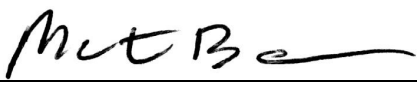
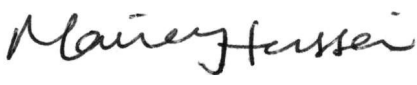




**BUREAU  
VERITAS**

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

# Test Report

Report No	EK1442-3
Client	UltraClenz, LLC
Address	1440 W. Indiantown Rd. Suite 350 Jupiter, FL 33458
Phone	561-840-8405
Items tested FCC ID FRN	Hub Assembly Z9O-FAS1505 0021282710
Equipment Type Equipment Code	Security Device Transceiver DSR
FCC Rule Parts	47 CFR 15.231(a)
Test Dates	November 8, 2010, December 20-22, 2010, April 12 and 30, 2012
Results	As detailed within this report
Prepared by	 Matthew Burman – Test Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	June 13, 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(a). The product is the Hub Assembly. The operating frequency is 433.9MHz. It is powered at 120Vac 60Hz. Line Conducted Emissions was performed.

We found that the product met the requirements without modification. The test sample was received in good condition.

## Test Methodology

Testing was performed according to ANSI C63.4-2003 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 was maximized separately.

Frequency range investigated: 0.15MHz – 4.5GHz

Measurement distance: 30-4500MHz 3m  
0.15-30MHz Conductive

### 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> K1442 <b>Company:</b> UltraClenz, LLC <b>Company Address:</b> 1440 W. Indiantown Rd. Suite 350 Jupiter, FL 33458 <b>Contact:</b> Marina Willis										
<b>MN</b>					<b>SN</b>					
EUT: FAS1505					Sample 1					
EUT Description: Hub Assembly EUT Tx Frequency: 433MHz										
<b>Support Equipment:</b>					<b>SN</b>					
Kenwood AC adapter W08-1044					Sample 1					
<b>EUT Ports:</b>										
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason
RS-485	Serial	1	0							
Power	DC power	1	1	twisted pair	None	none	1.5m	1.5m	indoor	Setup Only
<b>Software / Operating Mode Description:</b>										
EUT continues to transmit										

**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>
260-470MHz	3,750 to 12,500	375 to 1,250

[15.231(a)]

Average Limit[dBμV/m] =  $20\log(41.6667(F[\text{in MHz}]) - 7083.3333) @ 3\text{m}$ Example Calculation:  $20\log(41.6667(433.9) - 7083.3333) = 80.8\text{dB}\mu\text{V/m} @ 3\text{m}$ **MEASUREMENT**

Radiated Emissions Table												
Date: 08-Nov-10			Company: UltraClenz						Work Order: K1442			
Engineer: Evan Gould			EUT Desc: WINET Hub						EUT Operating Voltage/Frequency: 120Vac 60Hz			
Temp: 24.2°C			Humidity: 22%						Pressure: 990mBar			
Frequency Range: 30-1000MHz								Measurement Distance: 3 m				
Notes: Worst case 100ms duty cycle = 2%												
DCCF = -33.9												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			FCC 15.231(a)		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Fundamental			---	---	---	---	---	---	---	---	---	---
Hpk	433.77	71.9	0.0	16.9	1.2	90.0	---	---	---	100.8	-10.8	Pass
Hav	433.77	38.0	0.0	16.9	1.2	56.1	---	---	---	80.8	-24.7	Pass
Table Result: Pass by -10.8 dB								Worst Freq: 433.77 MHz				
Test Site: EMI Chamber 2			Cable 1: Asset #1506				Cable 2: Asset #1508			Cable 3: ---		
Analyzer: Gnrld			Preamp: none				Antenna: Red-White			Preselector: ---		

Rev. 11/4/2010

**Spectrum Analyzers / Receivers / Preselectors**

Gold

Range  
100Hz-26.5 GHzMN  
E4407BMfr  
AgilentSN  
MY45113816Asset  
1284Cat  
ICalibration Due  
4/9/2011**Radiated Emissions Sites**

EMI Chamber 2

FCC Code  
719150IC Code  
2762A-7VCCI Code  
R-3033, G-107Cat  
ICalibration Due  
2/15/2011**Antennas**

Red-White Bilog

Range  
30-2000MHzMN  
JB1Mfr  
SunolSN  
A091604-1Asset  
1105Cat  
ICalibration Due  
12/17/2010**Meteorological Meters**Temp./Humidity/Atm. Pressure Gauge  
CHAMBER2 ThermohygrometerMN  
7400 Perception II  
35519-044Mfr  
Davis  
Control CompanySN  
N/A  
72457639Asset  
965  
1347Cat  
I  
IICalibration Due  
4/6/2011  
8/18/2011**Cables**Asset #1506  
Asset #1508Range  
9kHz - 18GHz  
9kHz - 26.5GHzMfr  
Florida RF  
Florida RFCat  
II  
IICalibration Due  
8/16/2011  
4/20/2011

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



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**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**

20dB Bandwidth												
Date: 22-Dec-10			Company: Ultraclenz				Work Order: K1442					
Engineer: Matthew Burman			EUT Desc: WINET Hub				EUT Operating Voltage/Frequency: 120Vac 60Hz					
Temp: 19.7°C			Humidity: 23%				Pressure: 997mBar					
Frequency Range: 433MHz							Measurement Distance: 3 m					
Notes: Limit = 0.25% of center frequency												
	Frequency (MHz)	Bandwidth (MHz)					---			FCC 15.231(c)		
										Limit (MHz)	Margin (MHz)	Result (Pass/Fail)
	433.0	0.551991					---	---	---	1.1	-0.5	Pass
Test Site: 1DCC-OATS-3M-I			Cable 1: EMIR-14			Cable 2: ---			Cable 3: ---			
Analyzer: Rental SA#1			Preamp: none			Antenna: Grn-Red			Preselector: ---			

Rev: 20-Dec-2010

**Spectrum Analyzers / Receivers / Preselectors**

Rental SA #1 (Brown)

**Range**

9kHz-26.5GHz

**MN**

E4407B

**Mfr**

Agilent

**SN**

SG44210511

**Asset**

1510

**Cat**

I

**Calibration Due**

25-Mar-2011

**Radiated Emissions Sites**

1DCC-OATS-3M-I

**FCC Code**

719150

**IC Code**

2762A-8

**VCCI Code**

R-3109

**Cat**

II

**Calibration Due**

7-Jul-2011

**Antennas**

Green-Red Bilog

**Range**

30-2000MHz

**MN**

CBL6112B

**Mfr**

Chase

**SN**

2435

**Asset**

990

**Cat**

I

**Calibration Due**

30-Jun-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**6-Apr-2011  
18-Aug-2011**Cables**

REMI-14

**Range**

9kHz - 2GHz

**Mfr**

C-S

**Cat**

II

**Calibration Due**

17-Sep-2011

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



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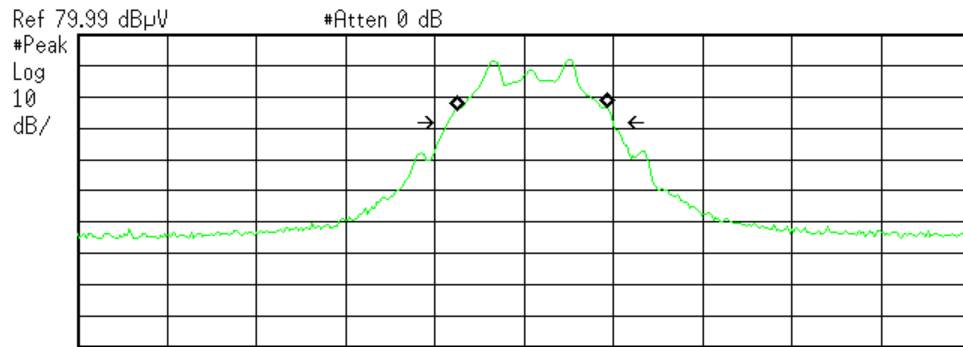
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Agilent 12:34:10 Dec 22, 2010

R T



Occupied Bandwidth  
504.2145 kHz

Occ BW % Pwr 99.00 %  
x dB -20.00 dB

Transmit Freq Error 24.744 kHz  
x dB Bandwidth 551.991 kHz

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	3,750 to 12,500	375 to 1,250

[15.231(a)]

Average Limit[dBμV/m] =  $20\log(41.6667(F[\text{in MHz}]) - 7083.3333) - 20 @ 3\text{m}$

Example Calculation:  $20\log(41.6667(433.9) - 7083.3333) - 20 = 60.8\text{dB}\mu\text{V/m} @ 3\text{m}$

### MEASUREMENTS

Radiated Emissions Table												
Date: 08-Nov-10			Company: UltraClenz						Work Order: K1442			
Engineer: Evan Gould			EUT Desc: WiNET Hub						EUT Operating Voltage/Frequency: 120Vac 60Hz			
Temp: 24.2°C			Humidity: 22%						Pressure: 990mBar			
Frequency Range: 30-1000MHz								Measurement Distance: 3 m				
Notes: Worst case 100ms duty cycle = 2% DCCF = -33.9												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC 15.231(a)		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
Hpk	867.6	57.4	22.7	22.4	2.0	59.1	---	---	---	80.8	-21.7	Pass
Hav	867.6	23.5	22.7	22.4	2.0	25.2	---	---	---	60.8	-35.6	Pass
Table Result:			Pass		by -21.7 dB		Worst Freq:			867.6 MHz		
Test Site: EMI Chamber 2			Cable 1: Asset #1506				Cable 2: Asset #1508			Cable 3: ---		
Analyzer: Gold			Preamp: Blue				Antenna: Red-White			Preselector: ---		

Rev. 11/4/2010

<b>Spectrum Analyzers / Receivers / Preselectors</b> Gold	<b>Range</b> 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	<b>Asset</b> 1284	<b>Cat</b> I	<b>Calibration Due</b> 4/9/2011
<b>Radiated Emissions Sites</b> EMI Chamber 2	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-7	<b>VCCI Code</b> R-3033, G-107			<b>Cat</b> I	<b>Calibration Due</b> 2/15/2011
<b>Preamps / Couplers Attenuators / Filters</b> Blue	<b>Range</b> 0.009-2000MHz	<b>MN</b> ZFL-1000-LN	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 759	<b>Cat</b> II	<b>Calibration Due</b> 4/6/2011
<b>Antennas</b> Red-White Bilog	<b>Range</b> 30-2000MHz	<b>MN</b> JB1	<b>Mfr</b> Sunol	<b>SN</b> A091604-1	<b>Asset</b> 1105	<b>Cat</b> I	<b>Calibration Due</b> 12/17/2010
<b>Meteorological Meters</b> Temp./Humidity/Atm. Pressure Gauge CHAMBER2 Thermohygrometer		<b>MN</b> 7400 Perception II 35519-044	<b>Mfr</b> Davis Control Company	<b>SN</b> N/A 72457639	<b>Asset</b> 965 1347	<b>Cat</b> I II	<b>Calibration Due</b> 4/6/2011 8/18/2011
<b>Cables</b> Asset #1506 Asset #1508	<b>Range</b> 9kHz - 18GHz 9kHz - 26.5GHz		<b>Mfr</b> Florida RF Florida RF			<b>Cat</b> II II	<b>Calibration Due</b> 8/16/2011 4/20/2011

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



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Radiated Emissions Table												
Date: 20-Dec-10			Company: UltraClenz			Work Order: K1442						
Engineer: Evan Gould			EUT Desc: Hub			EUT Operating Voltage/Frequency: 120Vac 60Hz						
Temp: 17.3°C			Humidity: 23%			Pressure: 999mBar						
Frequency Range: 30-1000MHz						Measurement Distance: 3 m						
Notes: No TX												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB)	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)
noise floor	216.5	32.6	25.5	10.5	2.1	19.7	---	---	---	46.0	-26.3	Pass
noise floor	412.4	28.9	25.8	17.1	3.0	23.2	---	---	---	46.0	-22.8	Pass
noise floor	525.9	25.5	25.7	18.2	3.5	21.5	---	---	---	46.0	-24.5	Pass
noise floor	610.4	24.6	25.5	19.3	3.8	22.2	---	---	---	46.0	-23.8	Pass
noise floor	793.2	23.3	25.2	20.6	4.5	23.2	---	---	---	46.0	-22.8	Pass
noise floor	920.0	26.6	25.3	21.8	4.9	28.0	---	---	---	46.0	-18.0	Pass
Table Result: Pass						by	-18.0 dB			Worst Freq: 920.0 MHz		
Test Site: 1DCC-OATS-3M-I			Cable 1: EMIR-14			Cable 2: ---			Cable 3: ---			
Analyzer: Rental SA#1			Preamp: Green			Antenna: Grn-Red			Preselector: ---			

Rev. 11/4/2010

<b>Spectrum Analyzers / Receivers / Preselectors</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>
Rental SA #1 (Brown)		9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	3/25/2011
<b>Radiated Emissions Sites</b>		<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>				
1DCC-OATS-3M-I		719150	2762A-8	R-3109				
<b>Preamps / Couplers Attenuators / Filters</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>
Green		0.009-2000MHz	ZFL-1000-LN	CS	N/A	802	II	9/9/2011
<b>Antennas</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>
Green-Red Bilog		30-2000MHz	CBL6112B	Chase	2435	990	I	6/30/2012
<b>Meteorological Meters</b>				<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>
Temp./Humidity/Atm. Pressure Gauge				7400 Perception II	Davis	N/A	965	I
1DCC-OATS-3M-I Thermohygrometer				35519-044	Control Company	72457635	1334	II
<b>Cables</b>		<b>Range</b>			<b>Mfr</b>			
REMI-14		9kHz - 2GHz			C-S			
						<b>Cat</b>	<b>Calibration Due</b>	
						II	9/17/2011	

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

Radiated Emissions Table																			
Date: 20-Dec-10			Company: UltraClenz						Work Order: K1442										
Engineer: Evan Gould			EUT Desc: Hub						EUT Operating Voltage/Frequency: 120Vac 60Hz										
Temp: 17.3°C			Humidity: 23%						Pressure: 999mBar										
Frequency Range: 1 - 4.5GHz									Measurement Distance: 3 m										
Notes:																			
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	1301.3	45.3	11.4	20.8	24.7	1.1	50.3	16.4	74.0	-23.7	Pass	54.0	-37.6	Pass					
V	1736.1	43.8	9.9	20.1	26.4	1.5	51.6	17.7	74.0	-22.4	Pass	54.0	-36.3	Pass					
H	2170.0	41.8	7.9	21.3	27.9	1.4	49.8	15.9	74.0	-24.2	Pass	54.0	-38.1	Pass					
Table Result:					Pass	by	-22.4 dB			Worst Freq:					1736.1 MHz				
Test Site: 1DCC-OATS-3M-I					Cable 1: EMIR-HIGH-21					Cable 2: ---					Cable 3: ---				
Analyzer: Rental SA#1					Preamp: Asset #1517					Antenna: Yellow Horn					Preselector: ---				

Rev: 20-Dec-2010

<b>Spectrum Analyzers / Receivers / Preselectors</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>
Rental SA #1 (Brown)		9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	25-Mar-2011
<b>Radiated Emissions Sites</b>		<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>				
1DCC-OATS-3M-I		719150	2762A-8	R-3109				
<b>Preamps / Couplers Attenuators / Filters</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>
1517 HF Preamp		1-18GHz	CS	CS	N/A	1517	II	1-Jun-2011
<b>Antennas</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>
Yellow Horn		1-18GHz	3115	EMCO	9608-4898	37	I	27-May-2011
<b>Meteorological Meters</b>				<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>
Temp./Humidity/Atm. Pressure Gauge				7400 Perception II	Davis	N/A	965	I
1DCC-OATS-3M-I Thermohygrometer				35519-044	Control Company	72457635	1334	II
<b>Cables</b>		<b>Range</b>			<b>Mfr</b>			
REMI-High-21		9kHz - 26.5GHz			C-S			
						<b>Cat</b>	<b>Calibration Due</b>	
						II	8-Jan-2011	

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.



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## Line Conducted Emissions

LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dB $\mu$ V)	Average limit (dB $\mu$ V)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.  
[47 CFR 15.207(a)]

## AC Side of a DC Supply Conducted Emissions

Date: 12-Apr-12				Company: UltraClenz LLC				Work Order: K1442						
Engineer: Matthew Burman				EUT Desc: Hub Assembly										
Temp: 23.2 °C				Humidity: 21%				Pressure: 1006 mBar						
Notes:														
Frequency Range: 0.15-30MHz								EUT Input Voltage/Frequency: 120Vac 60Hz						
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor	ATTN Factor	FCC/CISPR Class B			FCC/CISPR Class B		
	QP1 (dBuV)	QP2 (dBuV)	AVG1 (dBuV)	AVG2 (dBuV)	L1 (dB)	L2 (dB)			QP Limit (dB)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dB)	Margin (dB)	Result (Pass/Fail)
0.15	14.4	14.2	5.6	5.5	-0.3	-0.1	-0.1	-20.6	66.0	-30.6	Pass	56.0	-29.4	Pass
0.50	6.4	6.6	-1.9	-2.2	-0.1	-0.1	-0.1	-20.6	56.0	-28.6	Pass	46.0	-27.0	Pass
1.00	5.9	5.3	-2.3	-2.4	-0.1	-0.1	-0.1	-20.6	56.0	-29.3	Pass	46.0	-27.5	Pass
5.00	3.4	2.5	-3.5	-4.7	-0.2	-0.1	-0.1	-20.6	56.0	-31.7	Pass	46.0	-28.6	Pass
10.00	-1.4	-1.8	-8.1	-8.5	-0.2	-0.2	-0.2	-20.7	56.0	-36.3	Pass	46.0	-33.0	Pass
20.00	-2.4	-2.4	-9.3	-9.3	-0.4	-0.4	-0.2	-20.7	56.0	-37.1	Pass	46.0	-34.0	Pass
Result: Pass								Worst Margin: -27.0 dB		Frequency:		0.50 MHz		
Measurement Device: 230VAC LISN Asset 1492								Cable: CEMI-03		Spectrum Analyzer: Black				
								Attenuator: 20dB Atten-4		Site: CEMI 3				

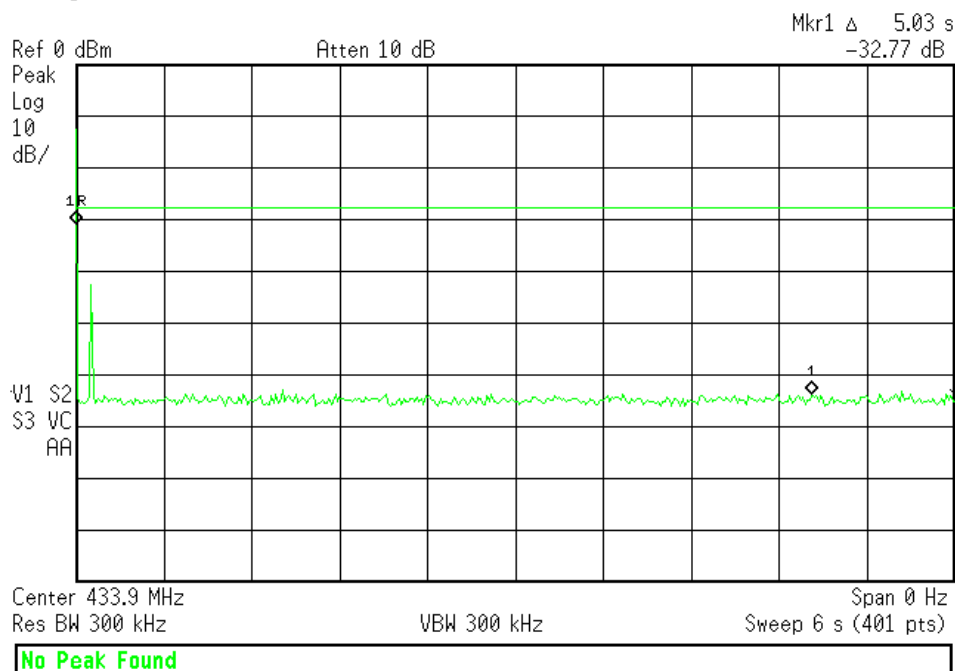


## Timing Requirements

*“A transmitter activated automatically shall cease transmission within 5 seconds after activation”*  
15.231(a)(2)

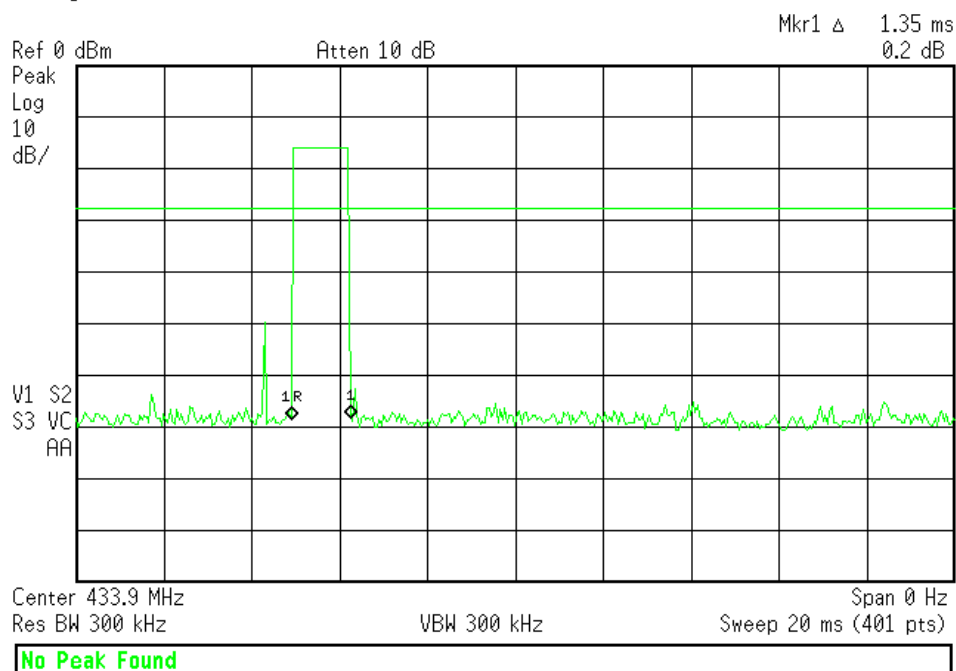
Agilent 12:36:19 Apr 30, 2012

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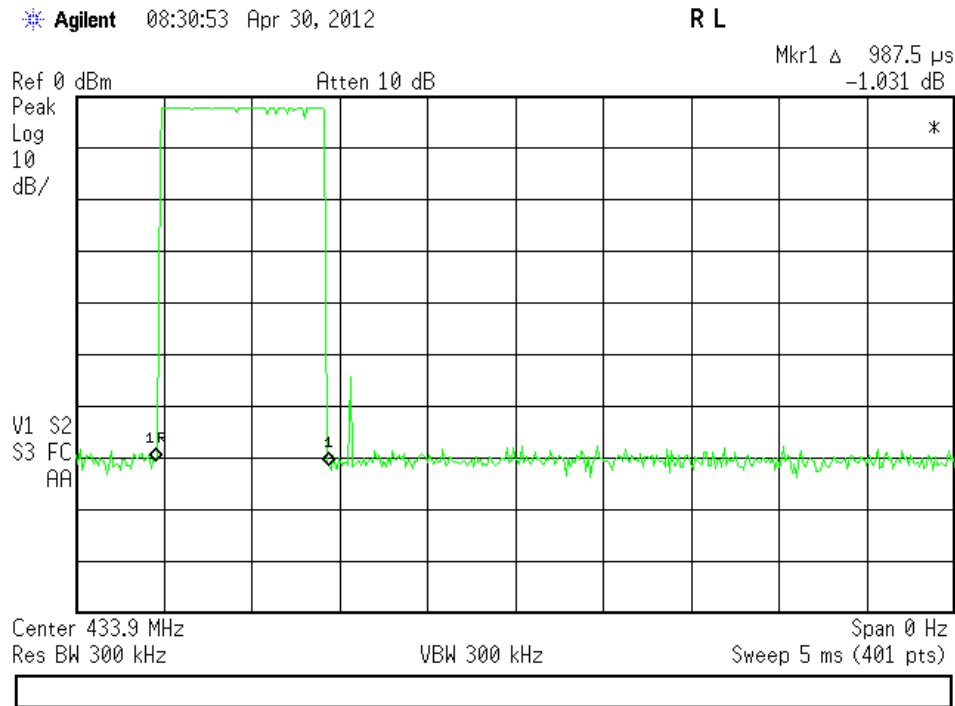
Agilent 12:39:02 Apr 30, 2012

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*“Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter.” 15.231(a)(3)*

### Single polling pulse



During one hour of normal operation, only a single pulse was observed.

The total time for periodic transmission is 987.5us, which is less than the 2 seconds allowed.

## 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 (Ucisprr)
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 (Ucisprr)
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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