



BUREAU  
VERITAS

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

# Test Report

Report No	EL0206-1
Client	INNCOM International
Address	277 West Main Street Niantic, CT 06357
Phone	860-739-4468
Items tested	Mini Radio
FCC ID	GTC202515I5RF
FRN	0017924150
Equipment Type	Low power communications device transmitter
Equipment Code	DXX
Standards	47CFR 15.249
Test Dates	February 25-26, 2011 and March 18, 2011
Results	As detailed within this report
Prepared by	 Matthew Burman – EMC Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	<u>March 18, 2011</u>
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 16 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.



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



## Contents

Contents.....	2
Product Tested - Configuration Documentation .....	3
Summary.....	4
Test Methodology .....	4
Compliance Statement .....	5
Test Results .....	6
Duty Cycle Correction Factor (DCF).....	6
Fundamental Measurements.....	8
Band Edge Measurements.....	9
Radiated Spurious Emissions .....	11
AC Line Conducted Emissions.....	13
Measurement Uncertainty.....	14
Product Documentation .....	15
Conditions Of Testing .....	16

Form Final Report REV 2-16-07 (DW)



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828

**Product Tested - Configuration Documentation**

EUT Configuration																					
Work Order: L0206 Company: Inncom Company Address: 277 West Main Street Niantic, CT 06357 Contact: Ryan Gardner Person Present: Ryan Gardner																					
EUT: 202-515 EUT Description: Mini Radio EUT Tx Frequency: 2405-2480MHz																					
<i>Support Equipment:</i>		MN Sunny switching power supply SW-2506							SN sample 1												
<i>EUT Ports:</i>		Port Label DC Power																			
		Port Type Power DC																			
		No. 1																			
		Populated 1																			
		Cable Type twisted pair																			
		Shielded no																			
		Ferrites none																			
		Length 1m																			
		Max Length 1m																			
		In/Out indoor																			
<i>Software / Operating Mode Description:</i>																					
EUT continues to transmit atmospheric conditions																					



## Summary

This test report supports a limited modular approval of a transmitter operating pursuant to 47 CFR 15.249. The product is the Mini Radio. It is a transmitter that operates in the range 2400-2483.5MHz

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

## Test Methodology

Radiated emission and AC Line conducted testing was performed according to the procedures specified in ANSI C63.4 (2009). Radiated Emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. The device antenna cannot be maximized separately.

The product was tested with modulation on and peak readings were compared against the average limit presented in section CFR 15.249.

The EUT operating voltage is 12Vdc.

The following bandwidths were used during radiated spurious and line conducted emissions.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

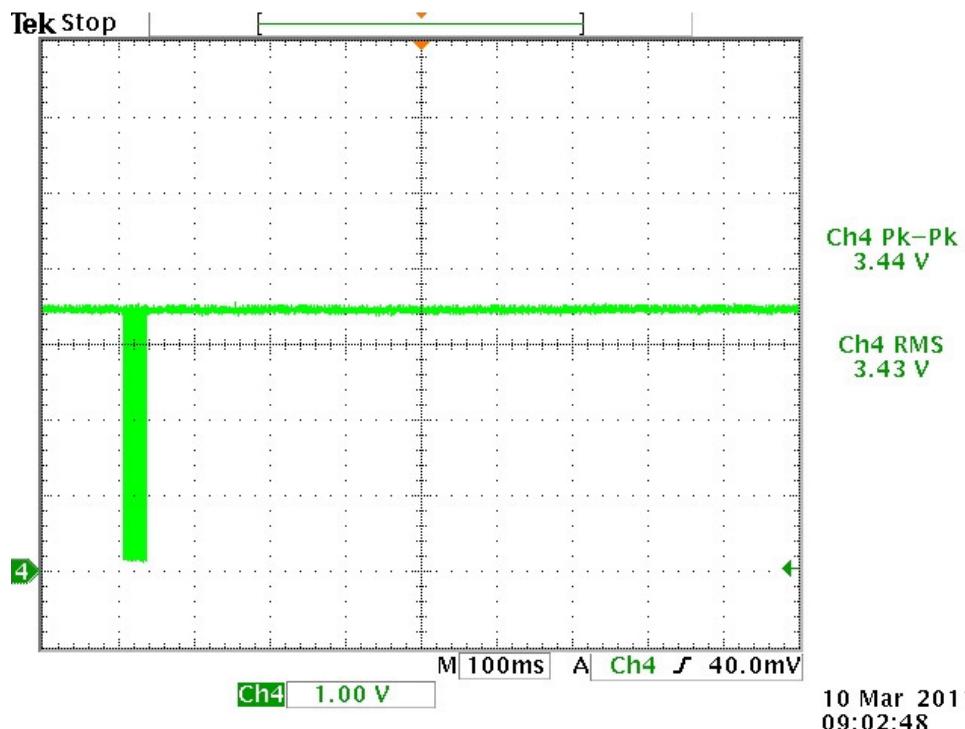


**Compliance Statement**

The Mini Radio has been found to conform to the following parts of 47 CFR as detailed below:

Part 15	Comments
15.15(b)	There are no controls accessible to the user that vary the output power.
15.19	The label is shown in the label exhibit.
15.21	Information to the user is shown in the instruction manual exhibit.
15.27	No special accessories are required for compliance.
15.203	The antenna for this device is a SMT
15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
15.207	EUT meets the AC Line conducted emissions requirements of 15.207.
15.249(a)	The fundamental and harmonics meet the limits in 15.249(a)
15.249(d)	Spurious emissions meet the limits in 15.209.



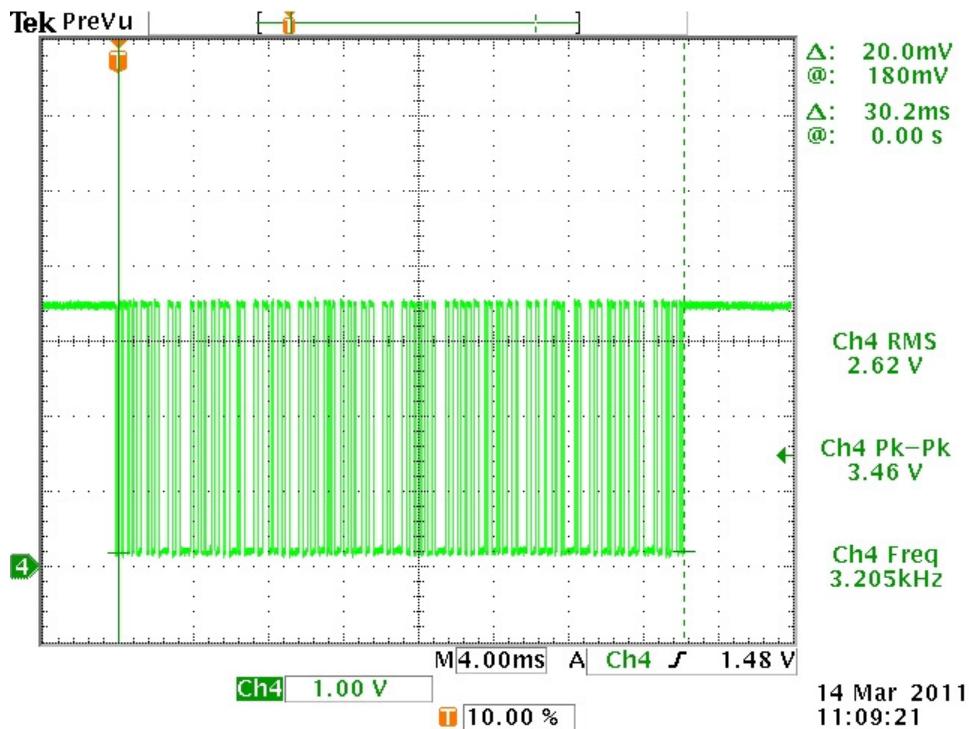
**Test Results****Duty Cycle Correction Factor (DCF)**

Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 6 of 17

Testing Cert. No. 1627-01



In any 100ms time period, the product could be on for 30.2ms

$$\text{DCCF} = 20 \times \log (30.2/100)$$

$$\text{DCCF} = -10.3$$

A duty cycle correction factor of -10.3dB was applied



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 7 of 17

Testing Cert. No. 1627-01

## Fundamental Measurements

### LIMITS

The field strength from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

[15.249(a)]

## MEASUREMENTS / RESULTS

Radiated Emissions Table								47 CFR 15.249(a)				
Date: 15-Mar-11	Company: Inncom								Work Order: L0206			
Engineer: Evan Gould	EUT Desc: 202-515								EUT Operating Voltage/Frequency: 12VDC			
Temp: 23.1°C	Humidity: 22%								Pressure: 1028.4mBar			
Frequency Range: 2400-2483.5MHz								Measurement Distance: 3 m				
Notes: Duty Cycle Correction Factor = 10.3dB Worst Case 100ms On Time = 30.2ms												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Duty Cycle Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)		
Hpk	2404.6	67.4	0.0	28.9	3.1	0.0	99.4	114.0	-14.6	Pass		
Hav	2404.6	67.4	0.0	28.9	3.1	10.3	89.1	94.0	-4.9	Pass		
Hpk	2445.6	67.3	0.0	29.0	3.2	0.0	99.5	114.0	-14.5	Pass		
Hav	2445.6	67.3	0.0	29.0	3.2	10.3	89.2	94.0	-4.8	Pass		
Hpk	2480.6	67.2	0.0	29.0	3.3	0.0	99.5	114.0	-14.5	Pass		
Hav	2480.6	67.2	0.0	29.0	3.3	10.3	89.2	94.0	-4.8	Pass		
<b>Table Result:</b> Pass by -4.8 dB								<b>Worst Freq:</b> 2445.6 MHz				
Test Site: 1DCC-OATS-3M-I	Cable 1: EMIR-HIGH-22								Cable 2: ---			
Analyzer: Black	Preamp: none								Antenna: Black Horn			

Rev: 15-Mar-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 25-Mar-2011
Radiated Emissions Sites 1DCC-OATS-3M-II	FCC Code 719150	IC Code 2762A-10	VCCI Code NA			Cat II	Calibration Due 5-Oct-2012
Antennas Black Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 9703-5148	Asset 56	Cat I	Calibration Due 6-Jul-2011
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-High-21	Range 9kHz - 26.5GHz	Mfr C-S			Cat II	Calibration Due 18-Jan-2012	

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



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 8 of 17

Testing Cert. No. 1627-01

## Band Edge Measurements

### LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).  
[15.247(d)]

### MEASUREMENTS / RESULTS

#### Bandedge

Date: 18-Mar-11		Company: Inncom		Work Order: L0206										
Engineer: Matthew Burman		EUT Desc: 202-515		EUT Operating Voltage/Frequency: 12Vdc										
Temp: 23.2°C		Humidity: 21%		Pressure: 1015mBar										
Frequency Range: 2400MHz														
Measurement Distance: 3 m														
Notes: Bandedge DCCF = 10.3dB RBW = 1MHz														
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB <sub>u</sub> V)	Average Reading (dB <sub>u</sub> V)	Preamp Factor (dB)	Antenna Factor (dB:m)	Cable Factor (dB)	Adjusted Peak Reading (dB <sub>u</sub> V/m)	Adjusted Avg Reading (dB <sub>u</sub> V/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
h	2400.0	63.12	52.8	36.7	28.9	3.1	58.4	48.1	74.0	-15.6	Pass	54.0	-5.9	Pass
v	2400.0	58.04	47.7	36.7	28.9	3.1	53.3	43.0	74.0	-20.7	Pass	54.0	-11.0	Pass
Table Result: Pass by -5.9 dB						Worst Freq: 2400.0 MHz								
Test Site: 1DCC-OATS-3M-I Analyzer: Gold						Cable 1: EMIR-HIGH-22			Cable 2: ---			Cable 3: ---		
Notes: Bandedge DCCF = 9.6dB RBW = 1MHz, reduced RBW = 100kHz						Antenna: Black Horn			Preselector: ---					

#### Bandedge

Date: 18-Mar-11		Company: Inncom		Work Order: L0206										
Engineer: Matthew Burman		EUT Desc: 202-515		EUT Operating Voltage/Frequency: 12Vdc										
Temp: 23.2°C		Humidity: 21%		Pressure: 1015mBar										
Frequency Range: 2483.5MHz														
Measurement Distance: 3 m														
Notes: Bandedge Marker - Delta Method DCCF = 9.6dB RBW = 1MHz, reduced RBW = 100kHz														
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB <sub>u</sub> V)	Average Reading (dB <sub>u</sub> V)	Preamp Factor (dB)	Antenna Factor (dB:m)	Cable Factor (dB)	Adjusted Peak Reading (dB <sub>u</sub> V/m)	Adjusted Avg Reading (dB <sub>u</sub> V/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
h	2483.5	54.98	50.1	36.8	29.0	3.3	50.4	45.6	74.0	-23.6	Pass	54.0	-8.4	Pass
v	2483.5	51.2	46.2	36.8	29.0	3.3	46.7	41.7	74.0	-27.3	Pass	54.0	-12.3	Pass
Table Result: Pass by -8.4 dB						Worst Freq: 2483.5 MHz								
Test Site: 1DCC-OATS-3M-I Analyzer: Gold						Cable 1: EMIR-HIGH-22			Cable 2: ---			Cable 3: ---		
Notes: Bandedge Marker - Delta Method DCCF = 9.6dB RBW = 1MHz, reduced RBW = 100kHz						Antenna: Black Horn			Preselector: ---					

Rev: 15-Mar-2011

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	9-Apr-2011
Radiated Emissions Sites 1DCC-OATS-3M-II	FCC Code 719150	IC Code 2762A-10	VCCI Code NA			Cat II	Calibration Due 5-Oct-2012
Preamps /Couplers Attenuators / Filters Red-Blue	Range 1-18GHz	MN PE2-38-218-4R5-17-15-SFF	Mfr CS	SN NA	Asset 1257	Cat II	Calibration Due 15-Jun-2011
Antennas Black Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 9703-5148	Asset 56	Cat I	Calibration Due 6-Jul-2011
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	Asset 965	Cat I	Calibration Due 6-Apr-2011	
Cables REMI-High-22	Range 9kHz - 15GHz	Mfr C-S	SN 72457635	Asset 1334	Cat II	Calibration Due 18-Aug-2011	
						Cat II	Calibration Due 18-Jan-2012

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

For the 2483.5Mhz bandedge, the marker-delta method from FCC public notification was used.

To calculate the bandedge for horizontal:

Fundamental peak (2480.635) at highest channel = 95.54dB<sub>u</sub>V/m (1MHz RBW, 3MHz VBW)Fundamental average 2480.635MHz = 90.65dB<sub>u</sub>V/m (1MHz RBW, 10Hz VBW)

Fundamental peak 2480.635MHz = 89.92 (100kHz RBW, 3MHz VBW)

Bandedge peak at 2483.5MHz = 49.36dB<sub>u</sub>V/m (100kHz RBW, 3MHz VBW)

Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 9 of 17

Testing Cert. No. 1627-01

Delta = 89.92 – 49.36 = 40.56dBuV/m

Bandedge average = 90.65 – 40.56 = 50.1dBuV/m

Bandedge peak = 95.54 – 40.56 = 54.98

To calculate the bandedge for vertical:

Fundamental peak (2480.635) at highest channel = 94.23dBuV/m (1MHz RBW, 3MHz VBW)

Fundamental average 2480.635MHz = 89.16dBuV/m (1MHz RBW, 10Hz VBW)

Fundamental peak 2480.635MHz = 88.1 (100kHz RBW, 3MHz VBW)

Bandedge peak at 2483.5MHz = 45.1dBuV/m (100kHz RBW, 3MHz VBW)

Delta = 88.1 – 45.1 = 43.0dBuV/m

Bandedge average = 89.16 – 40.56 = 46.2dBuV/m

Bandedge peak = 94.23 – 40.56 = 51.2dBuV/m



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 10 of 17

## Radiated Spurious Emissions

### LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).  
[15.247(d)]

### MEASUREMENTS / RESULTS

#### Radiated Emissions Table

Frequency Range: 30-1000MHz							Measurement Distance: 3 m			Work Order: L0206		
Notes:							EUT Max Freq:			EUT Operating Voltage/Frequency: 120V 60Hz		
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	CISPR Class B			FCC Class B		
							Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)
V	36.0	34.3	22.6	16.8	0.4	28.9	40.5	-11.6	Pass	40.0	-11.1	Pass
V	48.0	52.3	22.6	8.7	0.5	38.9	40.5	-1.6	Pass	40.0	-1.1	Pass
V	60.0	47.4	22.6	7.7	0.5	33.0	40.5	-7.5	Pass	40.0	-7.0	Pass
V	72.0	47.3	22.6	8.1	0.6	33.4	40.5	-7.1	Pass	40.0	-6.6	Pass
V	84.0	47.8	22.6	7.4	0.7	33.3	40.5	-7.2	Pass	40.0	-6.7	Pass
V	204.0	35.5	22.6	11.1	0.9	24.9	40.5	-15.6	Pass	43.5	-18.6	Pass
H	466.4	31.6	22.6	17.2	1.3	27.5	47.5	-20.0	Pass	46.0	-18.5	Pass
<b>Table Result:</b> Pass by -1.1 dB							<b>Worst Freq:</b> 48.0 MHz					
Test Site: EMI Chamber 2			Cable 1: Asset #1506			Cable 2: Asset #1508			Cable 3: ---			
Analyzer: Asset #1327			Preamp: Blue			Antenna: Red-Black			Preselector: ---			

Rev: 15-Mar-2011

Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber	(1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	11-Apr-2011
Radiated Emissions Sites		FCC Code	IC Code	VCCI Code			Cat	Calibration Due
EMI Chamber 2		719150	2762A-7	R-3033, G-107			I	12-Mar-2013
Preamps / Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Blue		0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	6-Apr-2011
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-Black BiLog		30-2000MHz	JB1	Sunol	A091604-2	1106	I	3-Dec-2012
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	
Temp./Humidity/Atm. Pressure Gauge	CHAMBER2 Thermohygrometer	7400 Perception II	Davis	N/A	965	I	6-Apr-2011	
		35519-044	Control Company	72457639	1347	II	18-Aug-2011	
Cables		Range	Mfr			Cat	Calibration Due	
Asset #1506		9kHz - 18GHz	Florida RF			II	16-Aug-2011	
Asset #1508		9kHz - 26.5GHz	Florida RF			II	20-Apr-2011	

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

#### Radiated Emissions Table

Frequency Range: 1-18GHz							Measurement Distance: 1 m			Work Order: L0206		
Notes:							EUT Max Freq:			EUT Operating Voltage/Frequency:		
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	---			FCC Class B		
							Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)
Hpk	4959.3	42.2	19.8	34.1	2.2	58.7	---	---	---	63.5	-4.8	Pass
<b>Table Result:</b> Pass by -4.8 dB							<b>Worst Freq:</b> 4959.3 MHz					
Test Site: 1DCC-OATS-3M-I			Cable 1: EMIR-HIGH-21			Cable 2: ---			Cable 3: ---			
Analyzer: Rental SA#1			Preamp: Brown			Antenna: Black Horn			Preselector: ---			

Rev: 15-Mar-2011

Spectrum Analyzers / Receivers /Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Rental SA #1 (Brown)		9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	25-Mar-2011
<b>Radiated Emissions Sites</b> 1DCC-OATS-3M-II		<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-10	<b>VCCI Code</b> NA			<b>Cat</b> II	<b>Calibration Due</b> 5-Oct-2012
<b>Preamps /Couplers Attenuators / Filters</b> Brown		<b>Range</b> 1-18GHz	<b>MN</b> CS	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 1523	<b>Cat</b> II	<b>Calibration Due</b> 30-Jul-2011
<b>Antennas</b> Black Horn		<b>Range</b> 1-18GHz	<b>MN</b> 3115	<b>Mfr</b> EMCO	<b>SN</b> 9703-5148	<b>Asset</b> 56	<b>Cat</b> I	<b>Calibration Due</b> 6-Jul-2011
<b>Meteorological Meters</b> Temp./Humidity/Atm. Pressure Gauge 1DCC-OATS-3M-I Thermohygrometer		<b>MN</b> 7400 Perception II 35519-044	<b>Mfr</b> Davis Control Company	<b>SN</b> N/A	<b>Asset</b> 965 1334	<b>Cat</b> I II	<b>Calibration Due</b> 6-Apr-2011 18-Aug-2011	
<b>Cables</b> REMI-High-21		<b>Range</b> 9kHz - 26.5GHz		<b>Mfr</b> C-S			<b>Cat</b> II	<b>Calibration Due</b> 18-Jan-2012

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

**Radiated Emissions Table**

Date: 25-Feb-11	Company: Inncom	Work Order: L0206										
Engineer: Evan Gould	EUT Desc: 202-515	EUT Operating Voltage/Frequency:										
Temp: 22.1°C	Humidity: 21%	Pressure: 983mBar										
Frequency Range: 18-25GHz		Measurement Distance: 1 m										
Notes:												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB)	Cable Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	— Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)	— Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)
no emissions found						---	---	---	---	---	---	---
<b>Table Result:</b> --- by --- dB			<b>Worst Freq:</b> --- MHz									
Test Site: 1DCC-OATS-3M-I	Cable 1: EMIR-HIGH-21		Cable 2: ---		Cable 3: ---		Antenna: Yellow Horn		Preselector: ---			
Analyzer: Rental SA#1	Preamp: 18-26.5GHz											

Rev: 2-Mar-2011

Spectrum Analyzers / Receivers /Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Rental SA #1 (Brown)		9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	25-Mar-2011
<b>Radiated Emissions Sites</b> 1DCC-OATS-3M-I		<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-8	<b>VCCI Code</b> R-3109			<b>Cat</b> II	<b>Calibration Due</b> 7-Jul-2011
<b>Preamps /Couplers Attenuators / Filters</b> HF (Yellow)		<b>Range</b> 18-26.5GHz	<b>MN</b> AFS4-18002650-60-8P-4	<b>Mfr</b> CS	<b>SN</b> 467559	<b>Asset</b> 1266	<b>Cat</b> I	<b>Calibration Due</b> 5-Oct-2011
<b>Antennas</b> HF (White) Horn		<b>Range</b> 18-26.5GHz	<b>MN</b> 801-WLM	<b>Mfr</b> Waveline	<b>SN</b> 758	<b>Asset</b> 758	<b>Cat</b> I	<b>Calibration Due</b> Cal /Verify before Use
<b>Meteorological Meters</b> Temp./Humidity/Atm. Pressure Gauge 1DCC-OATS-3M-I Thermohygrometer		<b>MN</b> 7400 Perception II 35519-044	<b>Mfr</b> Davis Control Company	<b>SN</b> N/A	<b>Asset</b> 965 1334	<b>Cat</b> I II	<b>Calibration Due</b> 6-Apr-2011 18-Aug-2011	
<b>Cables</b> REMI-High-21		<b>Range</b> 9kHz - 26.5GHz		<b>Mfr</b> C-S			<b>Cat</b> II	<b>Calibration Due</b> 18-Jan-2012

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



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 12 of 17



**AC 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)]

**MEASUREMENTS / RESULTS****AC Mains Conducted Emissions**

Date: 26-Feb-11	Company: Inncom	Work Order: L0206								
Engineer: Kyle Neffendorf	EUT Desc: Mini Radio within temperature/humidity sensor	Test Site: CEMI2								
Temp: 16.3°C	Humidity: 23%	Pressure: 1001mBar								
Notes: normal operation										
Measurement Device: Asset #1495 LISN		EUT Operating Voltage/Frequency: 120V 60Hz								
Range: 0.15-30MHz										
Frequency (MHz)	Q.P. Readings		Ave. Readings		Impedance Factor (dB)	FCC/CISPR B		FCC/CISPR B		Overall Result (Pass/Fail)
	QP1 (dB $\mu$ V)	QP2 (dB $\mu$ V)	AV1 (dB $\mu$ V)	AV2 (dB $\mu$ V)		qp Limit (dB $\mu$ V)	qp Margin dB	AVE Limit (dB $\mu$ V)	AVE Margin dB	
0.15	29.4	28.7	14.4	13.7	20.1	66.0	-16.5	56.0	-21.5	Pass
0.21	29.3	29.6	13.9	14.8	20.1	63.2	-13.5	53.2	-18.3	Pass
0.31	15.4	24.8	13.8	14.5	20.1	59.9	-15.0	49.9	-15.3	Pass
0.58	30.6	30.9	18.7	18.4	20.1	56.0	-5.0	46.0	-7.2	Pass
3.81	26.3	26.9	15.3	14.9	20.1	56.0	-9.0	46.0	-10.6	Pass
4.13	24.2	26.6	16.3	15.9	20.1	56.0	-9.3	46.0	-9.6	Pass
<b>Table Result:</b>		Pass	by	-5.00 dB			<b>Worst Freq:</b>		0.58 MHz	

Rev: 16-Feb-2011

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red	9kHz-1.8GHz	8591E	Agilent	3441A03559	24	I	10-Mar-2011
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
230VAC LISN Asset 1495	10kHz-50MHz	9252-50-R-24-BNC	Solar	84716	1495	I	13-Apr-2011
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code		Cat	Calibration Due		
CEMI 2	719150	C-3361, T-1576		III	NA		
Meteorological Meters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge	7400 Perception II	N/A	Davis	965	I	6-Apr-2011	
CEMI2 Thermohygrometer	35519-044	Control Company	72436083	1336	II	18-Aug-2011	
Cables	Range	Mfr	Cat	Calibration Due			
CEMI-03	9kHz - 2GHz	C-S	II	23-Sep-2011			

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



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 13 of 17

Testing Cert. No. 1627-01

## 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)		N/A
NIST	5.6dB	
CISPR	4.6dB	5.2dB (Ucispqr)
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		N/A
NIST	3.9dB	
CISPR	3.6dB	3.6dB (Ucispqr)
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		



### ***Product Documentation***

The following documentation has been provided by the client for inclusion in this report.



---

**Curtis-Straus LLC, a wholly owned subsidiary of BV CPS**  
**One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828**



page 15 of 17

## 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-STRAUSS (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.



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 16 of 17

Testing Cert. No. 1627-01

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.

Rev.160009121(2) #684340 v13CS



Curtis-Straus LLC, a wholly owned subsidiary of BV CPS  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



page 17 of 17

Testing Cert. No. 1627-01