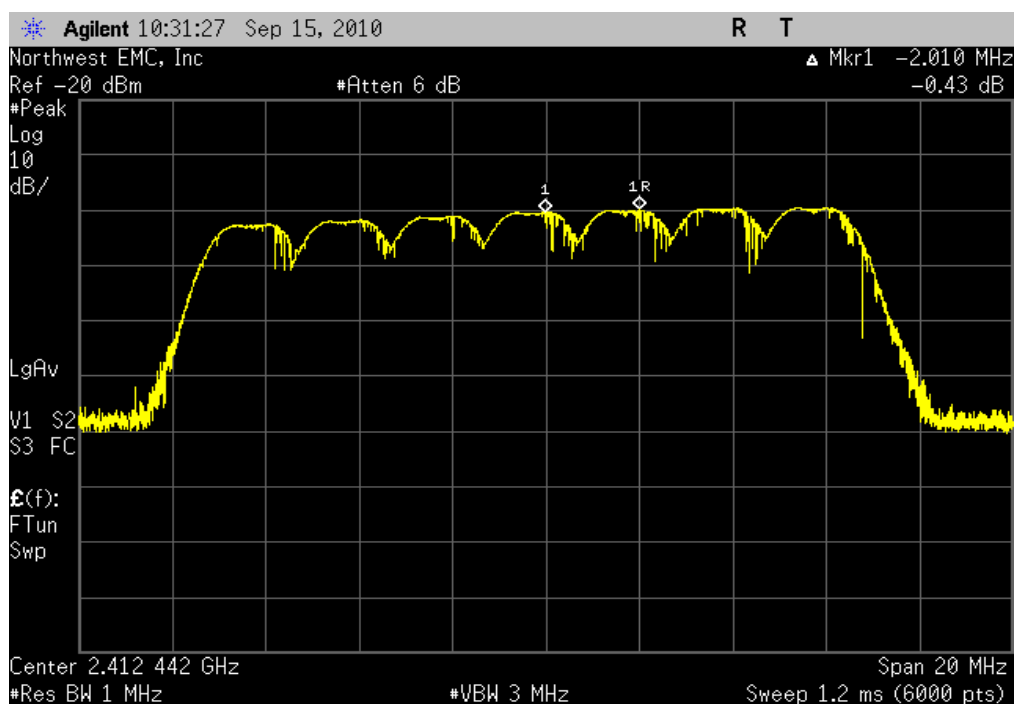


Group 2

Result: Pass

Value: 2.010 MHz

Limit: > 1 MHz

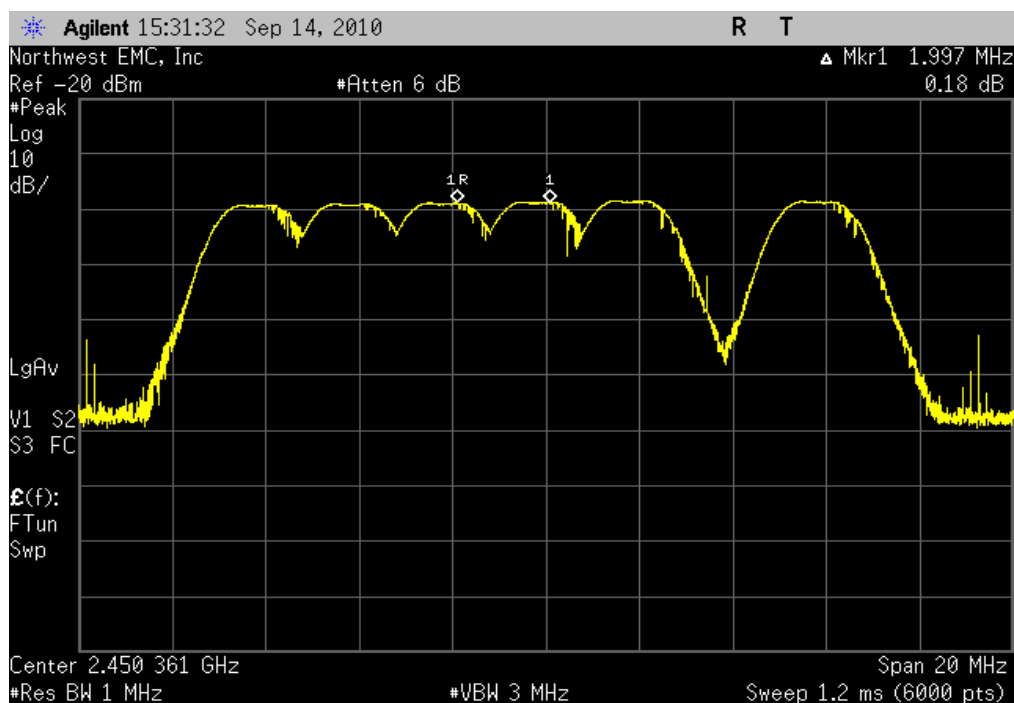


Group 3

Result: Pass

Value: 1.997 MHz

Limit: > 1 MHz

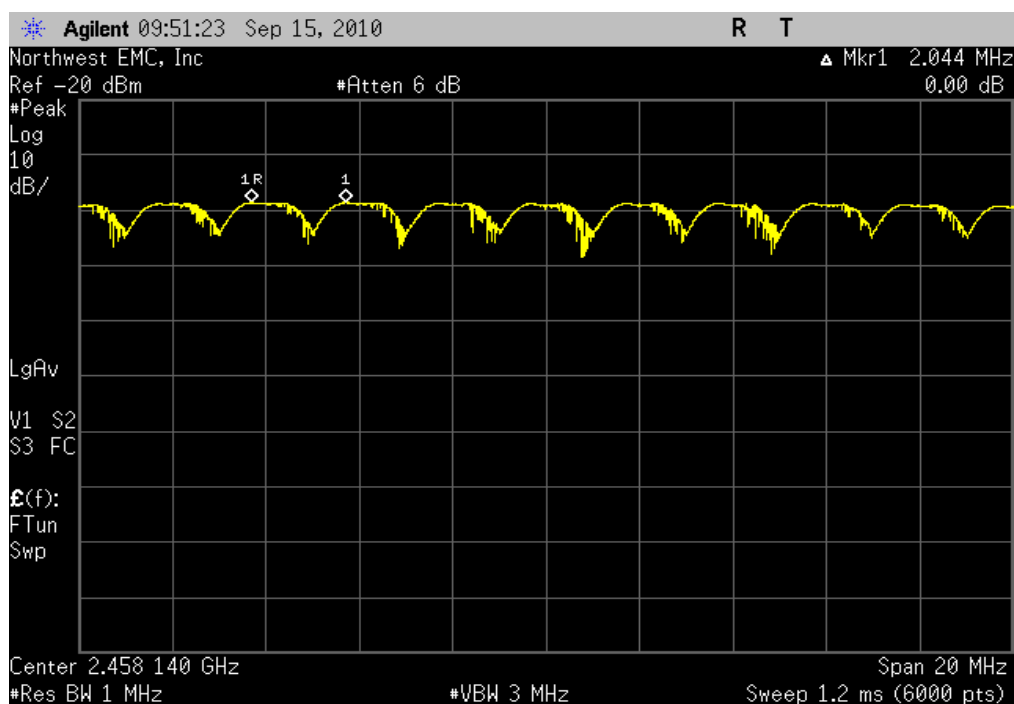


Group 4

Result: Pass

Value: 2.044 MHz

Limit: > 1 MHz



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cab	MNI	7/19/2010	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier fully maximized for its highest radiated power. The hopping function of the EUT was enabled.

EMC

DWELL TIME

EUT:	Audio Fox	Work Order:	REXP0001
Serial Number:	None	Date:	09/14/10
Customer:	Rex Plastics	Temperature:	23.68°C
Attendees:	None	Humidity:	44%
Project:	None	Barometric Pres.:	1020.8
Tested by:	Trevor Buls	Power:	120VAC/60Hz
		Job Site:	MN05

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

COMMENTS
Normal Hopping mode.

DEVIATIONS FROM TEST STANDARD
No Deviations

Configuration #	1	Signature	Trevor Buls
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		Value	Limit	Results
Group 1	Pulse Width	3.698 ms	See Below	Pass
	Period	57.51 ms	See Below	Pass
	600 ms Sweep	11 Pulses in 600 ms	See Below	Pass
	6 s Sweep	105 Pulses in 6 sec	See Below	Pass
Group 2	Pulse Width	3.698 ms	See Below	Pass
	Period	57.51 ms	See Below	Pass
	600 ms Sweep	11 Pulses in 600 ms	See Below	Pass
	6 s Sweep	105 Pulses in 6 sec	See Below	Pass
Group 3	Pulse Width	3.681 ms	See Below	Pass
	Period	57.5 ms	See Below	Pass
	600 ms Sweep	11 Pulses in 600 ms	See Below	Pass
	6 s Sweep	105 Pulses in 6 sec	See Below	Pass
Group 4	Pulse Width	3.698 ms	See Below	Pass
	Period	57.51 ms	See Below	Pass
	600 ms Sweep	11 Pulses in 600 ms	See Below	Pass
	6 s Sweep	105 Pulses in 6 sec	See Below	Pass

Requirement: The total dwell time shall not exceed 400 ms in 6 seconds.
(6 s = 15 channels * 0.4)

Measured:

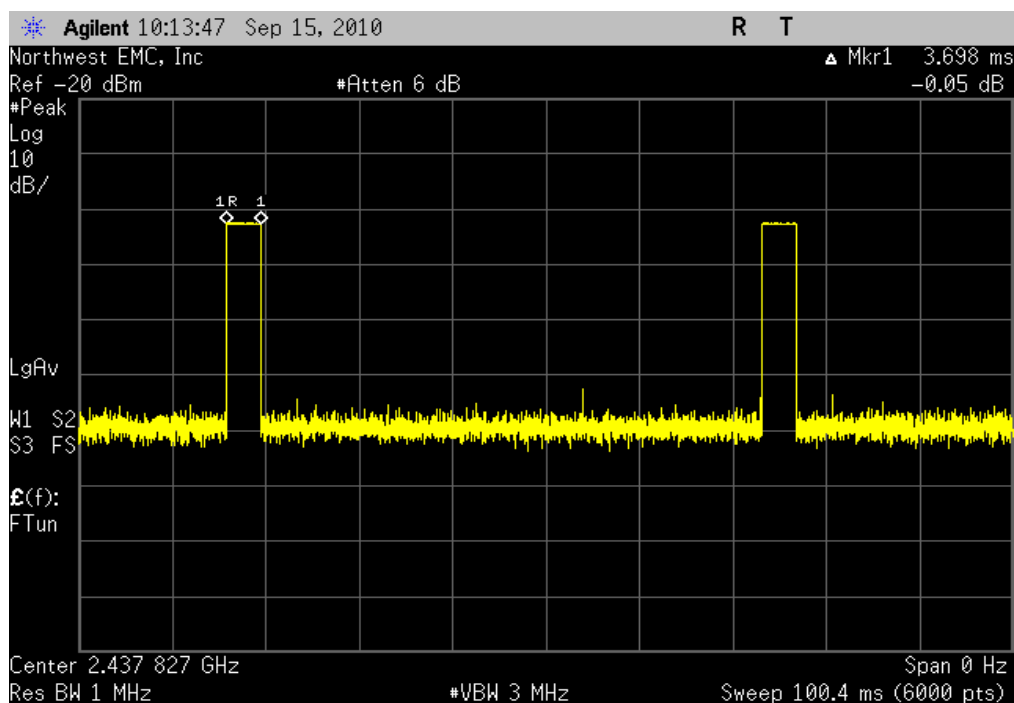
Group 1 388.29 ms
Group 2 388.29 ms
Group 3 386.51 ms
Group 4 388.29 ms

Group 1, Pulse Width

Result: Pass

Value: 3.698 ms

Limit: See Below

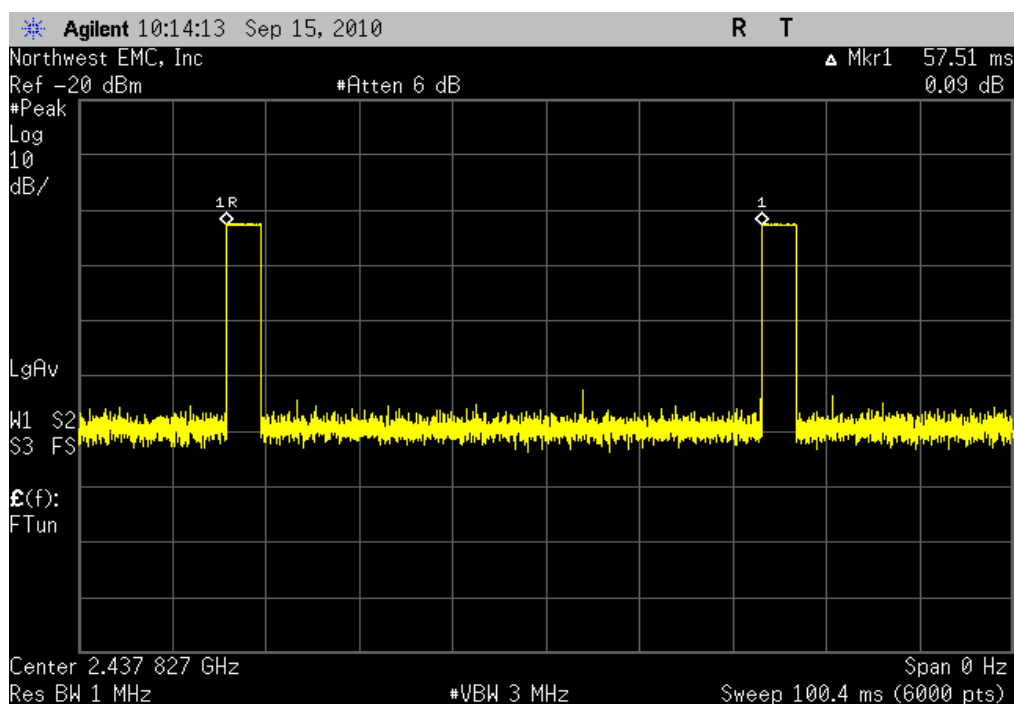


Group 1, Period

Result: Pass

Value: 57.51 ms

Limit: See Below

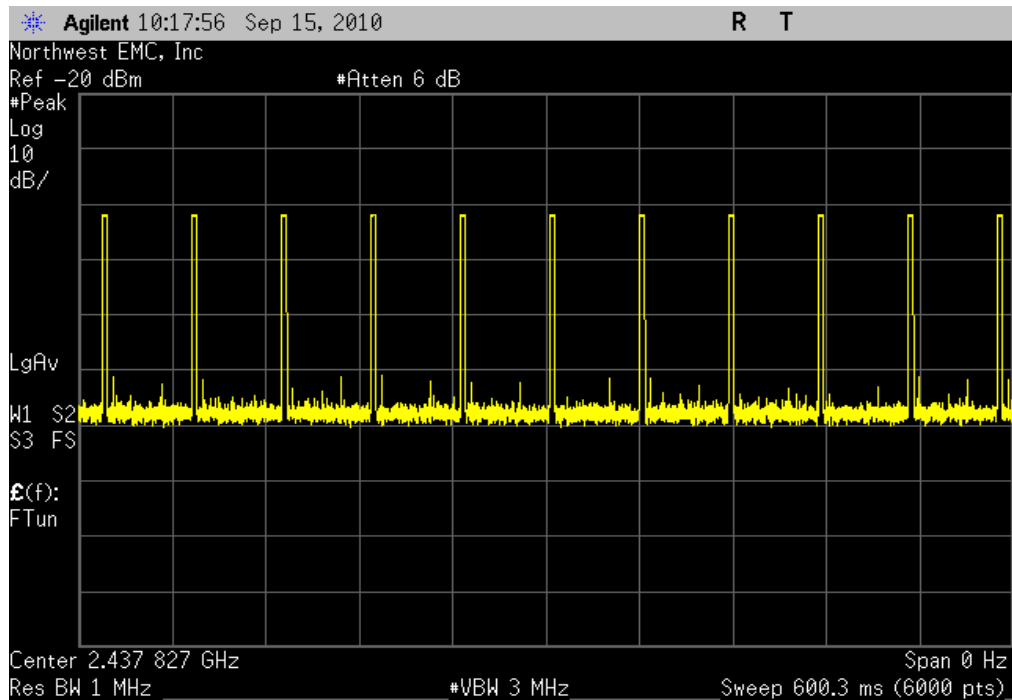


Group 1, 600 ms Sweep

Result: Pass

Value: 11 Pulses in 600 ms

Limit: See Below

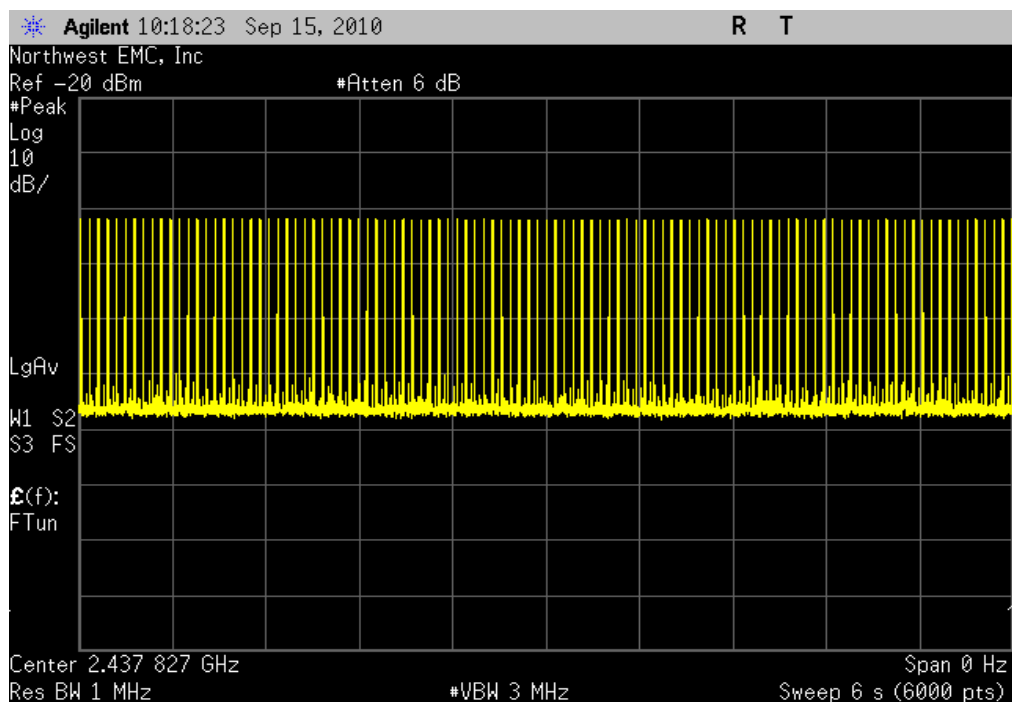


Group 1, 6 s Sweep

Result: Pass

Value: 105 Pulses in 6 sec

Limit: See Below

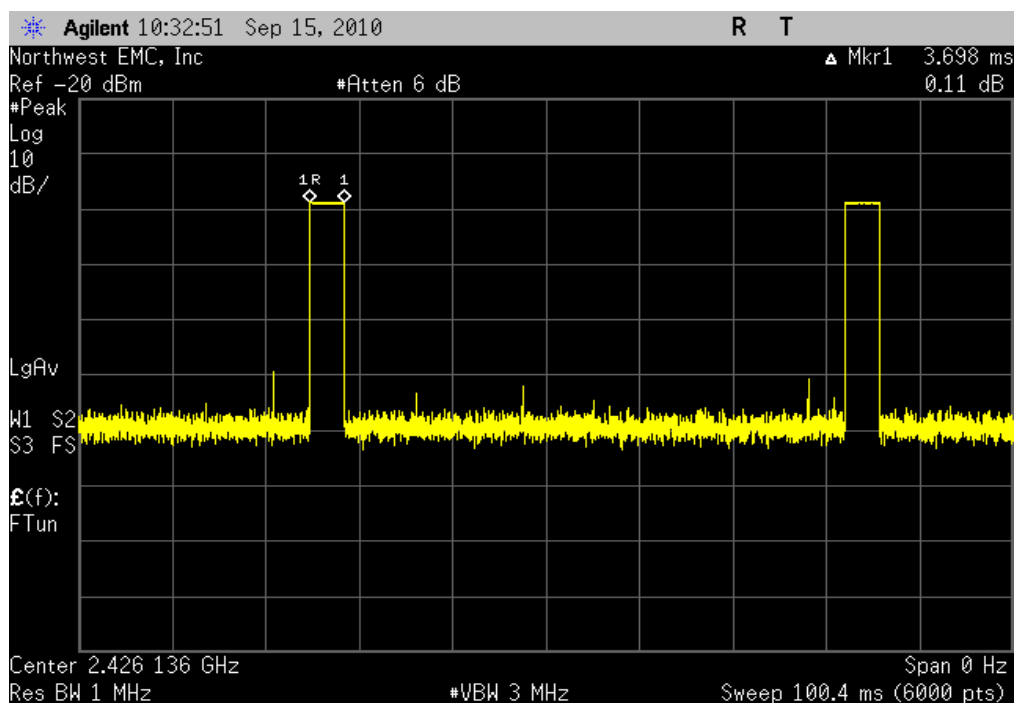


Group 2, Pulse Width

Result: Pass

Value: 3.698 ms

Limit: See Below

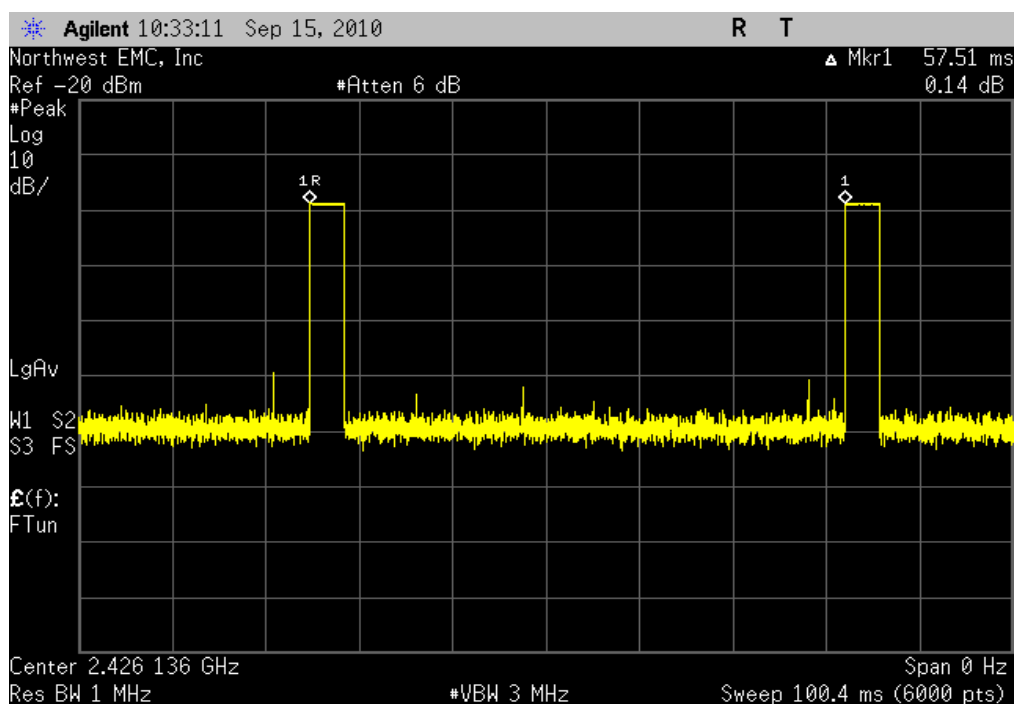


Group 2, Period

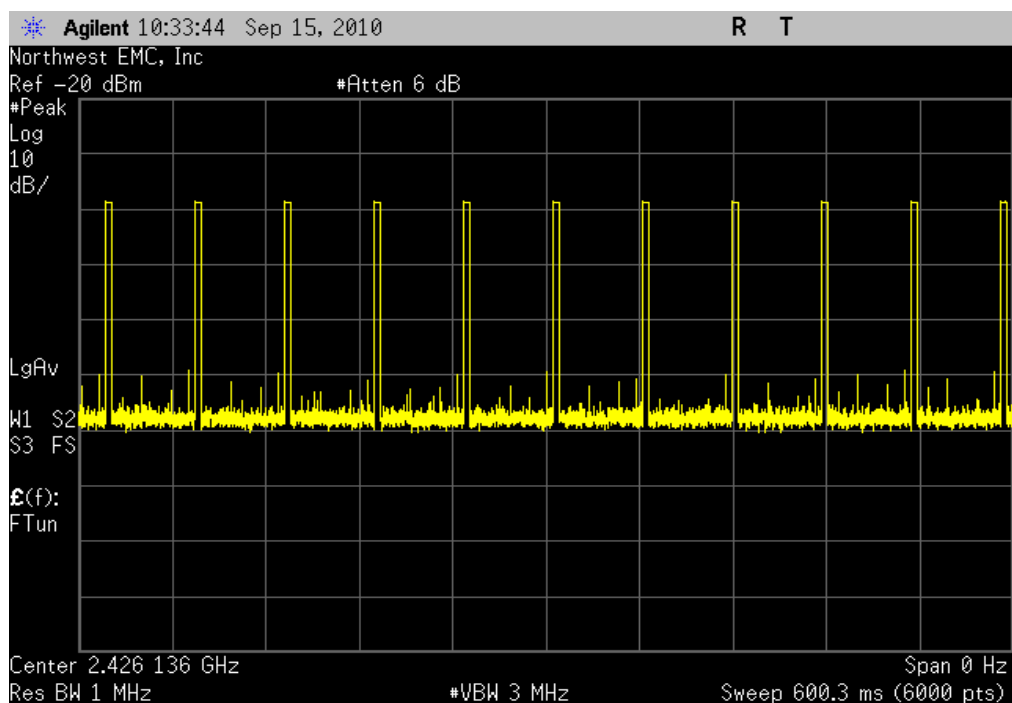
Result: Pass

Value: 57.51 ms

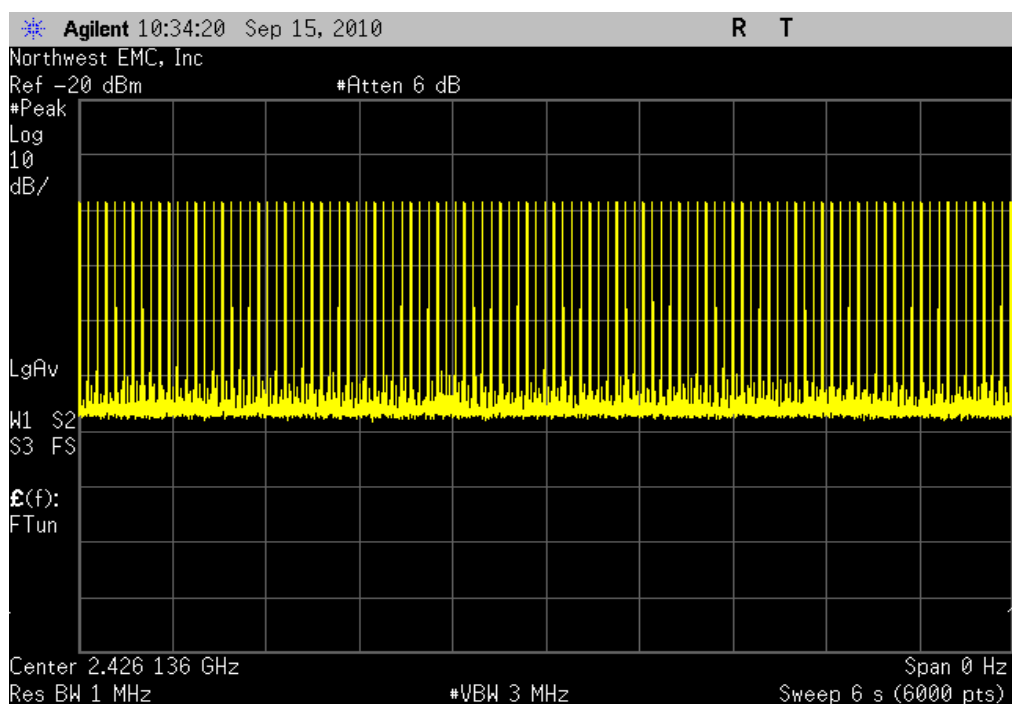
Limit: See Below



Group 2, 600 ms Sweep

Result: Pass**Value:** 11 Pulses in 600 ms**Limit:** See Below

Group 2, 6 s Sweep

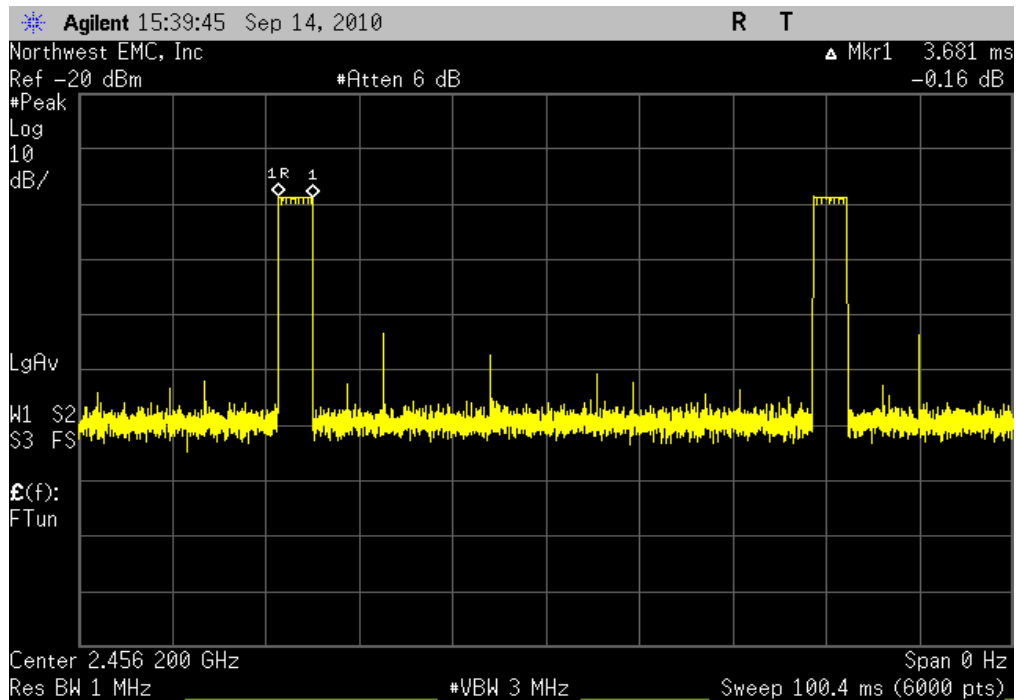
Result: Pass**Value:** 105 Pulses in 6 sec**Limit:** See Below

Group 3, Pulse Width

Result: Pass

Value: 3.681 ms

Limit: See Below

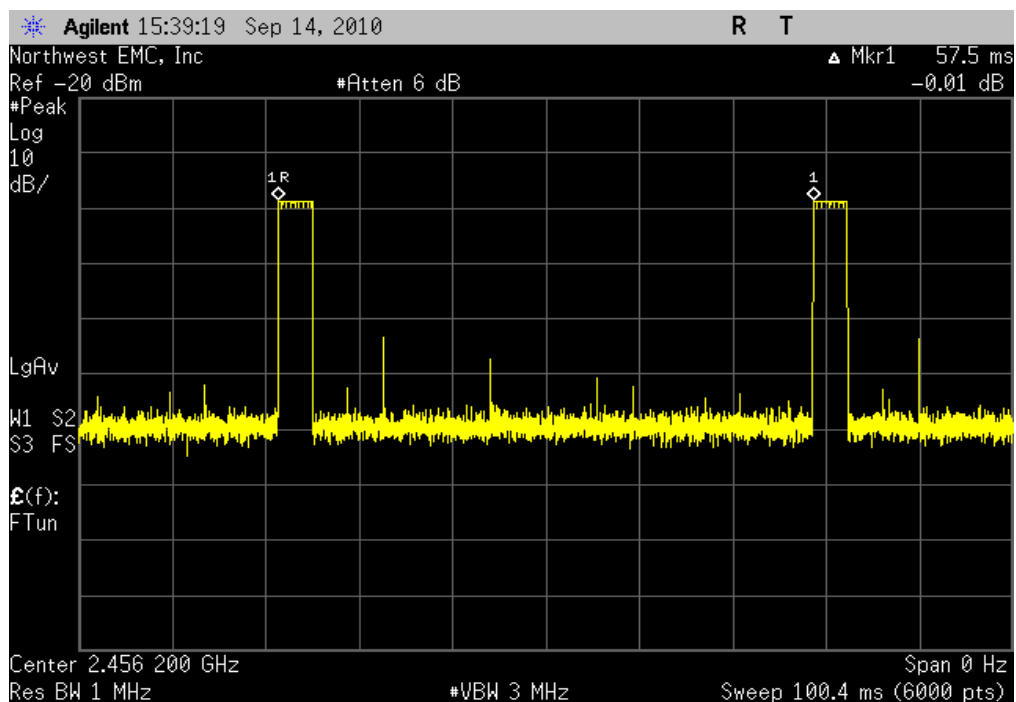


Group 3, Period

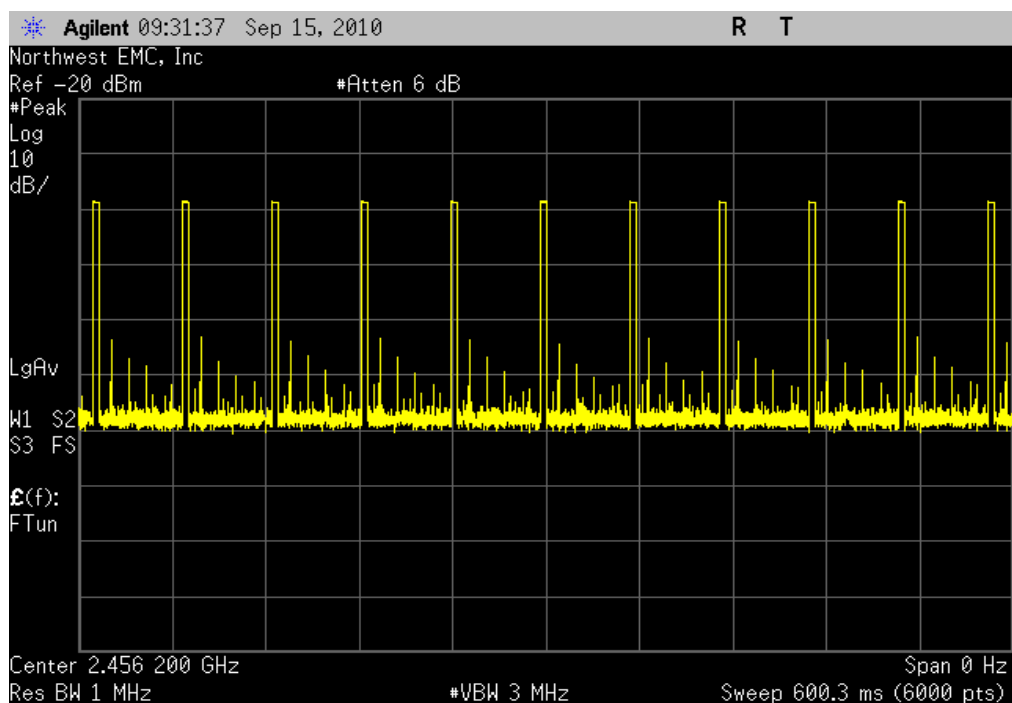
Result: Pass

Value: 57.5 ms

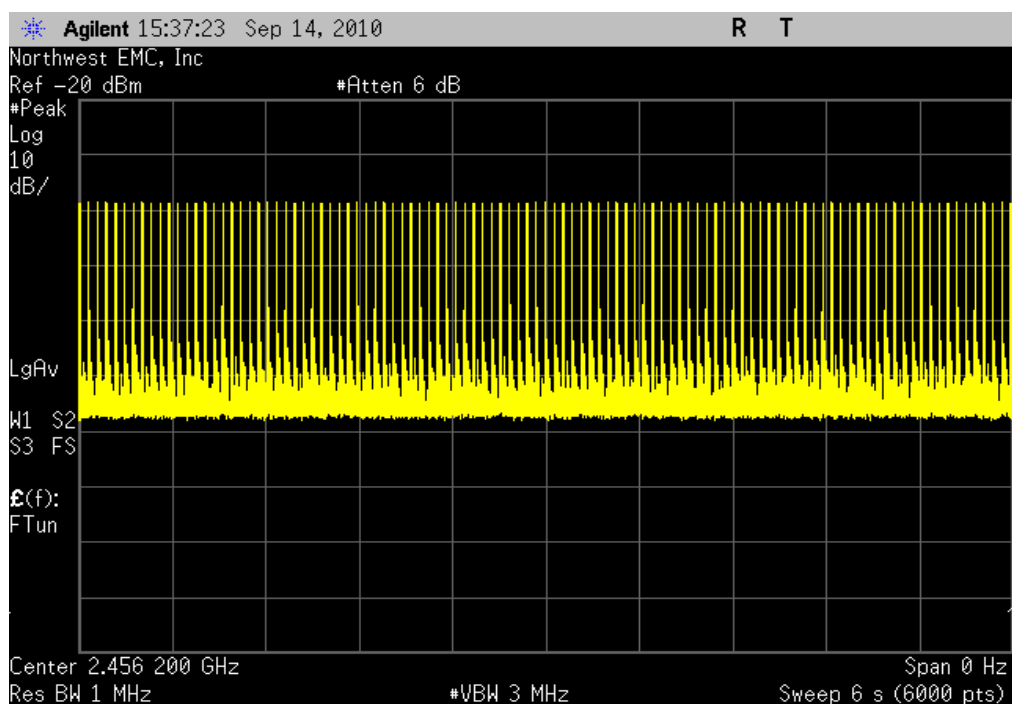
Limit: See Below



Group 3, 600 ms Sweep

Result: Pass**Value:** 11 Pulses in 600 ms**Limit:** See Below

Group 3, 6 s Sweep

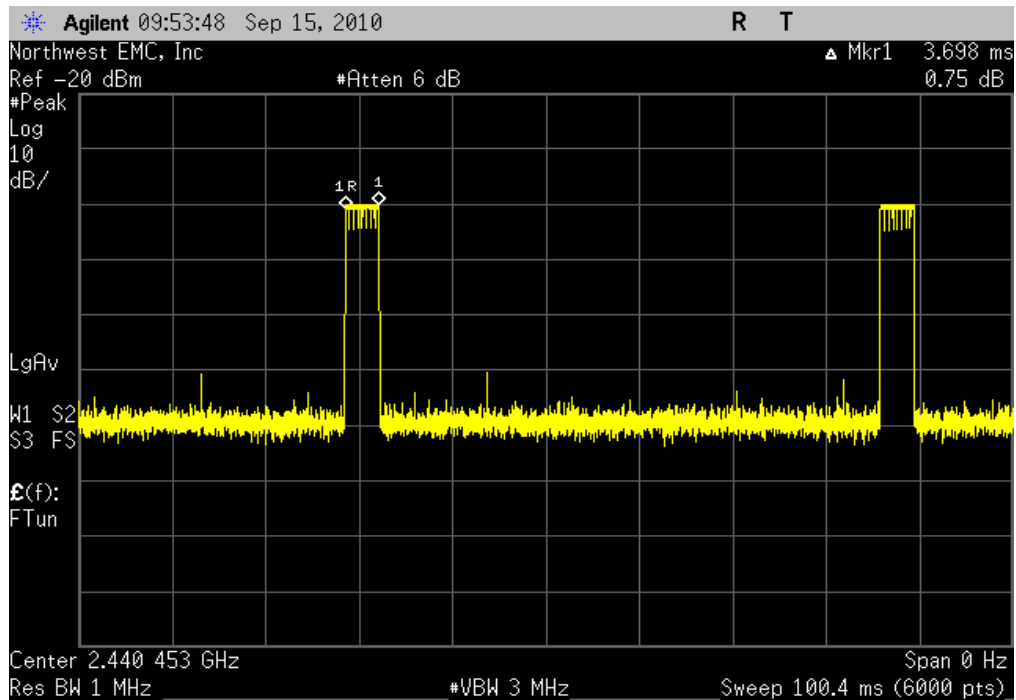
Result: Pass**Value:** 105 Pulses in 6 sec**Limit:** See Below

Group 4, Pulse Width

Result: Pass

Value: 3.698 ms

Limit: See Below

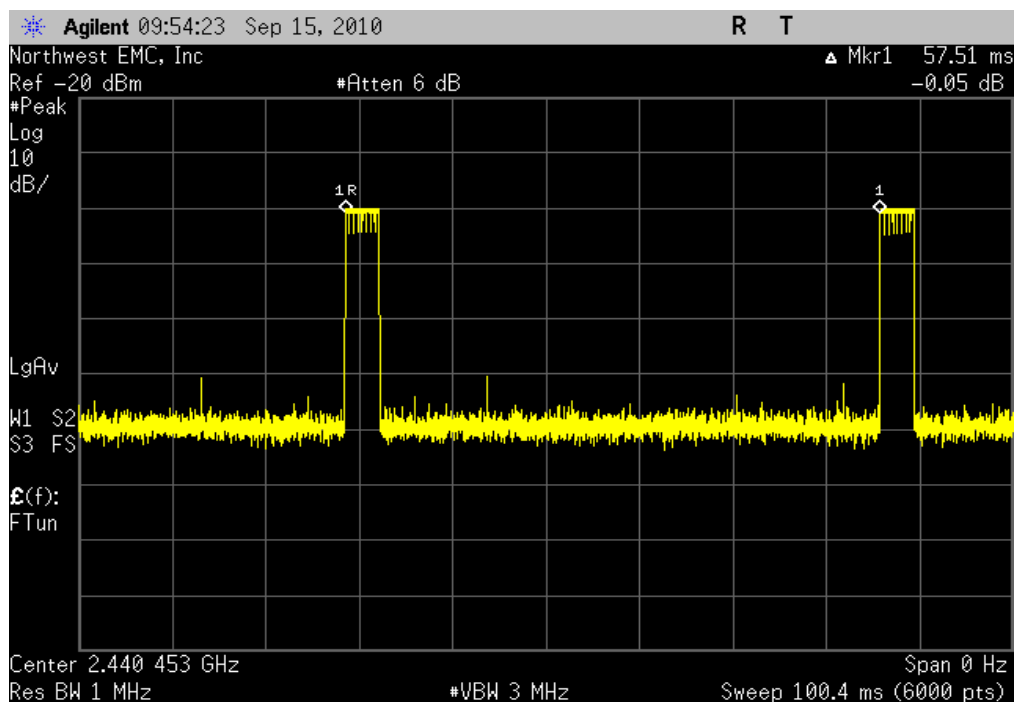


Group 4, Period

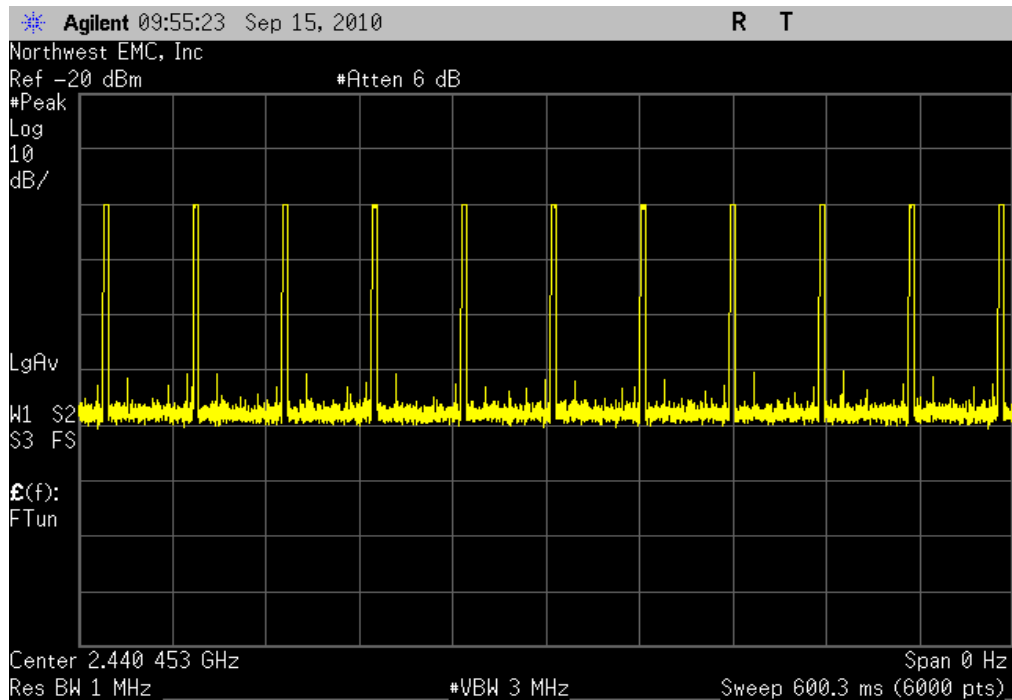
Result: Pass

Value: 57.51 ms

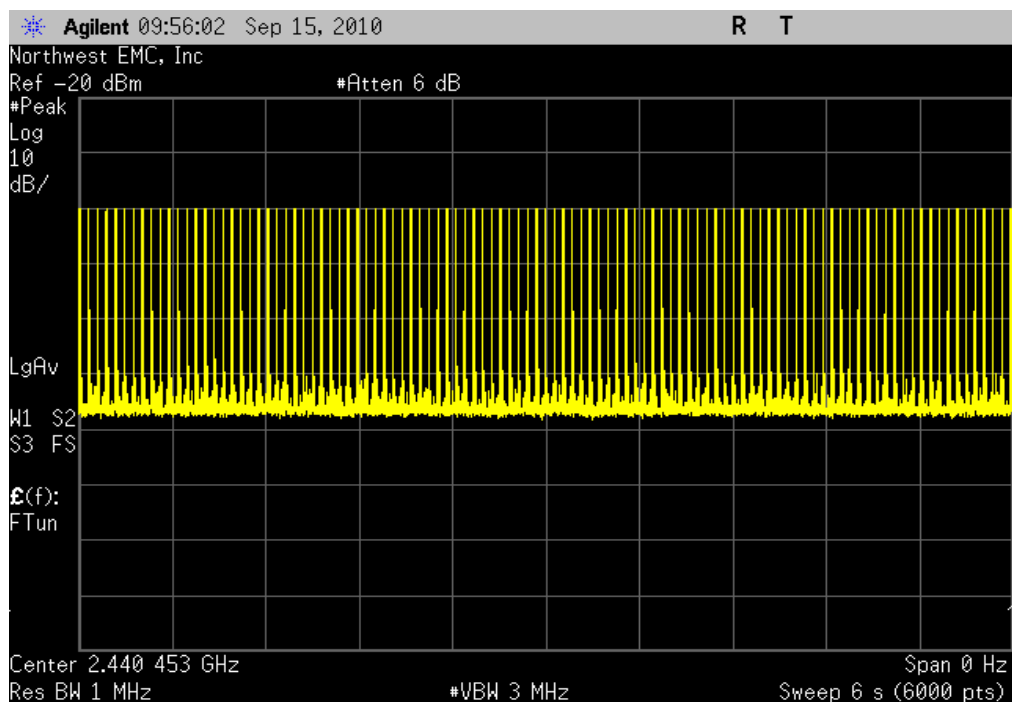
Limit: See Below



Group 4, 600 ms Sweep

Result: Pass**Value:** 11 Pulses in 600 ms**Limit:** See Below

Group 4, 6 s Sweep

Result: Pass**Value:** 105 Pulses in 6 sec**Limit:** See Below

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TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	7/19/2010	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The number of hopping frequencies was measured across the authorized band. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier fully maximized for its highest radiated power. The hopping function of the EUT was enabled.

EMC

Number of Hopping Frequencies

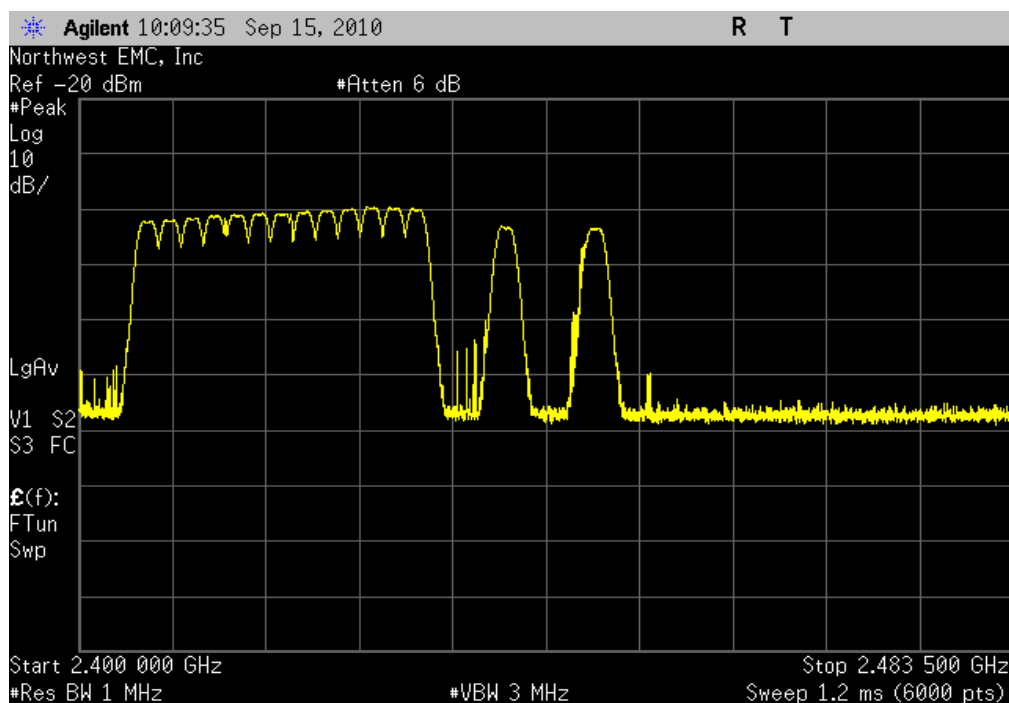
EUT: Audio Fox		Work Order: REXP0001	
Serial Number: None		Date: 09/14/10	
Customer: Rex Plastics		Temperature: 23.68°C	
Attendees: None		Humidity: 44%	
Project: None		Barometric Pres.: 1020.8	
Tested by: Trevor Buls		Power: 120VAC/60Hz	Job Site: MN05
TEST SPECIFICATIONS			
FCC 15.247:2010		Test Method ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
No Deviations			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
Group 1		15 Frequencies	≥ 15 Frequencies
Group 2		15 Frequencies	≥ 15 Frequencies
Group 3		15 Frequencies	≥ 15 Frequencies
Group 4		15 Frequencies	≥ 15 Frequencies
			Results
			Pass
			Pass
			Pass
			Pass

Number of Hopping Frequencies

Group 1

Result: Pass

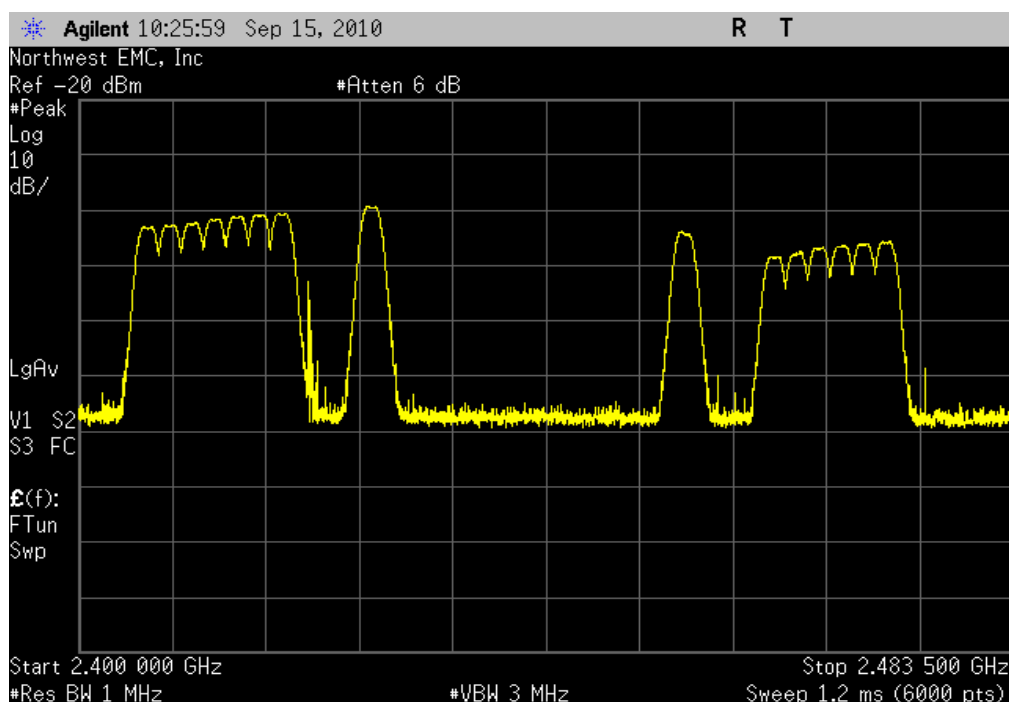
Value: 15 Frequencies

Limit: ≥ 15 Frequencies

Group 2

Result: Pass

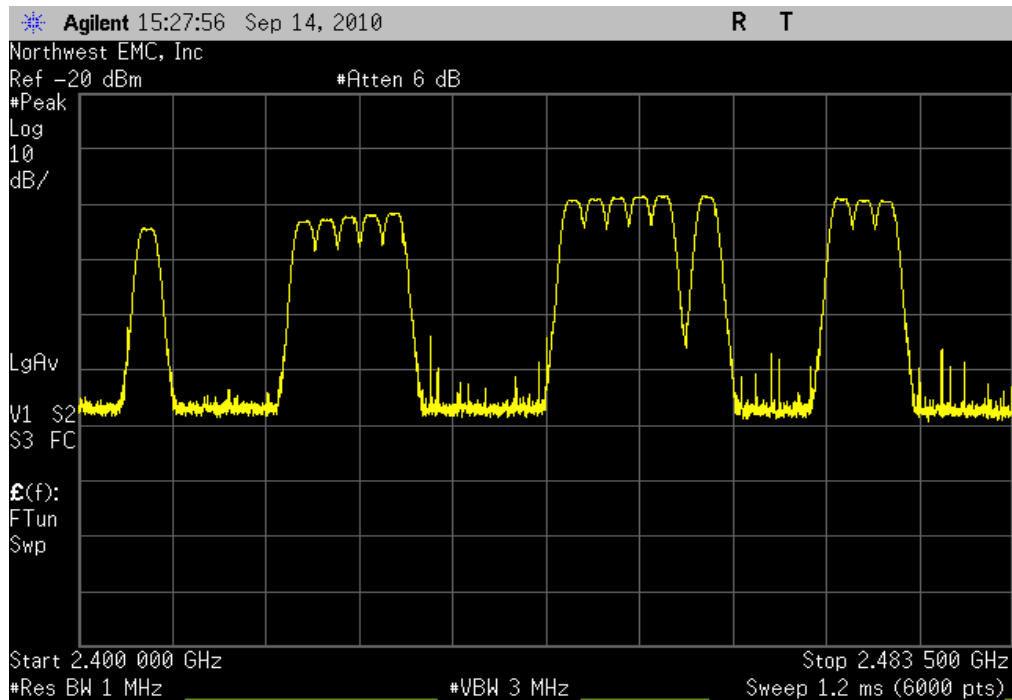
Value: 15 Frequencies

Limit: ≥ 15 Frequencies

Group 3

Result: Pass

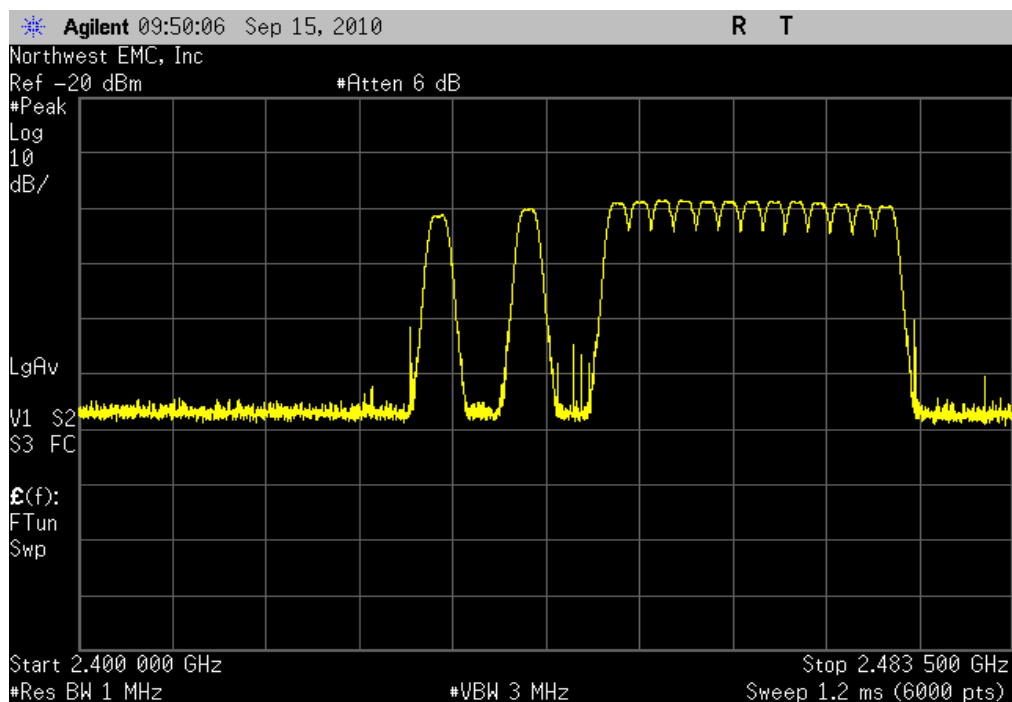
Value: 15 Frequencies

Limit: ≥ 15 Frequencies

Group 4

Result: Pass

Value: 15 Frequencies

Limit: ≥ 15 Frequencies

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	7/19/2010	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier fully maximized for its highest radiated power. The EUT was transmitting at its maximum data rate in a no hop mode.

EMC

OCCUPIED BANDWIDTH

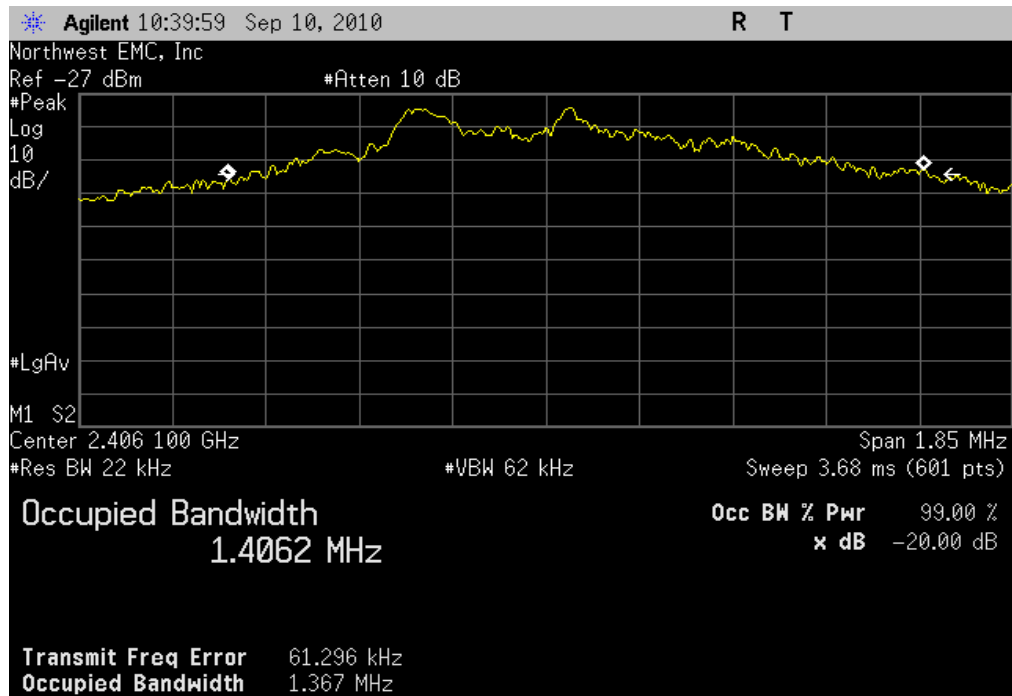
EUT: Audio Fox		Work Order: REXP0001	
Serial Number: None		Date: 09/10/10	
Customer: Rex Plastics		Temperature: 22.32°C	
Attendees: None		Humidity: 51%	
Project: None		Barometric Pres.: 1013.5	
Tested by: Trevor Buls		Power: 120VAC/60Hz	Job Site: MN05
TEST SPECIFICATIONS			
FCC 15.247:2010		Test Method ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
No Deviations			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
Low Channel		1.367 Mhz	3 MHz
Mid Channel		1.318 Mhz	3 MHz
High Channel		1.363 Mhz	3 MHz
			Results
			Pass
			Pass
			Pass

Low Channel

Result: Pass

Value: 1.367 Mhz

Limit: 3 MHz

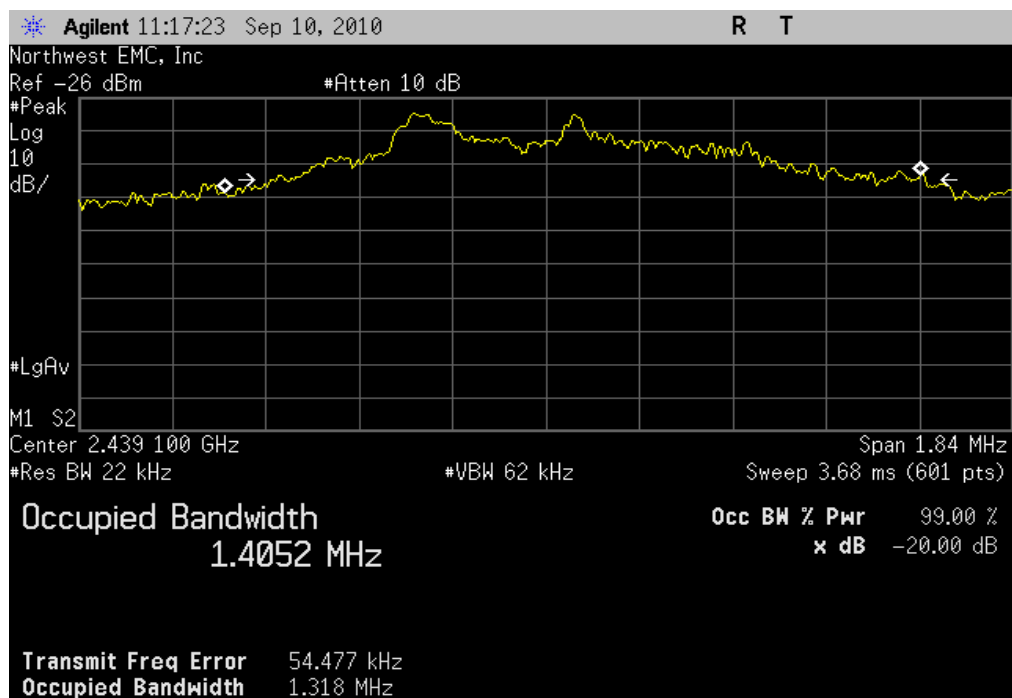


Mid Channel

Result: Pass

Value: 1.318 Mhz

Limit: 3 MHz

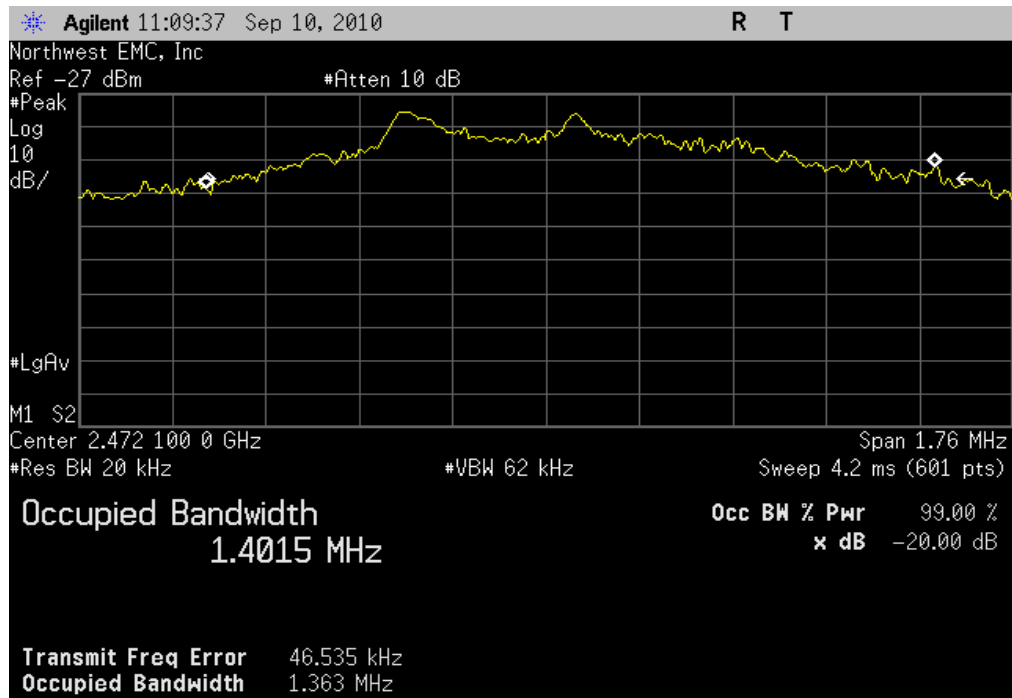


High Channel

Result: Pass

Value: 1.363 Mhz

Limit: 3 MHz



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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	7/19/2010	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier fully maximized for its highest radiated power. The EUT was transmitting at its maximum data rate in a no hop mode. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 10 MHz below the band edge to 10 MHz above the band edge.

EMC

BAND EDGE COMPLIANCE

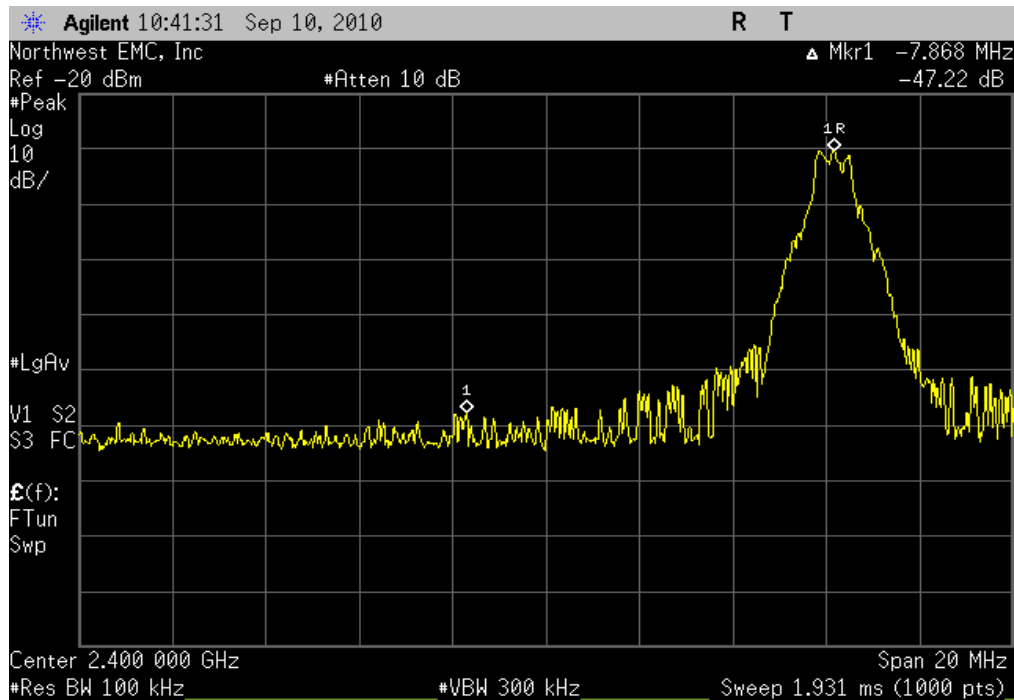
EUT: Audio Fox		Work Order: REXP0001	
Serial Number: None		Date: 09/10/10	
Customer: Rex Plastics		Temperature: 22.32°C	
Attendees: None		Humidity: 51%	
Project: None		Barometric Pres.: 1013.5	
Tested by: Trevor Buls		Power: 120VAC/60Hz	Job Site: MN05
TEST SPECIFICATIONS			
FCC 15.247:2010		Test Method ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
No Deviations			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
Low Channel		-47.22 dBc	-20 dBc
High Channel		-48.89 dBc	-20 dBc
			Results
			Pass
			Pass

Low Channel

Result: Pass

Value: -47.22 dBc

Limit: -20 dBc

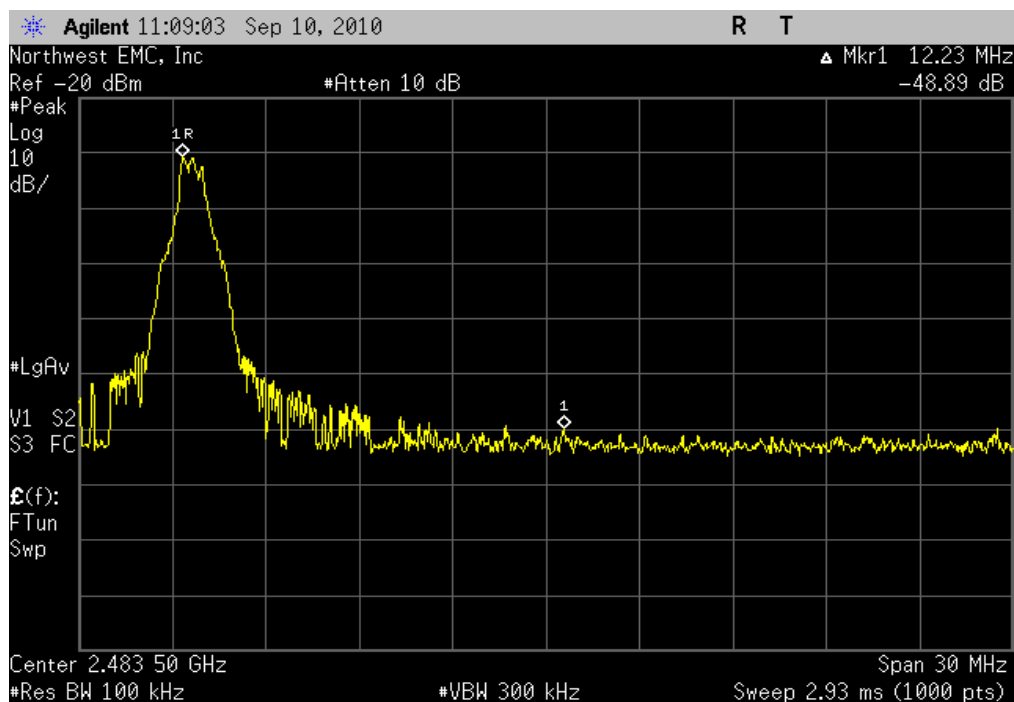


High Channel

Result: Pass

Value: -48.89 dBc

Limit: -20 dBc



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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	7/19/2010	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The peak power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier fully maximized for its highest radiated power. The EUT was transmitting at its maximum data rate for each modulation type available. Per the procedure outlined in FCC KDB 558074, March 23, 2005, the spectrum analyzer was used as follows:

The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 \div 3 \times 10^3 = 500$ seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 35 dB for correction to 3 kHz."

The field strength measurement power spectral density was converted to effective radiated power spectral density (dBm/3kHz) (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 6.

EMC

POWER SPECTRAL DENSITY

EUT:	Audio Fox	Work Order:	REXP0001
Serial Number:	None	Date:	09/13/10
Customer:	Rex Plastics	Temperature:	23.13°C
Attendees:	None	Humidity:	50%
Project:	None	Barometric Pres.:	1019.3
Tested by:	Trevor Buls	Power:	120VAC/60Hz
		Job Site:	MN05

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

COMMENTS
None

DEVIATIONS FROM TEST STANDARD
No Deviations

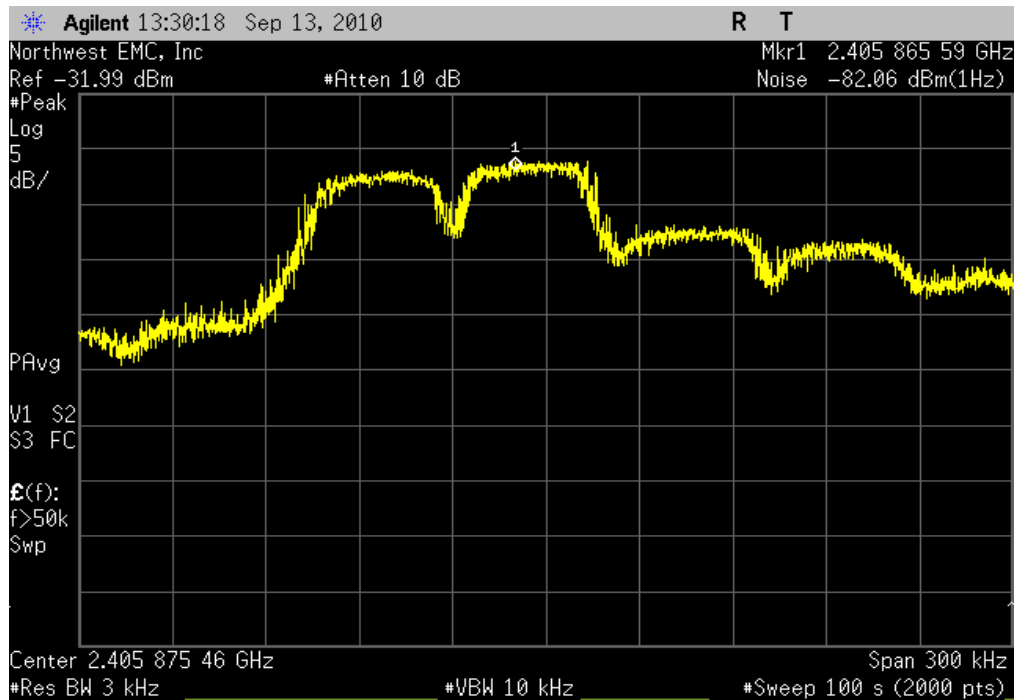
Configuration #	1	Signature	Trevor Buls
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	Reading (dBm/Hz)	Reading (dBm/3kHz)	Factor (dB)	PSD Field Strength (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz) (EIRP)	Limit (dBm/3kHz) (EIRP)	Results
Low Channel	-82.06	-47.06	33.6	-13.46	-1.69	≤ 8 dBm/3 kHz	Pass
Mid Channel	-81.55	-46.55	33.6	-12.95	-1.18	≤ 8 dBm/3 kHz	Pass
High Channel	-82.01	-47.01	33.7	-13.31	-1.54	≤ 8 dBm/3 kHz	Pass

Low Channel

Result: Pass

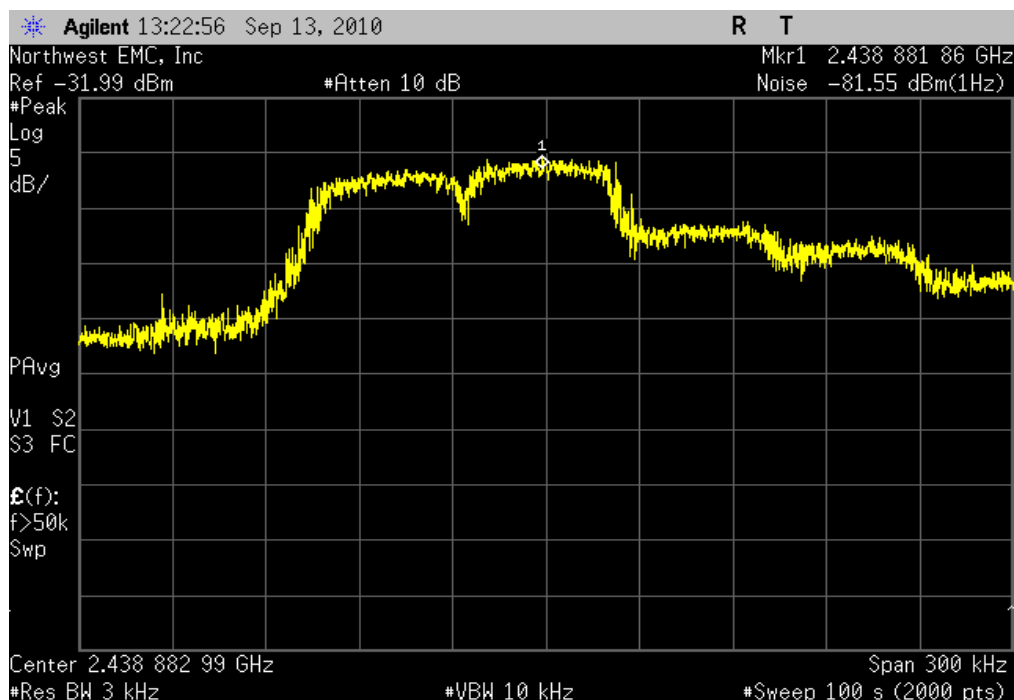
Value: -82.06 dBm/1Hz

Limit: ≤ 8 dBm/3 kHz

Mid Channel

Result: Pass

Value: -81.55 dBm/1Hz

Limit: ≤ 8 dBm/3 kHz

High Channel

Result: Pass

Value: -82.01 dBm/1Hz

Limit: ≤ 8 dBm/3 kHz

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting GFSK -12 dB RF power setting. High Channel 72 - 2472.1 MHz

Transmitting GFSK -12 dB RF power setting. Low Channel 6 - 2406.1 MHz

Transmitting GFSK -12 dB RF power setting. Mid Channel 39 - 2439.1 MHz

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

REXP0001 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	25 GHz
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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
High Pass Filter	Micro-Tronics	HPM50111	HGQ	7/9/2010	13 mo
Low Pass Filter	Micro-Tronics	LPM50004	HGK	7/9/2010	13 mo
Attenuator, 20 dB, 'SMA'	SM Electronics	SA6-20	REO	7/9/2010	13 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	1/27/2010	13 mo
MN05 Cables	N/A	18-26GHz Standard Gain Horn Cable	EVD	1/27/2010	13 mo
Antenna, Horn	ETS	3160-09	AHG	NCR	0 mo
Antenna, Horn	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	7/19/2010	13 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	7/19/2010	13 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/19/2010	13 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	7/19/2010	13 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/19/2010	13 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	7/19/2010	13 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	1/15/2010	13 mo
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	13 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The 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.

A Duty Cycle Correction Factor was added to the Average data: $20 \cdot \log((3.71 \cdot 2)/100\text{ms}) = 22.6$

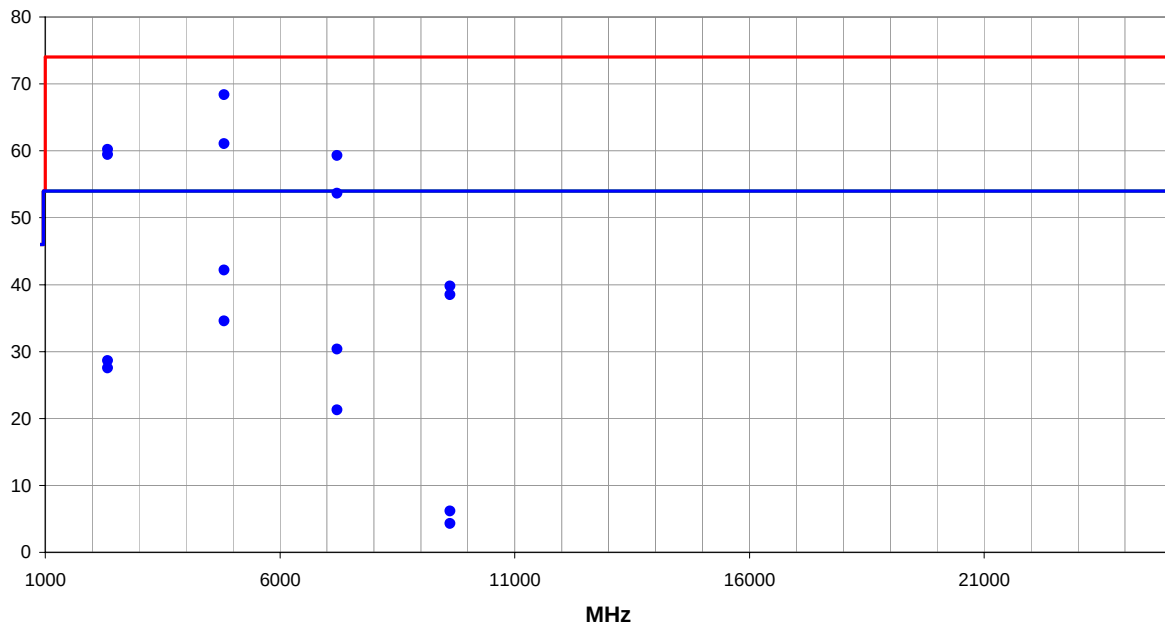
EMC

Spurious Radiated Emissions

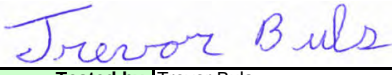
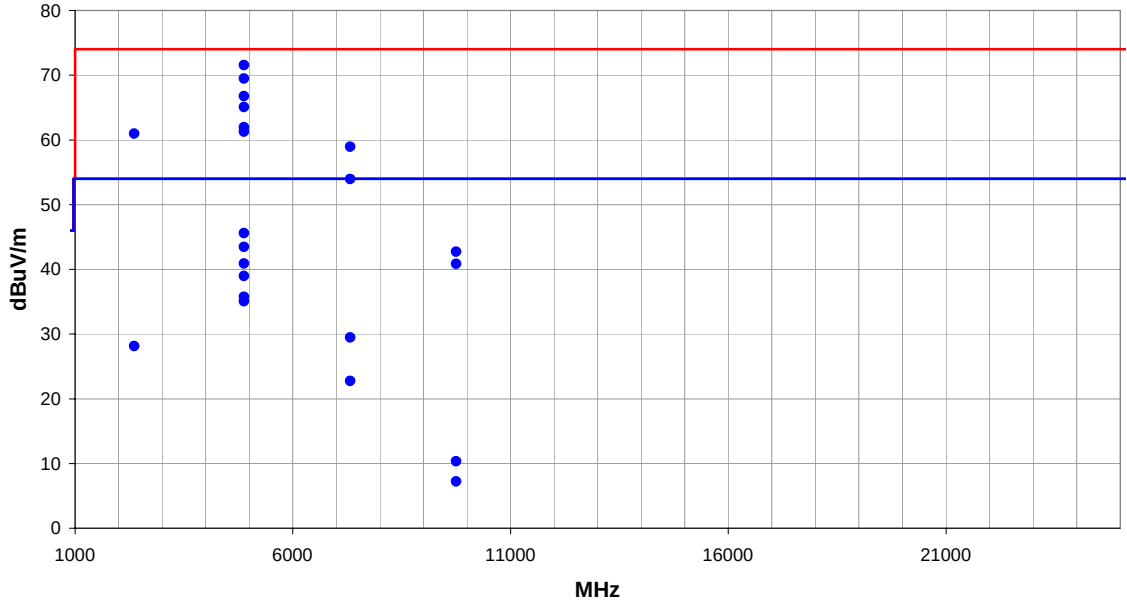
Work Order:	REXP0001	Date:	09/13/10	<i>Trevor Buls</i>
Project:	None	Temperature:	23.13	
Job Site:	MN05	Humidity:	49.85	
Serial Number:	None	Barometric Pres.:	1019.3	Tested by: Trevor Buls
EUT:	Audio Fox			
Configuration:	1 - Basic Configuration			
Customer:	Rex Plastics			
Attendees:	None			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting GFSK -12 dB RF power setting. Low Channel 6 - 2406.1 MHz			
Deviations:	None			
Comments:	EUT on Side. DCCF = $20 \cdot \log((3.71 \cdot 2)/100\text{ms}) = 22.6$			

Test Specifications					Test Method	
FCC 15.247:2010					ANSI C63.10:2009	

Run #	8	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
4812.950	64.8	3.6	1.0	292.0	0.0	0.0	Vert	PK	0.0	68.4	74.0	-5.6
4811.992	61.2	3.6	1.0	292.0	22.6	0.0	Vert	AV	0.0	42.2	54.0	-11.8
4811.659	57.5	3.6	1.0	311.0	0.0	0.0	Horz	PK	0.0	61.1	74.0	-12.9
2330.675	44.5	-4.3	1.4	228.0	0.0	20.0	Horz	PK	0.0	60.2	74.0	-13.8
2330.675	43.7	-4.3	1.2	203.0	0.0	20.0	Vert	PK	0.0	59.4	74.0	-14.6
7219.366	48.3	11.0	1.0	243.0	0.0	0.0	Vert	PK	0.0	59.3	74.0	-14.7
4811.967	53.6	3.6	1.0	311.0	22.6	0.0	Horz	AV	0.0	34.6	54.0	-19.4
7217.496	42.7	11.0	1.5	244.0	0.0	0.0	Horz	PK	0.0	53.7	74.0	-20.3
7217.650	42.0	11.0	1.0	243.0	22.6	0.0	Vert	AV	0.0	30.4	54.0	-23.6
2331.000	35.5	-4.3	1.4	228.0	22.6	20.0	Horz	AV	0.0	28.6	54.0	-25.4
2330.958	34.4	-4.3	1.2	203.0	22.6	20.0	Vert	AV	0.0	27.5	54.0	-26.5
7217.646	32.9	11.0	1.5	244.0	22.6	0.0	Horz	AV	0.0	21.3	54.0	-32.7
9623.184	49.1	-9.3	1.2	201.0	0.0	0.0	Horz	PK	0.0	39.8	74.0	-34.2
9622.883	47.8	-9.3	1.2	312.0	0.0	0.0	Vert	PK	0.0	38.5	74.0	-35.5
9623.417	38.1	-9.3	1.2	201.0	22.6	0.0	Horz	AV	0.0	6.2	54.0	-47.8
9623.308	36.2	-9.3	1.2	312.0	22.6	0.0	Vert	AV	0.0	4.3	54.0	-49.7

NORTHWEST				PSA-ESCI 2010.04.06 Version 2010.3.17									
EMC Spurious Radiated Emissions													
Work Order:	REXP0001	Date:	09/10/10										
Project:	None	Temperature:	22.32										
Job Site:	MN05	Humidity:	50.91										
Serial Number:	None	Barometric Pres.:	1013.5										
EUT:		Audio Fox											
Configuration:		1 - Basic Configuration											
Customer:		Rex Plastics											
Attendees:		None											
EUT Power:		120VAC/60Hz											
Operating Mode:		Transmitting GFSK -12 dB RF power setting. Mid Channel 39 - 2439.1 MHz											
Deviations:		None											
Comments:		DCCF = 20*log((3.71*2)/100ms) = 22.6											
Test Specifications			Test Method										
FCC 15.247:2010			ANSI C63.10:2009										
Run #	2	Test Distance (m)	3	Antenna Height(s)	1-4m								
Results				Pass									
													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4877.699	67.7	3.9	1.0	298.0	0.0	0.0	Vert	PK	0.0	71.6	74.0	-2.4	EUT on Side
4878.308	65.6	3.9	1.4	297.0	0.0	0.0	Horz	PK	0.0	69.5	74.0	-4.5	EUT Vertical
4877.691	62.9	3.9	1.6	271.0	0.0	0.0	Vert	PK	0.0	66.8	74.0	-7.2	EUT Vertical
4878.016	64.3	3.9	1.0	298.0	22.6	0.0	Vert	AV	0.0	45.6	54.0	-8.4	EUT on Side
4879.033	61.2	3.9	1.0	218.0	0.0	0.0	Vert	PK	0.0	65.1	74.0	-8.9	EUT Horizontal
4878.033	62.2	3.9	1.4	297.0	22.6	0.0	Horz	AV	0.0	43.5	54.0	-10.5	EUT Vertical
4877.749	58.1	3.9	1.0	187.0	0.0	0.0	Horz	PK	0.0	62.0	74.0	-12.0	EUT on Side
4877.724	57.4	3.9	1.0	356.0	0.0	0.0	Horz	PK	0.0	61.3	74.0	-12.7	EUT Horizontal
2361.886	45.3	-4.4	1.0	233.0	0.0	20.0	Horz	PK	0.0	60.9	74.0	-13.1	EUT on Side
4878.016	59.6	3.9	1.6	271.0	22.6	0.0	Vert	AV	0.0	40.9	54.0	-13.1	EUT Vertical
4877.991	57.7	3.9	1.0	218.0	22.6	0.0	Vert	AV	0.0	39.0	54.0	-15.0	EUT Horizontal
7316.531	47.3	11.7	1.0	260.0	0.0	0.0	Vert	PK	0.0	59.0	74.0	-15.0	EUT on Side
4878.008	54.5	3.9	1.0	187.0	22.6	0.0	Horz	AV	0.0	35.8	54.0	-18.2	EUT on Side
4877.949	53.8	3.9	1.0	356.0	22.6	0.0	Horz	AV	0.0	35.1	54.0	-18.9	EUT Horizontal
7316.781	42.3	11.7	1.1	230.0	0.0	0.0	Horz	PK	0.0	54.0	74.0	-20.0	EUT on Side
7316.690	40.4	11.7	1.0	260.0	22.6	0.0	Vert	AV	0.0	29.5	54.0	-24.5	EUT on Side
2362.972	35.1	-4.4	1.0	233.0	22.6	20.0	Horz	AV	0.0	28.1	54.0	-25.9	EUT on Side
7316.648	33.7	11.7	1.1	230.0	22.6	0.0	Horz	AV	0.0	22.8	54.0	-31.2	EUT on Side
9755.168	51.8	-9.1	1.0	220.0	0.0	0.0	Horz	PK	0.0	42.7	74.0	-31.3	EUT on Side
9755.159	49.9	-9.1	1.2	229.0	0.0	0.0	Vert	PK	0.0	40.8	74.0	-33.2	EUT on Side

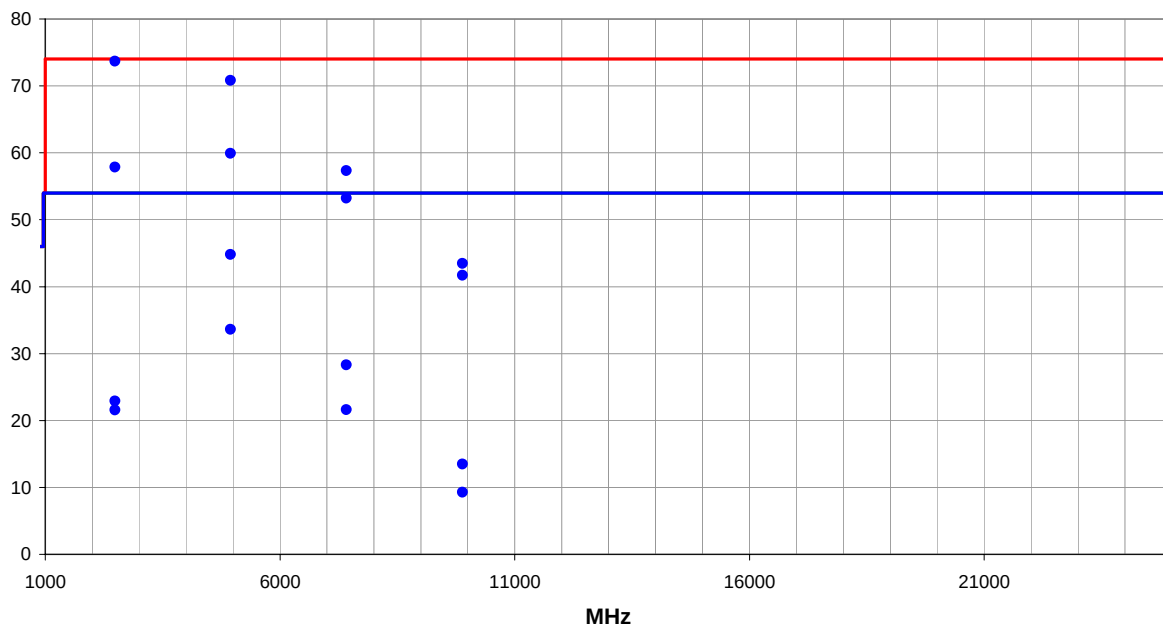
EMC

Spurious Radiated Emissions

Work Order:	REXP0001	Date:	09/13/10	<i>Trevor Buls</i>
Project:	None	Temperature:	23.13	
Job Site:	MN05	Humidity:	49.85	
Serial Number:	None	Barometric Pres.:	1019.3	
				Tested by: Trevor Buls
EUT:	Audio Fox			
Configuration:	1 - Basic Configuration			
Customer:	Rex Plastics			
Attendees:	None			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting GFSK -12 dB RF power setting. High Channel 72 - 2472.1 MHz			
Deviations:	None			
Comments:	EUT on Side. DCCF = $20 \cdot \log((3.71 \cdot 2)/100\text{ms}) = 22.6$			

Test Specifications	Test Method
FCC 15.247:2010	ANSI C63.10:2009

Run #	14	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
2485.000	58.1	-4.4	1.2	79.0	0.0	20.0	Horz	PK	0.0	73.7	74.0	-0.3
4943.565	66.7	4.1	1.0	281.0	0.0	0.0	Vert	PK	0.0	70.8	74.0	-3.2
4943.948	63.3	4.1	1.0	281.0	22.6	0.0	Vert	AV	0.0	44.8	54.0	-9.2
4943.682	55.8	4.1	1.0	231.0	0.0	0.0	Horz	PK	0.0	59.9	74.0	-14.1
2483.992	42.3	-4.4	3.7	61.0	0.0	20.0	Vert	PK	0.0	57.9	74.0	-16.1
7417.492	45.2	12.1	1.0	254.0	0.0	0.0	Vert	PK	0.0	57.3	74.0	-16.7
4943.990	52.1	4.1	1.0	231.0	22.6	0.0	Horz	AV	0.0	33.6	54.0	-20.4
7415.402	41.1	12.1	1.4	242.0	0.0	0.0	Horz	PK	0.0	53.2	74.0	-20.8
7415.651	38.8	12.1	1.0	254.0	22.6	0.0	Vert	AV	0.0	28.3	54.0	-25.7
9888.950	52.3	-8.8	1.0	218.0	0.0	0.0	Horz	PK	0.0	43.5	74.0	-30.5
2487.500	29.9	-4.4	1.2	79.0	22.6	20.0	Horz	AV	0.0	22.9	54.0	-31.1
9889.800	50.5	-8.8	1.2	242.0	0.0	0.0	Vert	PK	0.0	41.7	74.0	-32.3
7415.594	32.1	12.1	1.4	242.0	22.6	0.0	Horz	AV	0.0	21.6	54.0	-32.4
2483.283	28.6	-4.4	3.8	61.0	22.6	20.0	Vert	AV	0.0	21.6	54.0	-32.4
9887.450	44.9	-8.8	1.0	218.0	22.6	0.0	Horz	AV	0.0	13.5	54.0	-40.5
9887.475	40.7	-8.8	1.2	242.0	22.6	0.0	Vert	AV	0.0	9.3	54.0	-44.7

EMC**RADIATED OUTPUT POWER**

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting GFSK -12 dB RF power setting

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

1 - Basic Configuration

FREQUENCY RANGE INVESTIGATED

Start Frequency	2400 MHz	Stop Frequency	2483.5 MHz
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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
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24
MN05 Cables	ESM Cable Corp.	uble Ridge Guide Horn Cab	MNI	7/19/2010	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12 mo

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 IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting and while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT and EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EMC

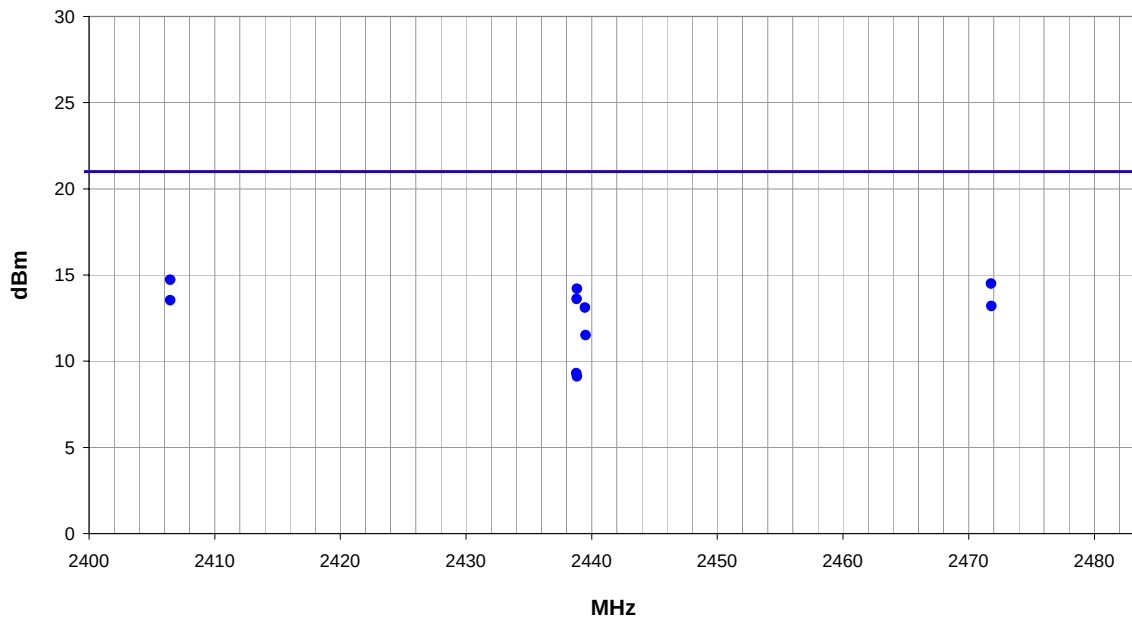
RADIATED OUTPUT POWER

Work Order:	REXP0001	Date:	09/10/10	<i>Trevor Buls</i>
Project:	None	Temperature:	22.32	
Job Site:	MN05	Humidity:	50.91	
Serial Number:	None	Barometric Pres.:	1013.5	
				Tested by: Trevor Buls
EUT:	Audio Fox			
Configuration:	1 - Basic Configuration			
Customer:	Rex Plastics			
Attendees:	None			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting GFSK -12 dB RF power setting			
Deviations:	None			
Comments:	The 6dB Occupied Bandwidth was less than 1 MHz so a 1 MHz Resolution Bandwidth was used with the data taken below.			

Test Specifications
FCC 15.247:2010

Test Method
ANSI C63.10:2009

Run #	1	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
2406.475	1.0	227.0	Horz	PK	2.97E-02	14.7	21.0	-6.3	EUT on Side, Channel 6
2471.792	1.0	228.0	Horz	PK	2.81E-02	14.5	21.0	-6.5	EUT on Side, Channel 72
2438.846	1.1	228.0	Horz	PK	2.64E-02	14.2	21.0	-6.8	EUT on Side, Channel 39
2438.821	1.2	153.0	Vert	PK	2.30E-02	13.6	21.0	-7.4	EUT on Side, Channel 39
2406.475	1.2	157.0	Vert	PK	2.25E-02	13.5	21.0	-7.5	EUT on Side, Channel 6
2471.817	1.4	149.0	Vert	PK	2.08E-02	13.2	21.0	-7.8	EUT on Side, Channel 72
2439.463	1.0	86.0	Horz	PK	2.05E-02	13.1	21.0	-7.9	EUT Horz, Channel 39
2439.529	1.1	342.0	Vert	PK	1.42E-02	11.5	21.0	-9.5	EUT Vert, Channel 39
2438.796	1.1	243.0	Horz	PK	8.53E-03	9.3	21.0	-11.7	EUT Vert, Channel 39
2438.829	1.0	244.0	Vert	PK	8.14E-03	9.1	21.0	-11.9	EUT Horz, Channel 39

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

Typical

Channel 72 - High Channel.

Channel 39 - Mid Channel.

Channel 6 - Low Channel.

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

REXP0001-4

REXP0001-3

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 20 dB	SM Electronics	SA01B-20	REF	12/11/2009	13 mo
High Pass Filter	TTE	H97-100K-50-720B	HGN	6/28/2010	13 mo
Receiver	Rohde & Schwarz	ESCI	ARF	3/30/2010	12 mo
MN03 Cables	ESM Cable Corp.	Conducted Cables	MNC	6/8/2010	13 mo
LISN	Solar	9252-50-R-24-BNC	LIQ	3/12/2010	12 mo
LISN	Solar	9252-50-R-24-BNC	LIO	3/12/2010	12 mo

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

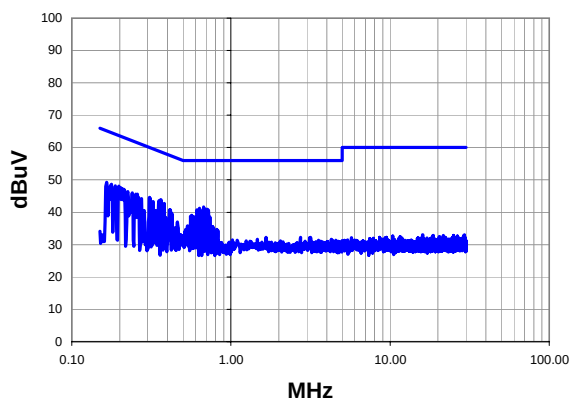
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 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

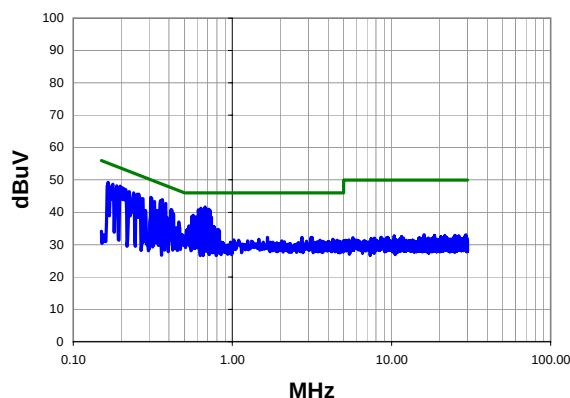
Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 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.

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i> Tested by: Elaine Reeves			
Project:	None	Temperature:	22.87				
Job Site:	MN03	Humidity:	47.22				
Serial Number:	None	Barometric Pres.:	1017.2				
EUT:	Audio Fox						
Configuration:	REXP0001-3						
Customer:	Rex Plastics						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Channel 6 - Low Channel.						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.207:2010			Test Method ANSI C63.10:2009				
Run #	1	Line:	High Line	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.674	21.2	20.4	41.6	56.0	-14.4
0.363	23.3	20.6	43.9	58.7	-14.8
0.635	20.8	20.4	41.2	56.0	-14.8
0.708	20.5	20.4	40.9	56.0	-15.1
0.691	20.5	20.4	40.9	56.0	-15.1
0.354	23.0	20.6	43.6	58.9	-15.3
0.611	20.3	20.4	40.7	56.0	-15.3
0.723	20.2	20.4	40.6	56.0	-15.4
0.308	23.9	20.7	44.6	60.0	-15.4
0.381	22.1	20.6	42.7	58.3	-15.6
0.198	26.9	21.1	48.0	63.7	-15.7
0.259	24.8	20.8	45.6	61.5	-15.9
0.165	27.8	21.4	49.2	65.2	-15.9
0.187	27.0	21.2	48.2	64.2	-16.0
0.623	19.6	20.4	40.0	56.0	-16.0
0.177	27.4	21.2	48.6	64.6	-16.0
0.213	26.1	21.0	47.1	63.1	-16.0
0.206	26.3	21.0	47.3	63.4	-16.0
0.252	24.8	20.8	45.6	61.7	-16.1
0.240	25.1	20.9	46.0	62.1	-16.1

Peak Data - vs - Average Limit

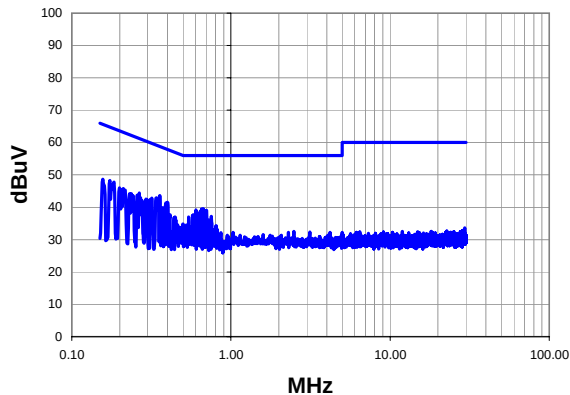
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.674	21.2	20.4	41.6	46.0	-4.4
0.363	23.3	20.6	43.9	48.7	-4.8
0.635	20.8	20.4	41.2	46.0	-4.8
0.708	20.5	20.4	40.9	46.0	-5.1
0.691	20.5	20.4	40.9	46.0	-5.1
0.354	23.0	20.6	43.6	48.9	-5.3
0.611	20.3	20.4	40.7	46.0	-5.3
0.723	20.2	20.4	40.6	46.0	-5.4
0.308	23.9	20.7	44.6	50.0	-5.4
0.381	22.1	20.6	42.7	48.3	-5.6
0.198	26.9	21.1	48.0	53.7	-5.7
0.259	24.8	20.8	45.6	51.5	-5.9
0.165	27.8	21.4	49.2	55.2	-5.9
0.187	27.0	21.2	48.2	54.2	-6.0
0.623	19.6	20.4	40.0	46.0	-6.0
0.177	27.4	21.2	48.6	54.6	-6.0
0.213	26.1	21.0	47.1	53.1	-6.0
0.206	26.3	21.0	47.3	53.4	-6.0
0.252	24.8	20.8	45.6	51.7	-6.1
0.240	25.1	20.9	46.0	52.1	-6.1

EMC

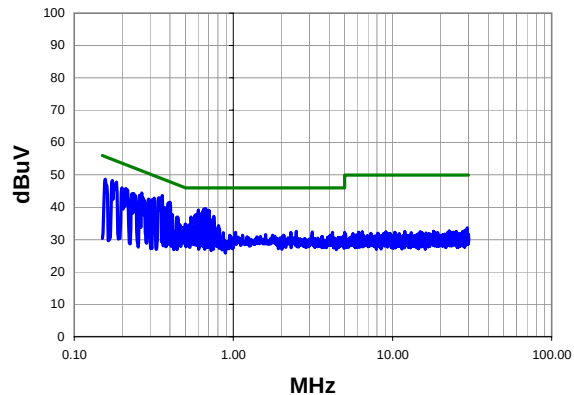
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i> Tested by: Elaine Reeves			
Project:	None	Temperature:	22.87				
Job Site:	MN03	Humidity:	47.22				
Serial Number:	None	Barometric Pres.:	1017.2				
EUT:	Audio Fox						
Configuration:	REXP0001-3						
Customer:	Rex Plastics						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Channel 6 - Low Channel.						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.207:2010			Test Method ANSI C63.10:2009				
Run #	2	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.357	23.0	20.6	43.6	58.8	-15.2
0.340	22.3	20.6	42.9	59.2	-16.3
0.400	21.0	20.5	41.5	57.9	-16.4
0.672	19.1	20.4	39.5	56.0	-16.5
0.184	26.6	21.2	47.8	64.3	-16.5
0.174	27.0	21.3	48.3	64.8	-16.5
0.657	19.0	20.4	39.4	56.0	-16.6
0.390	20.8	20.6	41.4	58.1	-16.7
0.667	18.7	20.4	39.1	56.0	-16.9
0.602	18.7	20.4	39.1	56.0	-16.9
0.266	23.6	20.8	44.4	61.3	-16.9
0.318	22.1	20.7	42.8	59.8	-17.0
0.703	18.6	20.4	39.0	56.0	-17.0
0.157	27.1	21.5	48.6	65.6	-17.0
0.696	18.4	20.4	38.8	56.0	-17.2
0.211	24.8	21.0	45.8	63.2	-17.4
0.641	18.2	20.4	38.6	56.0	-17.4
0.312	21.7	20.7	42.4	59.9	-17.5
0.199	24.9	21.1	46.0	63.6	-17.6
0.686	17.9	20.4	38.3	56.0	-17.7

Peak Data - vs - Average Limit

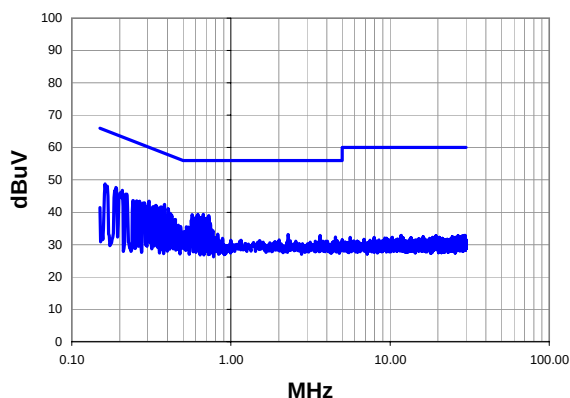
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.357	23.0	20.6	43.6	48.8	-5.2
0.340	22.3	20.6	42.9	49.2	-6.3
0.400	21.0	20.5	41.5	47.9	-6.4
0.672	19.1	20.4	39.5	46.0	-6.5
0.184	26.6	21.2	47.8	54.3	-6.5
0.174	27.0	21.3	48.3	54.8	-6.5
0.657	19.0	20.4	39.4	46.0	-6.6
0.390	20.8	20.6	41.4	48.1	-6.7
0.667	18.7	20.4	39.1	46.0	-6.9
0.602	18.7	20.4	39.1	46.0	-6.9
0.266	23.6	20.8	44.4	51.3	-6.9
0.318	22.1	20.7	42.8	49.8	-7.0
0.703	18.6	20.4	39.0	46.0	-7.0
0.157	27.1	21.5	48.6	55.6	-7.0
0.696	18.4	20.4	38.8	46.0	-7.2
0.211	24.8	21.0	45.8	53.2	-7.4
0.641	18.2	20.4	38.6	46.0	-7.4
0.312	21.7	20.7	42.4	49.9	-7.5
0.199	24.9	21.1	46.0	53.6	-7.6
0.686	17.9	20.4	38.3	46.0	-7.7

EMC

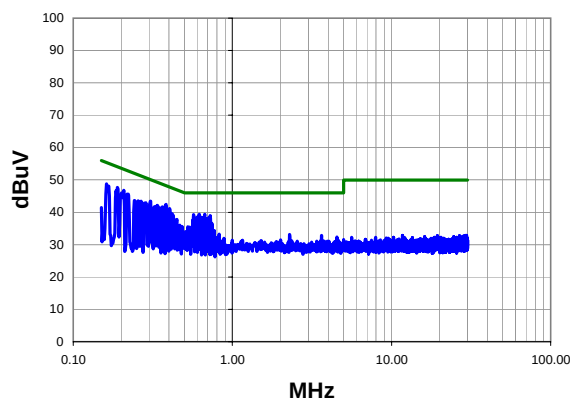
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i>	
Project:	None	Temperature:	22.87		
Job Site:	MN03	Humidity:	47.22		
Serial Number:	None	Barometric Pres.:	1017.2		
				Tested by: Elaine Reeves	
EUT:	Audio Fox				
Configuration:	REXP0001-3				
Customer:	Rex Plastics				
Attendees:	None				
EUT Power:	120VAC/60Hz				
Operating Mode:	Channel 39 - Mid Channel.				
Deviations:	None				
Comments:	None				
Test Specifications FCC 15.207:2010			Test Method ANSI C63.10:2009		
Run #	4	Line:	High Line	Ext. Attenuation:	20
				Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.383	21.8	20.6	42.4	58.2	-15.8
0.189	26.5	21.2	47.7	64.1	-16.4
0.208	25.8	21.0	46.8	63.3	-16.5
0.162	27.3	21.5	48.8	65.4	-16.6
0.670	18.9	20.4	39.3	56.0	-16.7
0.619	18.9	20.4	39.3	56.0	-16.7
0.403	20.6	20.5	41.1	57.8	-16.7
0.570	18.9	20.4	39.3	56.0	-16.7
0.305	22.7	20.7	43.4	60.1	-16.7
0.726	18.5	20.4	38.9	56.0	-17.1
0.363	21.0	20.6	41.6	58.7	-17.1
0.339	21.5	20.6	42.1	59.2	-17.1
0.607	18.4	20.4	38.8	56.0	-17.2
0.624	18.3	20.4	38.7	56.0	-17.3
0.218	24.6	21.0	45.6	62.9	-17.3
0.648	17.9	20.4	38.3	56.0	-17.7
0.267	22.7	20.8	43.5	61.2	-17.7
0.286	22.2	20.7	42.9	60.6	-17.7
0.708	17.8	20.4	38.2	56.0	-17.8
0.590	17.8	20.4	38.2	56.0	-17.8

Peak Data - vs - Average Limit

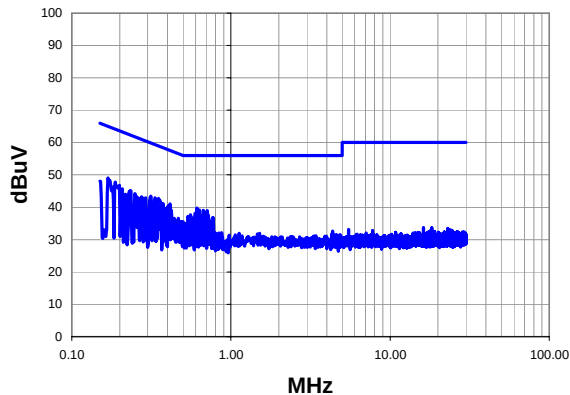
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.383	21.8	20.6	42.4	48.2	-5.8
0.189	26.5	21.2	47.7	54.1	-6.4
0.208	25.8	21.0	46.8	53.3	-6.5
0.162	27.3	21.5	48.8	55.4	-6.6
0.670	18.9	20.4	39.3	46.0	-6.7
0.619	18.9	20.4	39.3	46.0	-6.7
0.403	20.6	20.5	41.1	47.8	-6.7
0.570	18.9	20.4	39.3	46.0	-6.7
0.305	22.7	20.7	43.4	50.1	-6.7
0.726	18.5	20.4	38.9	46.0	-7.1
0.363	21.0	20.6	41.6	48.7	-7.1
0.339	21.5	20.6	42.1	49.2	-7.1
0.607	18.4	20.4	38.8	46.0	-7.2
0.624	18.3	20.4	38.7	46.0	-7.3
0.218	24.6	21.0	45.6	52.9	-7.3
0.648	17.9	20.4	38.3	46.0	-7.7
0.267	22.7	20.8	43.5	51.2	-7.7
0.286	22.2	20.7	42.9	50.6	-7.7
0.708	17.8	20.4	38.2	46.0	-7.8
0.590	17.8	20.4	38.2	46.0	-7.8

EMC

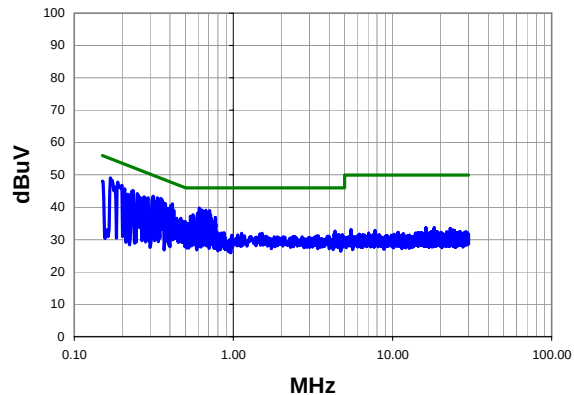
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i> Tested by: Elaine Reeves			
Project:	None	Temperature:	22.87				
Job Site:	MN03	Humidity:	47.22				
Serial Number:	None	Barometric Pres.:	1017.2				
EUT:	Audio Fox						
Configuration:	REXP0001-3						
Customer:	Rex Plastics						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Channel 39 - Mid Channel.						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.207:2010			Test Method ANSI C63.10:2009				
Run #	5	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.169	27.6	21.4	49.0	65.0	-16.0
0.351	22.1	20.6	42.7	58.9	-16.2
0.611	19.3	20.4	39.7	56.0	-16.3
0.187	26.6	21.2	47.8	64.2	-16.4
0.334	22.3	20.6	42.9	59.4	-16.5
0.313	22.7	20.7	43.4	59.9	-16.5
0.414	20.5	20.5	41.0	57.6	-16.6
0.357	21.6	20.6	42.2	58.8	-16.6
0.635	18.7	20.4	39.1	56.0	-16.9
0.672	18.6	20.4	39.0	56.0	-17.0
0.708	18.5	20.4	38.9	56.0	-17.1
0.233	24.3	20.9	45.2	62.3	-17.1
0.363	20.9	20.6	41.5	58.7	-17.2
0.403	20.0	20.5	40.5	57.8	-17.3
0.374	20.5	20.6	41.1	58.4	-17.3
0.208	24.7	21.0	45.7	63.3	-17.6
0.249	23.4	20.8	44.2	61.8	-17.6
0.291	22.2	20.7	42.9	60.5	-17.6
0.274	22.5	20.7	43.2	61.0	-17.8
0.597	17.8	20.4	38.2	56.0	-17.8

Peak Data - vs - Average Limit

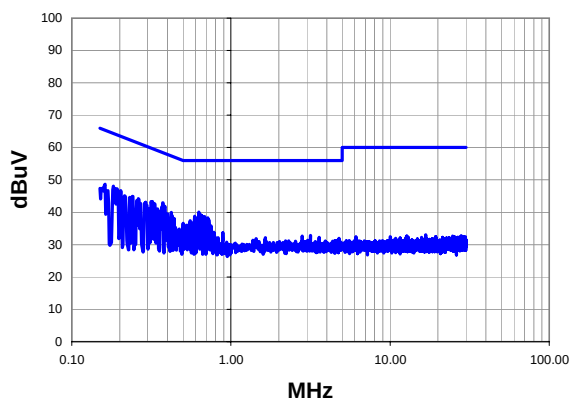
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.169	27.6	21.4	49.0	55.0	-6.0
0.351	22.1	20.6	42.7	48.9	-6.2
0.611	19.3	20.4	39.7	46.0	-6.3
0.187	26.6	21.2	47.8	54.2	-6.4
0.334	22.3	20.6	42.9	49.4	-6.5
0.313	22.7	20.7	43.4	49.9	-6.5
0.414	20.5	20.5	41.0	47.6	-6.6
0.357	21.6	20.6	42.2	48.8	-6.6
0.635	18.7	20.4	39.1	46.0	-6.9
0.672	18.6	20.4	39.0	46.0	-7.0
0.708	18.5	20.4	38.9	46.0	-7.1
0.233	24.3	20.9	45.2	52.3	-7.1
0.363	20.9	20.6	41.5	48.7	-7.2
0.403	20.0	20.5	40.5	47.8	-7.3
0.374	20.5	20.6	41.1	48.4	-7.3
0.208	24.7	21.0	45.7	53.3	-7.6
0.249	23.4	20.8	44.2	51.8	-7.6
0.291	22.2	20.7	42.9	50.5	-7.6
0.274	22.5	20.7	43.2	51.0	-7.8
0.597	17.8	20.4	38.2	46.0	-7.8

EMC

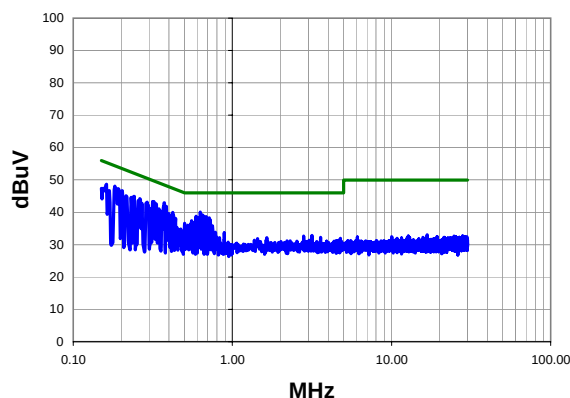
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i>			
Project:	None	Temperature:	22.87				
Job Site:	MN03	Humidity:	47.22				
Serial Number:	None	Barometric Pres.:	1017.2	Tested by: Elaine Reeves			
EUT:	Audio Fox						
Configuration:	REXP0001-3						
Customer:	Rex Plastics						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Channel 72 - High Channel.						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.207:2010			Test Method ANSI C63.10:2009				
Run #	6	Line:	High Line	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.373	22.3	20.6	42.9	58.4	-15.5
0.629	19.6	20.4	40.0	56.0	-16.0
0.182	26.9	21.2	48.1	64.4	-16.3
0.385	21.3	20.6	41.9	58.2	-16.3
0.322	22.6	20.7	43.3	59.7	-16.4
0.315	22.6	20.7	43.3	59.8	-16.5
0.162	27.2	21.5	48.7	65.4	-16.7
0.191	26.1	21.2	47.3	64.0	-16.7
0.203	25.6	21.1	46.7	63.5	-16.8
0.330	22.0	20.6	42.6	59.4	-16.8
0.646	18.7	20.4	39.1	56.0	-16.9
0.653	18.6	20.4	39.0	56.0	-17.0
0.262	23.4	20.8	44.2	61.4	-17.2
0.592	18.4	20.4	38.8	56.0	-17.2
0.240	24.0	20.9	44.9	62.1	-17.2
0.684	18.2	20.4	38.6	56.0	-17.4
0.291	22.4	20.7	43.1	60.5	-17.4
0.422	19.5	20.5	40.0	57.4	-17.4
0.616	17.9	20.4	38.3	56.0	-17.7
0.714	17.8	20.4	38.2	56.0	-17.8

Peak Data - vs - Average Limit

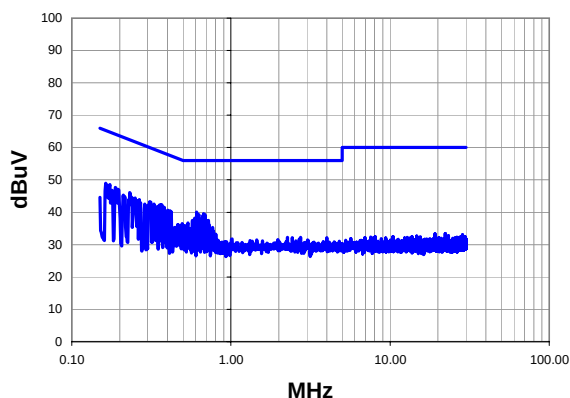
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.373	22.3	20.6	42.9	48.4	-5.5
0.629	19.6	20.4	40.0	46.0	-6.0
0.182	26.9	21.2	48.1	54.4	-6.3
0.385	21.3	20.6	41.9	48.2	-6.3
0.322	22.6	20.7	43.3	49.7	-6.4
0.315	22.6	20.7	43.3	49.8	-6.5
0.162	27.2	21.5	48.7	55.4	-6.7
0.191	26.1	21.2	47.3	54.0	-6.7
0.203	25.6	21.1	46.7	53.5	-6.8
0.330	22.0	20.6	42.6	49.4	-6.8
0.646	18.7	20.4	39.1	46.0	-6.9
0.653	18.6	20.4	39.0	46.0	-7.0
0.262	23.4	20.8	44.2	51.4	-7.2
0.592	18.4	20.4	38.8	46.0	-7.2
0.240	24.0	20.9	44.9	52.1	-7.2
0.684	18.2	20.4	38.6	46.0	-7.4
0.291	22.4	20.7	43.1	50.5	-7.4
0.422	19.5	20.5	40.0	47.4	-7.4
0.616	17.9	20.4	38.3	46.0	-7.7
0.714	17.8	20.4	38.2	46.0	-7.8

EMC

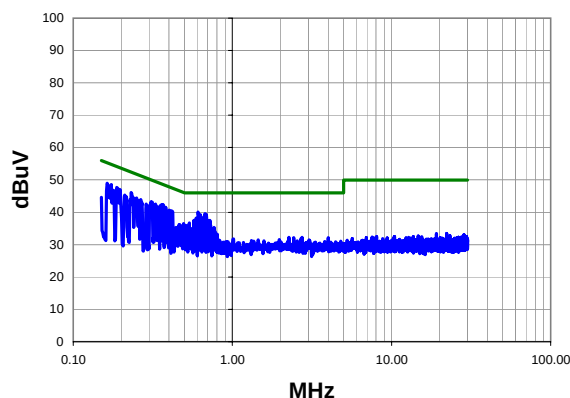
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i>			
Project:	None	Temperature:	22.87				
Job Site:	MN03	Humidity:	47.22				
Serial Number:	None	Barometric Pres.:	1017.2				
				Tested by: Elaine Reeves			
EUT:	Audio Fox						
Configuration:	REXP0001-3						
Customer:	Rex Plastics						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Channel 72 - High Channel.						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.207:2010			Test Method ANSI C63.10:2009				
Run #	7	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.609	19.6	20.4	40.0	56.0	-16.0
0.174	27.3	21.3	48.6	64.8	-16.2
0.232	25.2	20.9	46.1	62.4	-16.3
0.164	27.5	21.5	49.0	65.3	-16.3
0.363	21.7	20.6	42.3	58.7	-16.4
0.187	26.5	21.2	47.7	64.2	-16.5
0.674	19.1	20.4	39.5	56.0	-16.5
0.356	21.6	20.6	42.2	58.8	-16.6
0.196	25.9	21.1	47.0	63.8	-16.7
0.381	20.9	20.6	41.5	58.3	-16.8
0.687	18.8	20.4	39.2	56.0	-16.8
0.628	18.8	20.4	39.2	56.0	-16.8
0.308	22.5	20.7	43.2	60.0	-16.8
0.329	21.9	20.6	42.5	59.5	-17.0
0.415	20.0	20.5	40.5	57.5	-17.0
0.402	20.2	20.5	40.7	57.8	-17.1
0.663	18.3	20.4	38.7	56.0	-17.3
0.250	23.6	20.8	44.4	61.7	-17.3
0.266	23.1	20.8	43.9	61.3	-17.4
0.342	21.0	20.6	41.6	59.2	-17.6

Peak Data - vs - Average Limit

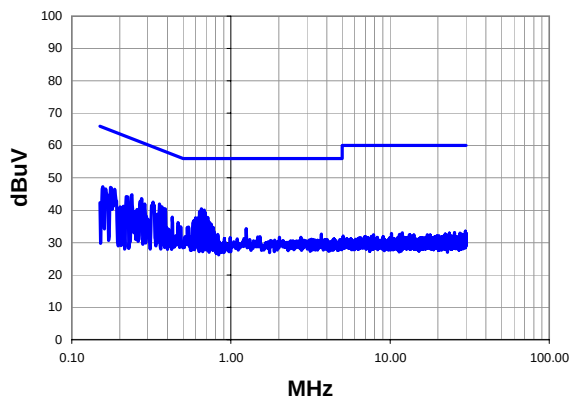
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.609	19.6	20.4	40.0	46.0	-6.0
0.174	27.3	21.3	48.6	54.8	-6.2
0.232	25.2	20.9	46.1	52.4	-6.3
0.164	27.5	21.5	49.0	55.3	-6.3
0.363	21.7	20.6	42.3	48.7	-6.4
0.187	26.5	21.2	47.7	54.2	-6.5
0.674	19.1	20.4	39.5	46.0	-6.5
0.356	21.6	20.6	42.2	48.8	-6.6
0.196	25.9	21.1	47.0	53.8	-6.7
0.381	20.9	20.6	41.5	48.3	-6.8
0.687	18.8	20.4	39.2	46.0	-6.8
0.628	18.8	20.4	39.2	46.0	-6.8
0.308	22.5	20.7	43.2	50.0	-6.8
0.329	21.9	20.6	42.5	49.5	-7.0
0.415	20.0	20.5	40.5	47.5	-7.0
0.402	20.2	20.5	40.7	47.8	-7.1
0.663	18.3	20.4	38.7	46.0	-7.3
0.250	23.6	20.8	44.4	51.7	-7.3
0.266	23.1	20.8	43.9	51.3	-7.4
0.342	21.0	20.6	41.6	49.2	-7.6

EMC

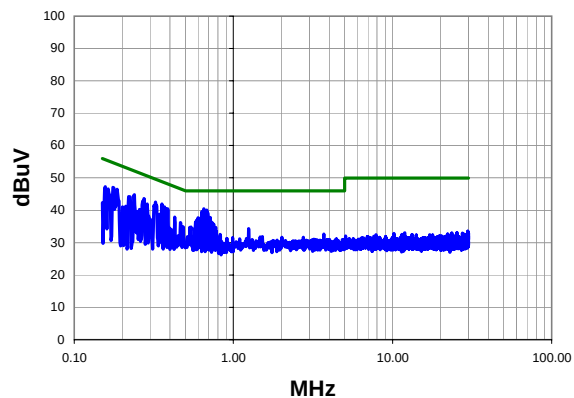
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i>			
Project:	None	Temperature:	22.87				
Job Site:	MN03	Humidity:	47.22				
Serial Number:	None	Barometric Pres.:	1017.2				
				Tested by: Elaine Reeves			
EUT:	Audio Fox						
Configuration:	REXP0001-4						
Customer:	Rex Plastics						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Typical						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.107:2010		Class B		Test Method ANSI C63.4:2003			
Run #	8	Line:	High Line	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

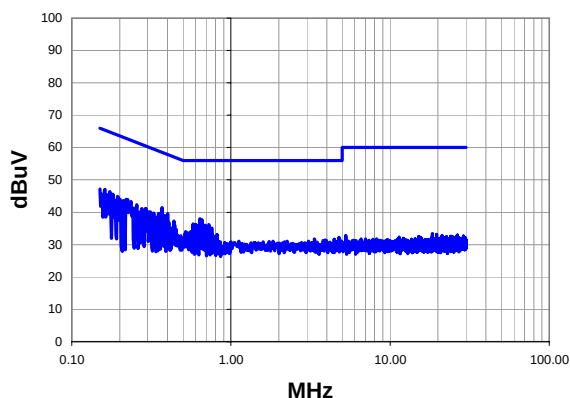
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.653	20.0	20.4	40.4	56.0	-15.6
0.680	19.6	20.4	40.0	56.0	-16.0
0.674	19.4	20.4	39.8	56.0	-16.2
0.636	19.2	20.4	39.6	56.0	-16.4
0.691	18.8	20.4	39.2	56.0	-16.8
0.356	21.3	20.6	41.9	58.8	-16.9
0.323	21.9	20.7	42.6	59.6	-17.1
0.238	23.9	20.9	44.8	62.2	-17.4
0.274	22.9	20.7	43.6	61.0	-17.4
0.369	20.4	20.6	41.0	58.5	-17.5
0.176	25.8	21.2	47.0	64.7	-17.7
0.386	19.9	20.6	40.5	58.1	-17.7
0.186	25.3	21.2	46.5	64.2	-17.7
0.378	19.9	20.6	40.5	58.3	-17.8
0.628	17.5	20.4	37.9	56.0	-18.1
0.714	17.3	20.4	37.7	56.0	-18.3
0.697	17.3	20.4	37.7	56.0	-18.3
0.601	17.3	20.4	37.7	56.0	-18.3
0.269	22.1	20.8	42.9	61.1	-18.3
0.157	25.7	21.5	47.2	65.6	-18.4

Peak Data - vs - Average Limit

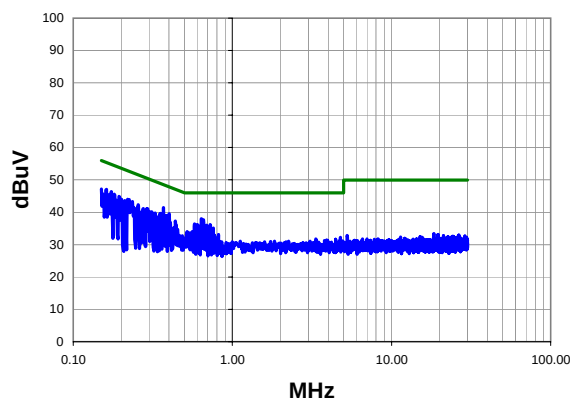
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.653	20.0	20.4	40.4	46.0	-5.6
0.680	19.6	20.4	40.0	46.0	-6.0
0.674	19.4	20.4	39.8	46.0	-6.2
0.636	19.2	20.4	39.6	46.0	-6.4
0.691	18.8	20.4	39.2	46.0	-6.8
0.356	21.3	20.6	41.9	48.8	-6.9
0.323	21.9	20.7	42.6	49.6	-7.1
0.238	23.9	20.9	44.8	52.2	-7.4
0.274	22.9	20.7	43.6	51.0	-7.4
0.369	20.4	20.6	41.0	48.5	-7.5
0.176	25.8	21.2	47.0	54.7	-7.7
0.386	19.9	20.6	40.5	48.1	-7.7
0.186	25.3	21.2	46.5	54.2	-7.7
0.378	19.9	20.6	40.5	48.3	-7.8
0.628	17.5	20.4	37.9	46.0	-8.1
0.714	17.3	20.4	37.7	46.0	-8.3
0.697	17.3	20.4	37.7	46.0	-8.3
0.601	17.3	20.4	37.7	46.0	-8.3
0.269	22.1	20.8	42.9	51.1	-8.3
0.157	25.7	21.5	47.2	55.6	-8.4

Work Order:	REXP0001	Date:	09/15/10	<i>Elaine L. Reeves</i>			
Project:	None	Temperature:	22.87				
Job Site:	MN03	Humidity:	47.22				
Serial Number:	None	Barometric Pres.:	1017.2	Tested by: Elaine Reeves			
EUT:	Audio Fox						
Configuration:	REXP0001-4						
Customer:	Rex Plastics						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Typical						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.107:2010		Class B		Test Method ANSI C63.4:2003			
Run #	9	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.369	20.8	20.6	41.4	58.5	-17.1
0.640	17.6	20.4	38.0	56.0	-18.0
0.402	19.1	20.5	39.6	57.8	-18.2
0.658	17.3	20.4	37.7	56.0	-18.3
0.162	25.6	21.5	47.1	65.4	-18.3
0.174	25.1	21.3	46.4	64.8	-18.4
0.150	25.6	21.6	47.2	66.0	-18.8
0.220	23.0	21.0	44.0	62.8	-18.8
0.181	24.4	21.2	45.6	64.5	-18.9
0.235	22.4	20.9	43.3	62.3	-19.0
0.194	23.7	21.2	44.9	63.9	-19.0
0.354	19.1	20.6	39.7	58.9	-19.2
0.381	18.4	20.6	39.0	58.3	-19.3
0.255	21.5	20.8	42.3	61.6	-19.3
0.393	18.1	20.5	38.6	58.0	-19.4
0.289	20.4	20.7	41.1	60.5	-19.4
0.293	20.3	20.7	41.0	60.4	-19.4
0.211	22.6	21.0	43.6	63.2	-19.6
0.201	22.9	21.1	44.0	63.6	-19.6
0.578	16.0	20.4	36.4	56.0	-19.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.369	20.8	20.6	41.4	48.5	-7.1
0.640	17.6	20.4	38.0	46.0	-8.0
0.402	19.1	20.5	39.6	47.8	-8.2
0.658	17.3	20.4	37.7	46.0	-8.3
0.162	25.6	21.5	47.1	55.4	-8.3
0.174	25.1	21.3	46.4	54.8	-8.4
0.150	25.6	21.6	47.2	56.0	-8.8
0.220	23.0	21.0	44.0	52.8	-8.8
0.181	24.4	21.2	45.6	54.5	-8.9
0.235	22.4	20.9	43.3	52.3	-9.0
0.194	23.7	21.2	44.9	53.9	-9.0
0.354	19.1	20.6	39.7	48.9	-9.2
0.381	18.4	20.6	39.0	48.3	-9.3
0.255	21.5	20.8	42.3	51.6	-9.3
0.393	18.1	20.5	38.6	48.0	-9.4
0.289	20.4	20.7	41.1	50.5	-9.4
0.293	20.3	20.7	41.0	50.4	-9.4
0.211	22.6	21.0	43.6	53.2	-9.6
0.201	22.9	21.1	44.0	53.6	-9.6
0.578	16.0	20.4	36.4	46.0	-9.6

