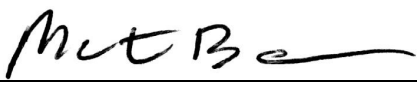
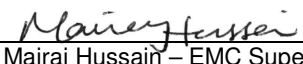




**BUREAU  
VERITAS**

Curtis-Straus LLC, a wholly owned subsidiary of BV CPS

# Test Report

Report No	EL2270-2
Client	AirPointe of New Hampshire
Address	35E Industrial Way Suite 101 Rochester, NH 03867
Phone	603-994-2200
Items tested FCC ID FRN	Bonsai 440 WUS00048 0018228197
Equipment Type Equipment Code	Part 15 Security/Remote Control Transmitter DSC
FCC Rule Parts	47 CFR 15.231(e)
Test Dates	December 15-16, 2011
Results	As detailed within this report
Prepared by	 Matthew Burman – Test Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	March 27, 2012
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 14 of this report.

Curtis-Straus LLC is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



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Form Final Report REV 7-20-07 (DW)



## Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.231(e). The product is the Bonsai 440. The operating frequency is 440MHz. It is powered by +3VDC coin cell batteries. Line Conducted Emissions was not performed.

We found that the product met the requirements without modification. Don Proulx from AirPointe was present during the testing. The test sample was received in good condition.

## Test Methodology

Testing was performed according to ANSI C63.4-2009 and ANSI C63.10-2009. Radiated emissions were maximized by rotating the device around its three orthogonal axes, as well as varying the test antenna's height and polarity. The EUT's antenna cannot be maximized separately. Fresh batteries were used for testing.

Frequency range investigated: 30MHz – 4.5GHz

Measurement distance: 30-4500MHz 3m

This device has no receiver portion.

### Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	



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**Product Tested - Configuration Documentation**

EUT Configuration																																	
<b>Work Order:</b> L2270 <b>Company:</b> airPointe <b>Company Address:</b> 35E Industrial Way Rochester, NH 03867 <b>Contact:</b> Don Proulx <b>Person Present:</b> Don Proulx																																	
<b>MN</b>			<b>PN</b>			<b>SN</b>																											
<b>EUT:</b> T6422 <b>EUT Description:</b> BONSAI 440 - Active RFID Tag <b>EUT TX Frequency:</b> 440MHz																																	
<b>Support Equipment:</b>			<b>MN</b>			<b>SN</b>																											
NONE																																	
<b>EUT Ports:</b>																																	
<table border="1"> <thead> <tr> <th>Port Label</th> <th>Port Type</th> <th>No. of ports</th> <th>No. Populated</th> <th>Cable Type</th> <th>Shielded</th> <th>Ferrites</th> <th>Length</th> <th>Max Length</th> <th>In/Out NEBS Type</th> <th>Unpopulated Reason</th> </tr> </thead> <tbody> <tr> <td colspan="11">NONE</td> </tr> </tbody> </table>												Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason	NONE										
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason																							
NONE																																	
<b>Software / Operating Mode Description:</b>																																	
EUT is transmitting a 440MHz signal every 10.5 seconds																																	

**Test Results****Fundamental Emission****LIMIT**

<i>Fundamental Frequency</i>	<i>Field Strength of Fundamental (microvolts/meter)</i>	<i>Field Strength of Spurious Emission (microvolts/meter)</i>
440MHz	1,500 to 5,000	150 to 500

[15.231(e)]

Average Limit[dBμV/m] =  $20\log(16.6667(F[\text{in MHz}]) - 2833.3333) @ 3\text{m}$

Example Calculation:  $20\log(16.6667(440) - 2833.3333) = 73.1\text{dB}\mu\text{V/m} @ 3\text{m}$

**MEASUREMENT**

Fundamental									
Date: 15-Dec-11			Company: airPointe				Work Order: L2270		
Engineer: John Cushing			EUT Desc: BONSAI 440			EUT Operating Voltage/Frequency: 3V Battery			
Temp: 21.1 °C			Humidity: 22%			Pressure: 1014mBar			
Frequency Range: Fundamental						Measurement Distance: 3 m			
Notes: DCCF = -20.0dB									
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	47 CFR 15.231(e)		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
H peak	440.0	69.0	0.0	16.7	5.6	91.3	93.1	-1.8	Pass
H avg	440.0	49.0	0.0	16.7	5.6	71.3	73.1	-1.8	Pass
Table Result: Pass by -1.8 dB Worst Freq: 440.0 MHz									
Test Site: 1DCC-OATS-3M-II			Cable 1: EMIR-18						
Analyzer: Asset #1327			Preamp: none Antenna: Red-Brown						

Rev: 14-Dec-2011

**Spectrum Analyzers / Receivers / Preselectors**  
SA EMI Chamber (1327)

Range	MN	Mfr	SN	Asset	Cat	Calibration Due
9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	26-Apr-2012

**Radiated Emissions Sites**  
1DCC-OATS-3M-II

FCC Code	IC Code	VCCI Code	Cat	Calibration Due
719150	2762A-10	R-3761, G-493	II	5-Oct-2012

**Antennas**  
Red-Brown Bilog

Range	MN	Mfr	SN	Asset	Cat	Calibration Due
30-2000MHz	JB1	Sunol	A0032406	1218	I	25-Aug-2012

**Meteorological Meters**  
Temp./Humidity/Atm. Pressure Gauge  
1DCC-OATS-3M-I Thermohygrometer

MN	Mfr	SN	Asset	Cat	Calibration Due
7400 Perception II 35519-044	Davis Control Company	N/A 72457635	965 1334	I II	4-Apr-2013 19-Aug-2013

**Cables**  
REMI-18

Range	Mfr	Cat	Calibration Due
9kHz - 2GHz	C-S	II	13-Jan-2012

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



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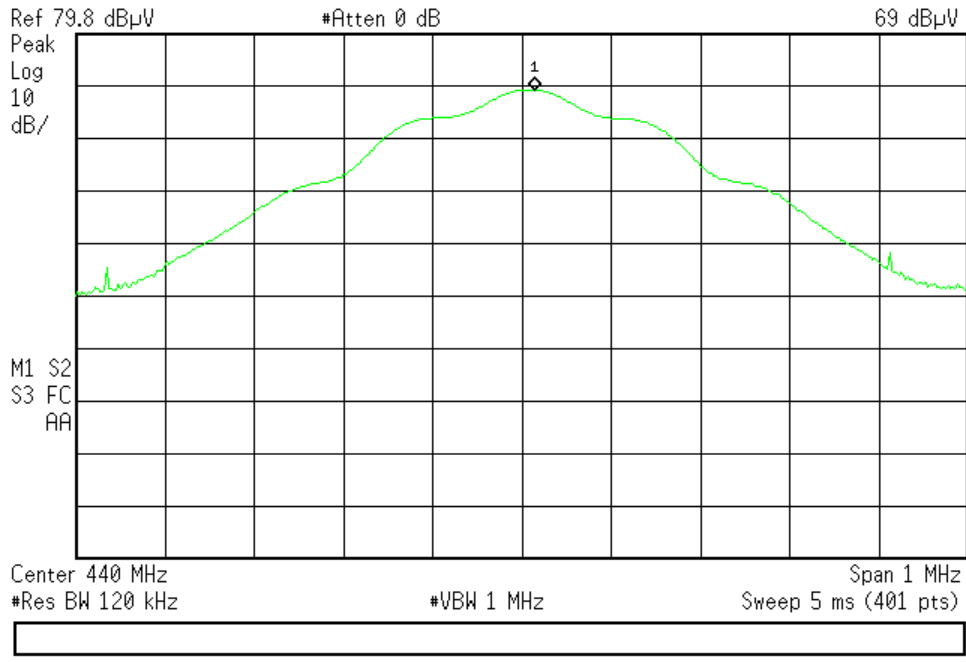


# **Analyzer Screen Plot**

Agilent 16:09:20 Dec 15, 2011

R T

Mkr1 440.0150 MHz  
69 dBμV



**Bandwidth****LIMIT**

*“The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz...Bandwidth is determined at the points 20dB down from the modulated carrier”. [15.231(c)]*

**MEASUREMENTS / RESULTS**

Bandwidth Measurement			
Engineer: John Cushing		Temp: 21.1 °C	
Date: 12-15-11		Humidity: 22%	
Site: 3M2		Pressure: 1014mBar	
RBW = 120kHz			
Frequency (MHz)	20dB BW (MHz)	Limit (MHz)	Results (Pass/Fail)
440	0.5625	1.1	Pass

Rev: 14-Dec-2011

**Spectrum Analyzers / Receivers / Preselectors**  
SA EMI Chamber (1327)**Range**  
9kHz-13.2 GHz**MN**  
E4405B**Mfr**  
Agilent**SN**  
MY45103416**Asset**  
1327**Cat**  
I**Calibration Due**  
26-Apr-2012**Radiated Emissions Sites**  
1DCC-OATS-3M-II**FCC Code**  
719150**IC Code**  
2762A-10**VCCI Code**  
R-3761, G-493**Cat**  
II**Calibration Due**  
5-Oct-2012**Antennas**  
Red-Brown Bilog**Range**  
30-2000MHz**MN**  
JB1**Mfr**  
Sunol**SN**  
A0032406**Asset**  
1218**Cat**  
I**Calibration Due**  
25-Aug-2012**Meteorological Meters**  
Temp./Humidity/Atm. Pressure Gauge  
1DCC-OATS-3M-I Thermohygrometer**MN**  
7400 Perception II  
35519-044**Mfr**  
Davis  
Control Company**SN**  
N/A  
72457635**Asset**  
965  
1334**Cat**  
I  
II**Calibration Due**  
4-Apr-2013  
19-Aug-2013**Cables**  
REMI-18**Range**  
9kHz - 2GHz**Mfr**  
C-S**Cat**  
II**Calibration Due**  
13-Jan-2012

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



# Analyzer Plot

Agilent 16:11:50 Dec 15, 2011

R T

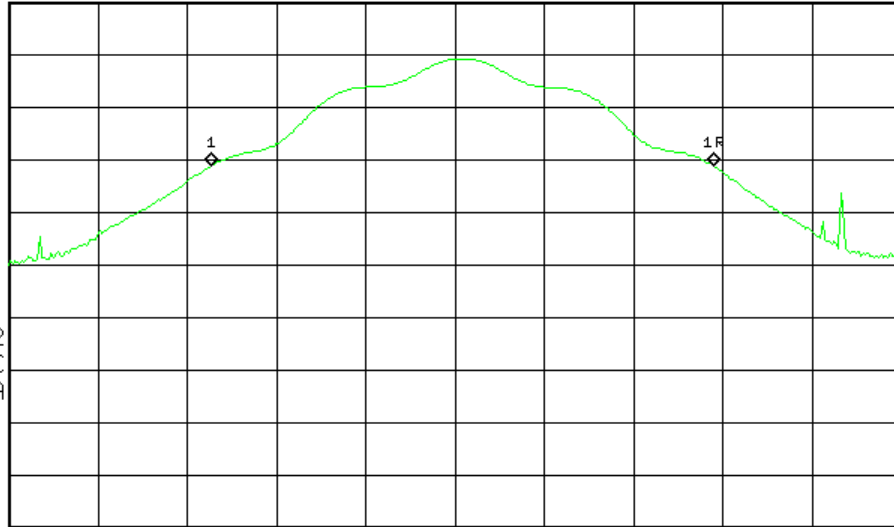
Mkr1  $\Delta$  -562.5 kHz  
-0.039 dB

Ref 79.8 dB $\mu$ V

#Atten 0 dB

Peak  
Log  
10  
dB/

M1 S2  
S3 FC  
AA



Center 440 MHz

#Res BW 120 kHz

#VBW 1 MHz

Span 1 MHz

Sweep 5 ms (401 pts)

C:\temp.gif file saved



## Harmonics and Spurious Emissions

### LIMIT

<i>Fundamental Frequency</i>	<i>Field Strength of Fundamental (microvolts/meter)</i>	<i>Field Strength of Spurious Emission (microvolts/meter)</i>
260 - 470 MHz	1,500 to 5,000	150 to 500

[15.231(e)]

Average Limit[dBμV/m] =  $20\log(16.6667(F[\text{in MHz}]) - 2833.3333) - 20$  @ 3m

Example Calculation:  $20\log(16.6667(440) - 2833.3333) - 20 = 53.1\text{dB}\mu\text{V/m}$  @ 3m

### MEASUREMENTS

Spurious Emissions												
Date: 16-Dec-11			Company: Airpointe						Work Order: L2270			
Engineer: Matthew Burman			EUT Desc: Bonsai 440						EUT Operating Voltage/Frequency: 3Vdc			
Temp: 24.3°C			Humidity: 21%						Pressure: 1003mBar			
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: Duty Cycle Correction Factor = 20dB RBW = 120kHz												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC Class B		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
h pk	880.0	21.4	13.9	21.8	2.0	31.3	---	---	---	46.0	-14.7	Pass
Table Result: Pass by -14.7 dB							Worst Freq: 880.0 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #1505				Cable 2: Asset #1508			Cable 3: ---		
Analyzer: Rental SA#1			Preamp: Orange				Antenna: Red-White			Preselector: ---		
Rev: 14-Dec-2011												
Spectrum Analyzers / Receivers /Preselectors Rental SA #1 (Brown)						Range 9kHz-26.5GHz	MN E4407B	Mfr Agilent	SN SG44210511	Asset 1510	Cat I	Calibration Due 12-Apr-2012
Radiated Emissions Sites EMI Chamber 1						FCC Code 719150	IC Code 2762A-6	VCCI Code R-3032, G-106			Cat I	Calibration Due 12-Mar-2013
Preamps /Couplers Attenuators / Filters Orange						Range 0.009-2000MHz	MN ZFL-1000-LN	Mfr CS	SN N/A	Asset 765	Cat II	Calibration Due 10-Dec-2012
Antennas Red-White Bilog						Range 30-2000MHz	MN JB1	Mfr Sunol	SN A091604-1	Asset 1105	Cat I	Calibration Due 28-Jan-2013
Meteorological Meters Temp./Humidity/Atm. Pressure Gauge CHAMBER1 Thermohygrometer							MN 7400 Perception II 35519-044	Mfr Davis Control Company	SN N/A 72457642	Asset 965 1345	Cat I II	Calibration Due 4-Apr-2013 19-Aug-2013
Cables Asset #1505 Asset #1508						Range 9kHz - 18GHz 9kHz - 18GHz		Mfr Florida RF Florida RF			Cat II II	Calibration Due 19-Aug-2012 9-Apr-2012

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



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**Spurious Emissions**

Date: 16-Dec-11		Company: Airpointe				Work Order: L2270								
Engineer: Matthew Burman		EUT Desc: Bonsai 440				EUT Operating Voltage/Frequency: 3Vdc								
Temp: 24.3°C		Humidity: 21%				Pressure: 1003mBar								
Frequency Range: 1-5GHz						Measurement Distance: 3 m								
Notes: Duty Cycle Correction Factor = 20dB RBW = 1MHz Average Reading = Peak Reading - DCCF														
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	1320.0	33.14	13.1	19.3	26.1	2.0	41.9	21.9	74.0	-32.1	Pass	54.0	-32.1	Pass
v	1760.0	31.36	11.4	18.7	27.0	2.9	42.6	22.6	74.0	-31.4	Pass	54.0	-31.4	Pass
v	2200.0	32.9	12.9	19.4	27.8	3.5	44.8	24.8	74.0	-29.2	Pass	54.0	-29.2	Pass
v	2640.0	31.11	11.1	20.0	29.3	3.6	44.0	24.0	74.0	-30.0	Pass	54.0	-30.0	Pass
v	3080.0	30.5	10.5	19.2	31.0	4.5	46.8	26.8	74.0	-27.2	Pass	54.0	-27.2	Pass
v	3520.0	29.55	9.6	18.5	31.5	4.5	47.1	27.1	74.0	-26.9	Pass	54.0	-26.9	Pass
v	3960.0	29.51	9.5	18.4	32.8	5.2	49.1	29.1	74.0	-24.9	Pass	54.0	-24.9	Pass
v	4400.0	27.65	7.7	17.5	32.5	5.8	48.5	28.5	74.0	-25.5	Pass	54.0	-25.5	Pass
Table Result:		Pass		by		-24.9 dB		Worst Freq:		3960.0 MHz				
Test Site: EMI Chamber 1		Cable 1: Asset #1505		Cable 2: Asset #1508		Cable 3: ---								
Analyzer: Rental SA#1		Preamp: Brown		Antenna: Black Horn		Preselector: ---								

Rev: 14-Dec-2011

Spectrum Analyzers / Receivers / Preselectors  
Rental SA #1 (Brown)Range  
9kHz-26.5GHzMN  
E4407BMfr  
AgilentSN  
SG44210511Asset  
1510Cat  
ICalibration Due  
12-Apr-2012Radiated Emissions Sites  
EMI Chamber 1FCC Code  
719150IC Code  
2762A-6VCCI Code  
R-3032, G-106Cat  
ICalibration Due  
12-Mar-2013Preamps / Couplers Attenuators / Filters  
BrownRange  
1-18GHzMN  
CSMfr  
CSSN  
N/AAsset  
1523Cat  
IICalibration Due  
10-Dec-2012Antennas  
Black HornRange  
1-18GHzMN  
3115Mfr  
EMCOSN  
9703-5148Asset  
56Cat  
ICalibration Due  
29-Jun-2013Meteorological Meters  
Temp./Humidity/Atm. Pressure Gauge  
CHAMBER1 ThermohygrometerMN  
7400 Perception II  
35519-044Mfr  
Davis  
Control CompanySN  
N/A  
72457642Asset  
965  
1345Cat  
I  
IICalibration Due  
4-Apr-2013  
19-Aug-2013Cables  
Asset #1505  
Asset #1508Range  
9kHz - 18GHz  
9kHz - 18GHzMfr  
Florida RF  
Florida RFCat  
II  
IICalibration Due  
19-Aug-2012  
9-Apr-2012

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

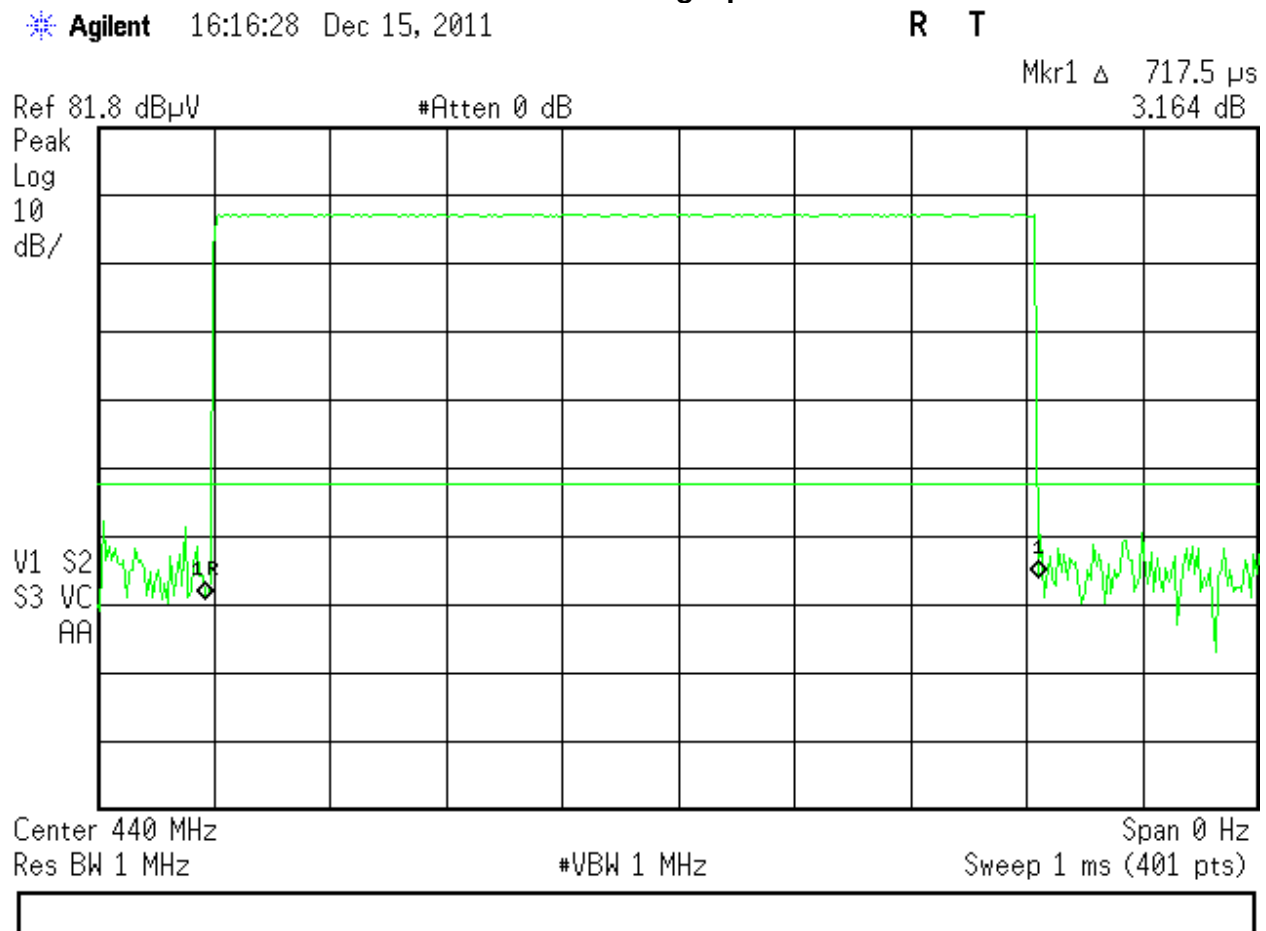
**Note:** 15.231(b)(3) states "Spurious emissions shall be attenuated to the average...limits shown in this table [15.231(e)] or to the general limits shown in Section 15.209, whichever limit permits a higher field strength." Since the emissions above meet the 15.209 limits, those limits are displayed in the data table to show worst case.



## Timing Requirements / Duty Cycle Correction Factor

"In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds." [15.231(e)]

### Duration of single pulse

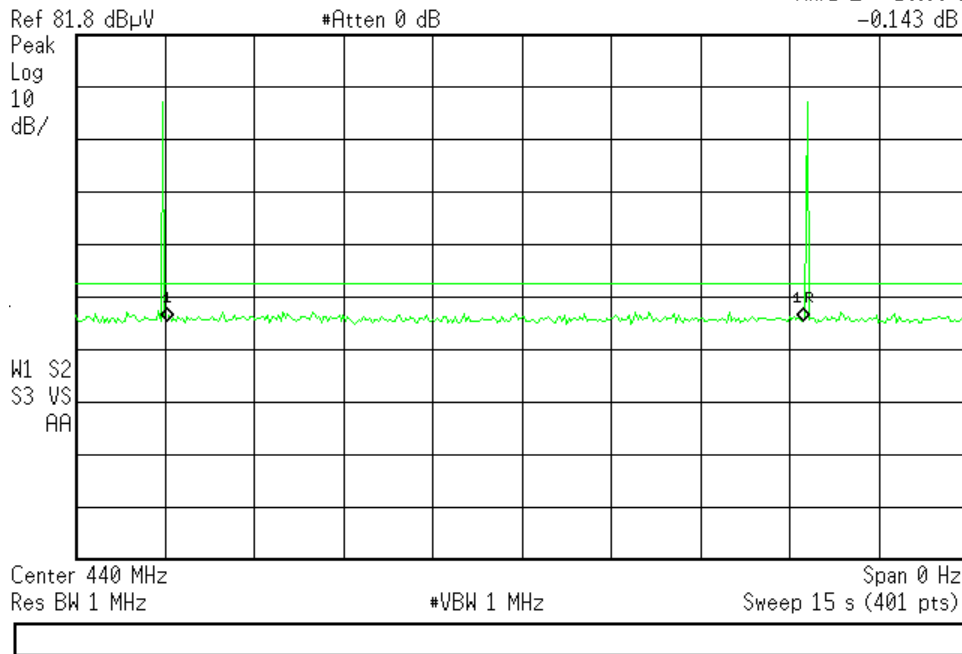


Silent period =  $30 \times 0.7175 \text{ milliseconds} = 0.0215 \text{ seconds}$   
The silent period shall be minimum 10 seconds.

**Silent Period**

Agilent 16:19:25 Dec 15, 2011

R T

Mkr1  $\Delta$  -10.69 s  
-0.143 dB

The worst case duty cycle is represented by the two analyzer plots immediately above.

$$\text{DCCF} = 20 \cdot \log (.7175\text{ms}/0.1\text{s})$$

$$\text{DCCF} = 20 \cdot \log (0.007175)$$

$$\text{DCCF} = -42.88\text{dB}$$

A 20dB Duty Cycle Correction Factor was used in this report.

## Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz)		
NIST	5.6dB	N/A
CISPR	4.6dB	5.2dB (Ucisp)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisp)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	$3.23 \times 10^{-8}$	$1 \times 10^{-7}$
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation:		
• Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	3.4% 0.3dB	5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		



## Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS," "MTL," "ACTS," "MTL-ACTS" and "CURTIS-STRAUS" (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only where such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.
13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST



ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B) NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.\$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

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