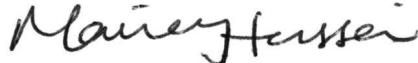




BUREAU  
VERITAS

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

# Test Report

Report No	EM0593-2
Client	Inncom Ryan Gardner
Address	277 West Main Street Niantic, CT 06357
Phone	860-739-4468
Items tested	E527.4G Thermostat
FCC ID	GTC202151TXR
IC ID	1609A-202151TXR
FRN	0017924150
Equipment Type	Low Power Communication Device Transmitter
Equipment Code	DXX
Emission Designator	2M41F7D
Standards	47CFR 15.249, RSS 210 Issue 8 and RSS GEN Issue 3
Test Dates	March 26, 28 and April 27, 2012
Results	As detailed within this report
Prepared by	 John Cushing – Test Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	<u>May 7, 2012</u>
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 18 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 2-16-07 (DW)



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**Product Tested - Configuration Documentation**

EUT Configuration																		
<b>Work Order:</b> M0593 <b>Company:</b> Inncom <b>Company Address:</b> 277 West Main Street Niantic, CT 06357 <b>Contact:</b> Ryan Gardner <b>Person Present:</b> Ryan Gardner																		
<b>EUT:</b> 201-527 <b>EUT Description:</b> E527 4G Thermostat <b>EUT Max Frequency:</b> 32MHz <b>EUT Tx Frequency:</b> 2405-2480MHz																		
<b>Support Equipment:</b> <table border="1"> <thead> <tr> <th></th> <th>MN</th> <th>PN</th> <th>SN</th> </tr> </thead> <tbody> <tr> <td>Evora Multibutton</td> <td>201-217</td> <td>---</td> <td>Sample 1</td> </tr> <tr> <td>Power Supply</td> <td>01-9920</td> <td></td> <td>12939</td> </tr> </tbody> </table>								MN	PN	SN	Evora Multibutton	201-217	---	Sample 1	Power Supply	01-9920		12939
	MN	PN	SN															
Evora Multibutton	201-217	---	Sample 1															
Power Supply	01-9920		12939															
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out	NEBS Type	Unpopulated Reason							
S5 bus	Power and Communication	1	1	24awg	No	None	1.5m	10m	indoor									
H6	Power and Communication	1	0								Not supported							
H9	external temp	1	1	24awg	No	None	1.5m	10m	indoor									
<b>Software / Operating Mode Description:</b> EUT is wirelessly pinging the Evora Multibutton. EUT was also tested in standby/receive mode.																		



## Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.249 and RSS-210. The product is the E527.4G Thermostat. It is a transmitter that operates in the range 2400 – 2483.5 MHz.

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) and RSS-GEN. 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 120V/60Hz.

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



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### Compliance Statement

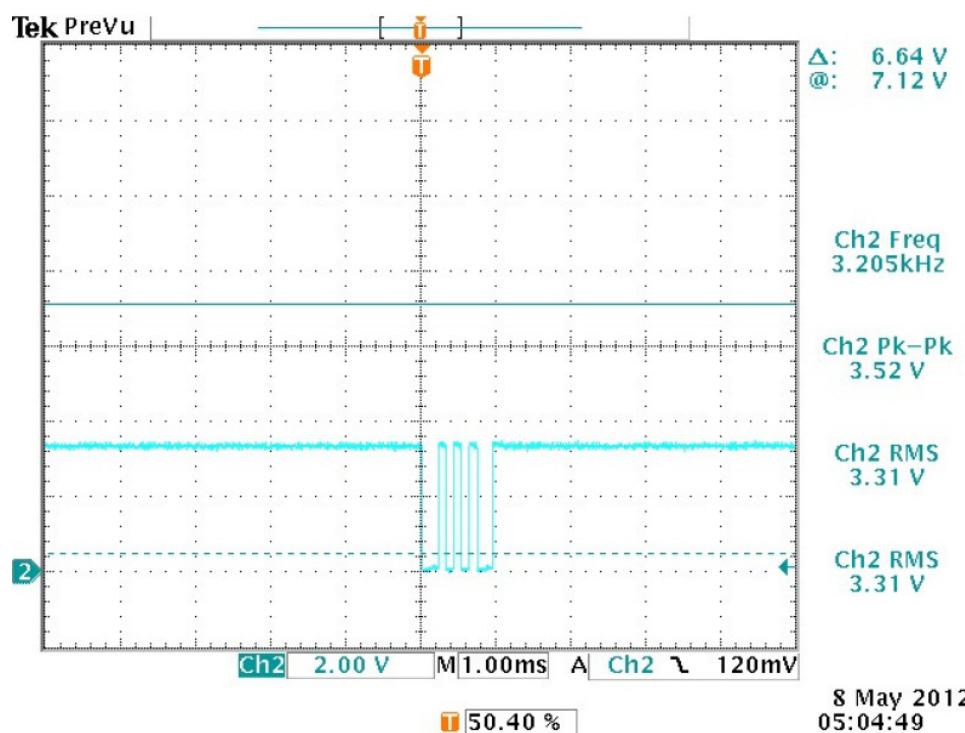
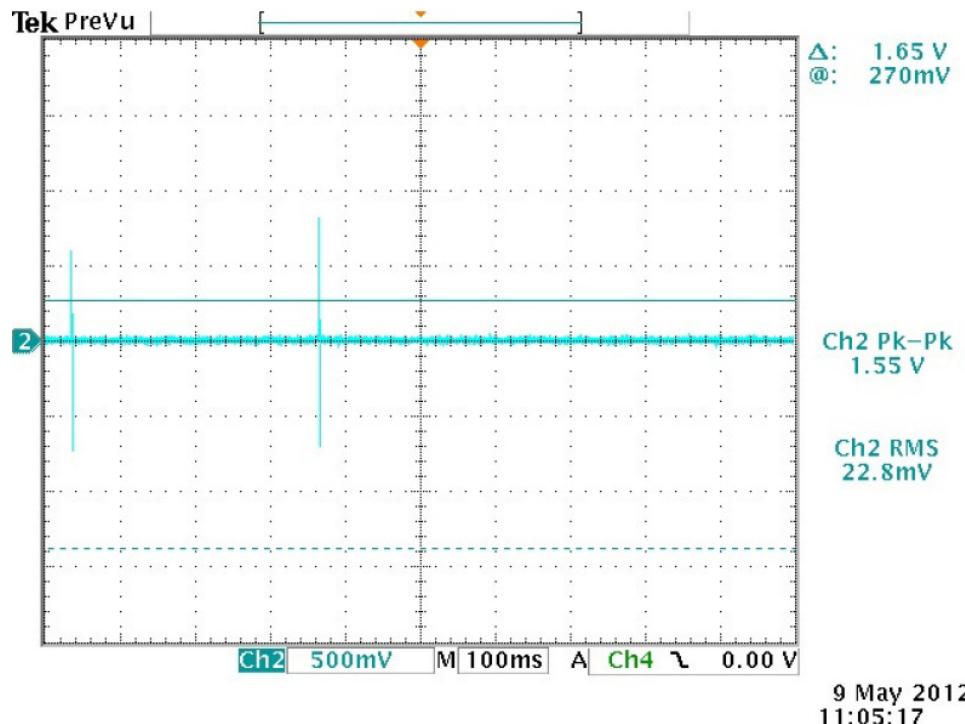
The E527.4G Thermostat has been found to conform to the following parts of 47 CFR and RSS 210 as detailed below:

RSS-GEN	RSS 210	Part 15	Comments
5.4		15.15(b)	There are no controls accessible to the user that vary the output power.
5.2		15.19	The label is shown in the label exhibit.
7.1.3		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
7.1.2		15.203	The antenna for this device is hardwired to the PCB.
	2.5	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.
7.2.4		15.207	Passes by 8.7dB at 0.59MHz
	A2.9(a)	15.249(a)	The fundamental and harmonics meet the limits in 15.249(a)
	A2.9(b)	15.249(d)	Spurious emissions meet the limits in 15.209.
4.6.1			99% emissions bandwidth plot is provided.



## Test Results

### Duty Cycle Correction Factor (DCCF)



In any 100ms time period, the product could be on for 1ms

DCCF =  $20 \times \log (1/100)$

DCCF = -40.0dB

A duty cycle correction factor of -40.0dB was applied



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## 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

Fundamental												Work Order: M0593		
Date: 26-Mar-12												EUT Operating Voltage/Frequency: 120Vac 60Hz		
Engineer: Matthew Burman														
Temp: 21.9°C														
Humidity: 22%														
Frequency Range: 2400-2483.5MHz												Measurement Distance: 3 m		
Notes: DCCF = -40dB														
RBW = 1MHz														
VBW = 3MHz														

## 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

Spurious Emissions										Work Order: M0594							
Date: 26-Mar-12 Engineer: Matthew Burman Temp: 21.9°C										EUT Operating Voltage/Frequency: 120Vac 60Hz							
Company: Inncom EUT Desc: E527.4G Humidity: 22%										Pressure: 999mBar							
Frequency Range: 2390-2483.5MHz										Measurement Distance: 3 m							
Notes: Radiated Bandedge DCCF = -40dB																	
RBW = 1MHz Peak Detector VBW = 3MHz																	
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB <sub>μ</sub> V)	Average Reading (dB <sub>μ</sub> V)	Preamp Factor (dB)	Antenna Factor (dB)	Cable Factor (dB)	Adjusted Peak Reading (dB <sub>μ</sub> V/m)	Adjusted Avg Reading (dB <sub>μ</sub> V/m)	FCC Class B High Frequency - Peak				FCC Class B High Frequency - Average				
									Limit (dB <sub>μ</sub> V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB <sub>μ</sub> V/m)	Margin (dB)	Result (Pass/Fail)			
H	2390.0	37.89	-2.1	21.7	28.1	3.3	47.6	7.6	74.0	-26.4	Pass	54.0	-46.4	Pass			
H	2483.5	58.8	18.8	21.8	28.4	3.3	68.7	28.7	74.0	-5.3	Pass	54.0	-25.3	Pass			
Table Result:				Pass	by	-5.3 dB							Worst Freq: 2483.5 MHz				
Test Site: 1DCC-OATS-3M-I				Cable 1: EMIR-HIGH-22				Antenna: Yellow Horn									
Analyzer: Rental SA#1				Preamp: Asset #1517													

Adjusted Peak Reading = Peak Reading - Preamp Factor + Antenna Factor + Cable Factor

Adjusted Average Reading = Adjusted Peak Reading - DCCF

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Spectrum Analyzers / Receivers /Preselectors				Range	MN	Mfr	SN	Asset	Cat	Calibration Due				
Rental SA #1 (Brown)				9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	2/14/2013				
Radiated Emissions Sites				FCC Code	IC Code	VCCI Code							Cat	Calibration Due
1DCC-OATS-3M-I				719150	2762A-8	R-3109, G-494							II	4/7/2012
Preamps /Couplers Attenuators / Filters				Range	MN	Mfr	SN	Asset	Cat	Calibration Due				
1517 HF Preamp				1-20GHz	CS	CS	N/A	1517	II	3/29/2012				
Antennas				Range	MN	Mfr	SN	Asset	Cat	Calibration Due				
Yellow Horn				1-18GHz	3115	EMCO	9608-4898	37	I	6/17/2013				
Meteorological Meters				MN	Mfr	SN	Asset	Cat	Cat	Calibration Due				
Temp./Humidity/Atm. Pressure Gauge 1DCC-OATS-3M-I Thermohygrometer				7400 Perception II	Davis	N/A	965	I	II	4/4/2013 8/19/2013				
35519-044				Control Company	72457635	1334								
Cables				Range	Mfr							Cat	Calibration Due	
REMI-High-22				9kHz - 15GHz	C-S							II	1/31/2013	

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



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## 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							FCC Class B																																																																								
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)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)																																																																						
							Work Order: M0593	EUT Operating Voltage/Frequency: 120V/60Hz	Pressure: 1009mBar																																																																						
Frequency Range: 30-1000MHz							Measurement Distance: 3 m																																																																								
Notes: No Emissions Found Readings are Noise Floor																																																																															
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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)																																																																									
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H	608.0	36.7	23.0	18.5	2.3	34.5																																																																									
<b>Table Result:</b> Pass				by -9.1 dB			<b>Worst Freq:</b> 46.88 MHz																																																																								
Test Site: EMI Chamber 2			Cable 1: Asset #1506			Cable 2: Asset #1507																																																																									
Analyzer: Gold			Preamp: Blue			Antenna: Red-White																																																																									

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table							FCC Class B																
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)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)														
							Work Order: M0593	EUT Operating Voltage/Frequency: 120V/60Hz	Pressure: 1009mBar														
Frequency Range: 30-1000MHz							Measurement Distance: 3 m																
Notes: Receive Mode																							
<table border="1"> <thead> <tr> <th>Antenna Polarization (H / V)</th><th>Frequency (MHz)</th><th>Reading (dB<math>\mu</math>V)</th><th>Preamp Factor (dB)</th><th>Antenna Factor (dB/m)</th><th>Cable Factor (dB)</th><th>Adjusted Reading (dB<math>\mu</math>V/m)</th></tr> </thead> <tbody> <tr><td colspan="3">NO EMISSIONS FOUND</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>							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)	NO EMISSIONS FOUND							FCC Class B		
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)																	
NO EMISSIONS FOUND																							
<table border="1"> <thead> <tr><td colspan="3"><b>Table Result:</b> Pass</td></tr> </thead> </table>							<b>Table Result:</b> Pass			Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)											
<b>Table Result:</b> Pass																							
Test Site: EMI Chamber 2			Cable 1: Asset #1506			Cable 2: Asset #1507																	
Analyzer: Gold			Preamp: Blue			Antenna: Red-White																	

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Spectrum Analyzers / Receivers /Preselectors Gold		Range 100Hz-26.5 GHz	MN E4407B	Mfr Agilent	SN MY45113816	Asset 1284	Cat I	Calibration Due 2/3/2013
Radiated Emissions Sites EMI Chamber 2		FCC Code 719150	IC Code 2762A-7	VCCI Code R-3033, G-107			Cat I	Calibration Due 2/15/2014
Preamps /Couplers Attenuators / Filters Blue		Range 0.009-2000MHz	MN ZFL-1000-LN	Mfr CS	SN N/A	Asset 759	Cat II	Calibration Due 6/1/2012
Antennas Red-White BiLog		Range 30-2000MHz	MN JB1	Mfr Sunol	SN A091604-1	Asset 1105	Cat I	Calibration Due 1/28/2013
Meteorological Meters Temp./Humidity/Atm. Pressure Gauge CHAMBER2 Thermohygrometer		MN 7400 Perception II 35519-044	Mfr Davis Control Company	SN N/A	Asset 965 72457639	Cat I II	Calibration Due 4/4/2013 8/19/2013	
Cables Asset #1506 Asset #1507		Range 9kHz - 18GHz 9kHz - 26.5GHz	Mfr Florida RF Florida RF				Cat II II	Calibration Due 2/2/2013 1/31/2013

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

**Spurious Emissions**

Date: 26-Mar-12	Company: Inncom	Work Order: M0594												
Engineer: Matthew Burman	EUT Desc: E527.4G	EUT Operating Voltage/Frequency: 120Vac 60Hz												
Temp: 21.9°C	Humidity: 22%	Pressure: 999mBar												
Frequency Range: 1-6GHz		Measurement Distance: 3 m												
Notes: Harmonics of Fundamental RBW = 1MHz DCCF = -40dB VBW = 3MHz		Peak Detector												
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB $\mu$ V)	Average Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB $\mu$ V/m)	Adjusted Avg Reading (dB $\mu$ V/m)	FCC Class B High Frequency - Peak	FCC Class B High Frequency - Average				
H	4880.0	41.5	1.5	20.4	33.1	5.1	59.3	19.3	74.0	-14.7	Pass	54.0	-34.7	Pass
<b>Table Result:</b>		Pass	by	-14.7 dB				<b>Worst Freq:</b>		4880.0 MHz				
Test Site: 1DCC-OATS-3M-I Analyzer: Rental SA#1		Cable 1: EMIR-HIGH-22 Preamp: Asset #1517		Antenna: Yellow Horn										

Adjusted Peak Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor  
 Adjusted Average Reading = Adjusted Peak Reading - DCCF

**Spurious Emissions**

Date: 26-Mar-12	Company: Inncom	Work Order: M0594												
Engineer: Matthew Burman	EUT Desc: E527.4G	EUT Operating Voltage/Frequency: 120Vac 60Hz												
Temp: 21.9°C	Humidity: 22%	Pressure: 999mBar												
Frequency Range: 1-6GHz		Measurement Distance: 3 m												
Notes: Receive mode RBW = 1MHz VBW = 3MHz		Peak Detector												
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB $\mu$ V)	Average Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB $\mu$ V/m)	Adjusted Avg Reading (dB $\mu$ V/m)	FCC Class B High Frequency - Peak	FCC Class B High Frequency - Average				
no emissions found				---	---	---	---	---	---	---	---	---	---	---
<b>Table Result:</b>		---	by	---				<b>Worst Freq:</b>		--- MHz				
Test Site: 1DCC-OATS-3M-I Analyzer: Rental SA#1		Cable 1: EMIR-HIGH-22 Preamp: Asset #1517		Antenna: Yellow Horn										



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## Spurious Emissions

Date: 26-Mar-12	Company: Inncom	Work Order: M0594																																																																																																
Engineer: Matthew Burman	EUT Desc: E527.4G	EUT Operating Voltage/Frequency: 120Vac 60Hz																																																																																																
Temp: 21.9°C	Humidity: 22%	Pressure: 999mBar																																																																																																
Frequency Range: 6-18GHz																																																																																																		
Notes: Harmonics of Fundamental RBW = 1MHz Peak Detector DCCF = -40dB VBW = 3MHz																																																																																																		
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<b>Table Result:</b> Pass by -14.4 dB																																																																																																		
Test Site: 1DCC-OATS-3M-I Analyzer: Rental SA#1																																																																																																		
Cable 1: EMIR-HIGH-22 Preamp: Asset #1517																																																																																																		
Antenna: Yellow Horn																																																																																																		

Adjusted Peak Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Adjusted Average Reading = Adjusted Peak Reading - DCCF

## Spurious Emissions

Date: 26-Mar-12	Company: Inncom	Work Order: M0594																																				
Engineer: Matthew Burman	EUT Desc: E527.4G	EUT Operating Voltage/Frequency: 120Vac 60Hz																																				
Temp: 21.9°C	Humidity: 22%	Pressure: 999mBar																																				
Frequency Range: 6-18GHz																																						
Notes: Receive Mode RBW = 1MHz Peak Detector VBW = 3MHz																																						
Measurement Distance: 1 m																																						
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Test Site: 1DCC-OATS-3M-I Analyzer: Rental SA#1																																						
Cable 1: EMIR-HIGH-22 Preamp: Asset #1517																																						
Antenna: Yellow Horn																																						

Rev. 3/17/2012

Spectrum Analyzers / Receivers /Preselectors Rental SA #1 (Brown)	Range 9kHz-26.5GHz	MN E4407B	Mfr Agilent	SN SG44210511	Asset 1510	Cat I	Calibration Due 2/14/2013
Radiated Emissions Sites 1DCC-OATS-3M-I	FCC Code 719150	IC Code 2762A-8	VCCI Code R-3109, G-494			Cat II	Calibration Due 4/7/2012
Preamps /Couplers Attenuators / Filters 1517 HF Preamp	Range 1-20GHz	MN CS	Mfr CS	SN N/A	Asset 1517	Cat II	Calibration Due 3/29/2012
Antennas Yellow Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 9608-4898	Asset 37	Cat I	Calibration Due 6/17/2013
Meteorological Meters Temp./Humidity/Atm. Pressure Gauge 1DCC-OATS-3M-I Thermohygrometer	Range 7400 Perception II 35519-044	MN Davis Control Company	Mfr N/A	SN 965 72457635	Asset 1334	Cat I II	Calibration Due 4/4/2013 8/19/2013
Cables REMI-High-22	Range 9kHz - 15GHz	Mfr C-S				Cat II	Calibration Due 1/31/2013

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

## Radiated Emissions Table

Date: 26-Mar-12	Company: Inncom	Work Order: M0594																																			
Engineer: Matthew Burman	EUT Desc: E527.4G	EUT Operating Voltage/Frequency: 120Vac 60Hz																																			
Temp: 21.9°C	Humidity: 22%	Pressure: 999mBar																																			
Frequency Range: 18-25GHz																																					
Notes: Harmonics of Fundamental RBW = 1MHz Peak Detector DCCF = -40dB VBW = 3MHz																																					
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Cable 1: EMIR-HIGH-22 Preamp: 18-26.5GHz																																					
Antenna: 18-26.5GHz Horn																																					



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**Radiated Emissions Table**

Date: 26-Mar-12	Company: Inncom	Work Order: M0594												
Engineer: Matthew Burman	EUT Desc: E527.4G	EUT Operating Voltage/Frequency: 120Vac 60Hz												
Temp: 21.9°C	Humidity: 22%	Pressure: 999mBar												
Frequency Range: 18-25GHz		Measurement Distance: 1 m												
Notes: Receive Mode RBW = 1MHz Peak Detector VBW = 3MHz														
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB $\mu$ V)	Average Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB $\mu$ V/m)	Adjusted Avg Reading (dB $\mu$ V/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									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	---	MHz
Test Site: 1DCC-OATS-3M-I	Cable 1: EMIR-HIGH-22					
Analyzer: Rental SA#1	Preamp: 18-26.5GHz					
					Antenna: 18-26.5GHz Horn	

Rev. 3/17/2012

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Rental SA #1 (Brown)	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	2/14/2013
<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, G-494			Cat II	Calibration Due 4/7/2012
<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> 10/6/2012
<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> 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 72457635	<b>Asset</b> 965 1334	<b>Cat</b> I II	<b>Calibration Due</b> 4/4/2013 8/19/2013
<b>Cables</b> REMI-High-22	<b>Range</b> 9kHz - 15GHz		<b>Mfr</b> C-S			<b>Cat</b> II	<b>Calibration Due</b> 1/31/2013

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## 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-Mar-12		Company: Inncom		Work Order: M0593						
Engineer: Matthew Burman		EUT Desc: E527.4G thermostat		Test Site: CEMI2						
Temp: 21.0 °C		Humidity: 22%		Pressure: 999mBar						
Notes: AC side of the dedicated AC/DC converter										
Measurement Device: Asset #1494 LISN					EUT Operating Voltage/Frequency: 120Vac 60Hz					
Range: 0.15-30MHz										
Frequency (MHz)	Q.P. Readings		Ave. Readings		Overall Result (Pass/Fail)					
	QP1 (dB $\mu$ V)	QP2 (dB $\mu$ V)	AV1 (dB $\mu$ V)	AV2 (dB $\mu$ V)						
				Impedance Factor (dB)						
0.15	14.6	9.5	10.3	1.9	20.1	66.0	-31.3	56.0	-25.6	Pass
0.59	23.9	20.1	17.2	7.2	20.1	56.0	-12.0	46.0	-8.7	Pass
0.89	13.2	11.1	6.6	0.2	20.1	56.0	-22.7	46.0	-19.3	Pass
5.64	16.1	16.4	8.5	4.7	20.1	60.0	-23.5	50.0	-21.4	Pass
10.21	10.6	10.4	4.0	3.3	20.1	60.0	-29.3	50.0	-25.9	Pass
20.00	5.8	10.8	6.9	7.5	20.3	60.0	-28.9	50.0	-22.2	Pass

**Table Result:** Pass by -8.70 dB

**Worst Freq:** 0.59 MHz

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Black	9kHz-12.8GHz	8596E	Agilent	3710A00944	337	I	12/2/2012
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
230VAC LISN Asset 1494	10kHz-50MHz	9252-50-R-24-BNC	Solar	84715	1494	I	5/26/2012
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code				Cat	Calibration Due
CEMI 2	719150	C-3361, T-1576				III	NA
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	
Temp./Humidity/Atm. Pressure Gauge CEMI2 Thermohygrometer	7400 Perception II 35519-044	Davis Control Company	N/A 72436083	965 1336	I II	4/4/2013 8/19/2013	
Cables	Range	Mfr			Cat	Calibration Due	
CEMI-03	9kHz - 2GHz	C-S			II	9/16/2012	
Attenuators	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
20dB Atten-4	9kHz-2GHz			N/A		II	6/11/2012

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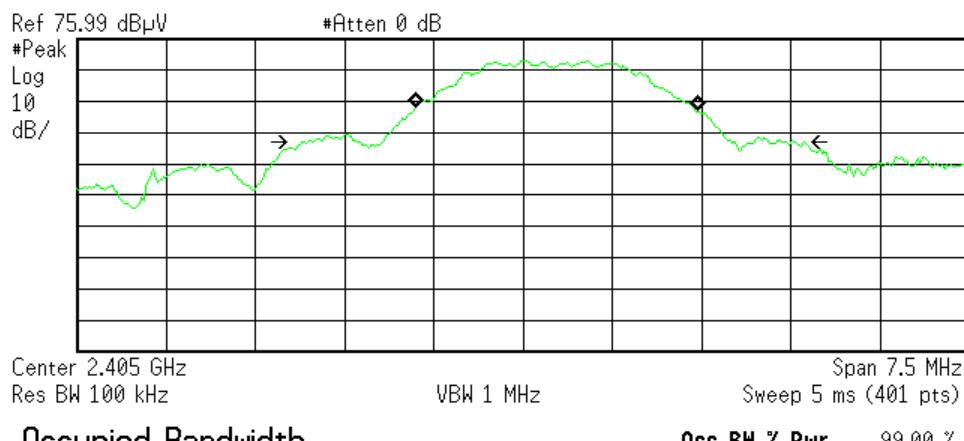
## Occupied Bandwidth

### REQUIREMENT

When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 4.6.1]

Agilent 10:41:38 Apr 27, 2012

R T



Transmit Freq Error 273.393 kHz  
x dB Bandwidth 4.155 MHz

Low Channel



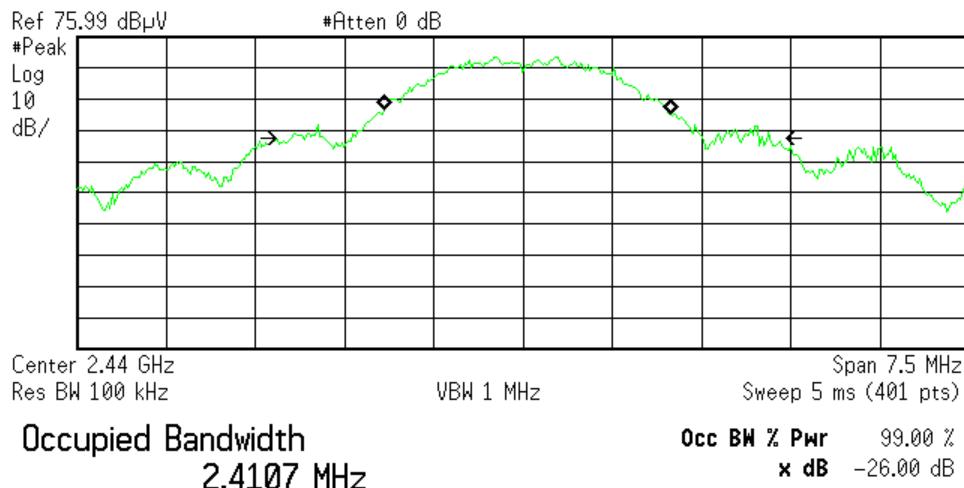
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Agilent 10:46:46 Apr 27, 2012

R T



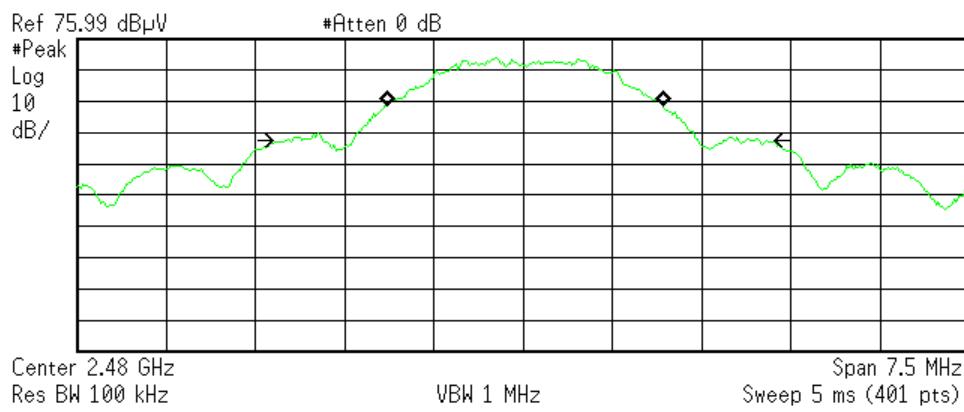
Transmit Freq Error      38.189 kHz  
x dB Bandwidth      4.022 MHz

C:\temp.gif file saved

Middle Channel

Agilent 10:48:52 Apr 27, 2012

R T



Occupied Bandwidth  
2.3315 MHz

Occ BW % Pwr      99.00 %  
x dB      -26.00 dB

Transmit Freq Error      12.622 kHz  
x dB Bandwidth      3.965 MHz

C:\temp.gif file saved

High Channel



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## 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 (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		
NIST	3.9dB	N/A
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		



## 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 were 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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