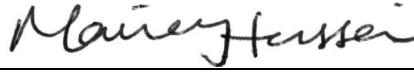




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Test Report

Report No	EM1798-1
Client	Inncom Ryan Gardner
Address	277 West Main Street Niantic, CT 06357
Phone	860-739-4468
Items tested	E528.4G Thermostat
FCC ID	GTC202150TXR
IC ID	1609A-202150TXR
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	 Chris Reynolds – Test Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	12/20/12
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.



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



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Product Tested - Configuration Documentation

EUT Configuration																	
Work Order: M1798 Company: Inncom Company Address: 277 West Main Street Niantic, CT 06357 Contact: Ryan Gardner Person Present: Ryan Gardner																	
MN		PN		SN													
EUT:		01-9911		202-150		Sample 1											
EUT Description: Wireless Networking Thermostat EUT Max Frequency: 32MHz EUT Min Frequency: 8MHz EUT Tx Frequency: 2405-2480MHz																	
Support Equipment:																	
KDS Monitor		786N		FBUL41215569U													
Dell Keyboard		SK-8110		CN-07N242-71616-47L-0CK;													
Dell Mouse		M-S34		LNA10103513													
Dell PC		HFMJM51		CN-0C3152-70821-47K-5CFW													
B574 Network Controller		01-9437		B574P12RF0A0													
K595 Motion Detector		202-595		Sample 1													
EUT Ports:																	
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type								
H7	Auxiliary Power and Communication	1	1	3-wire	no	none	1m	10m	indoor								
H3	External Humidity Sensor	1	1	3-wire	no	none	1m	10m	indoor								
H6	Diagnostics	1	0														
H5	Legacy Port	1	0														
H4	DC Power	1	1	8 pin conductor	no	none	1"	1"	indoor								
H8	Motion Detector	1	1	3-wire	no	none	1"	1"	indoor								
H9	IR Sensor	1	0														
AC mains	AC mains	1	1	3-wire AC	no	none	1m	N/A	indoor								
H1	Serial	1	0						setup only								
Software / Operating Mode Description:																	
EUT is wirelessly transmitting temperature readings.																	
Performance Criteria:																	
There shall be no loss of wireless transmission as indicated by the ZB link.																	



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Testing Cert. No. 1627-01

Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.249, RSS GEN Issue 3, and RSS-210, Issue 8. The product is the E528.4G (MN: 01-9911) 0dB Thermostat. It is a transmitter that operates in the range 2400 – 2483.5 MHz.

Product was tested with AC power supply PS564. AC mains conducted emissions were performed on AC side of the power supply.

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 (2003) 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 E528.4G 0dB 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.
7.2.4		15.207	AC conducted emissions were performed while EUT powered through AC power supply PS564.
	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.



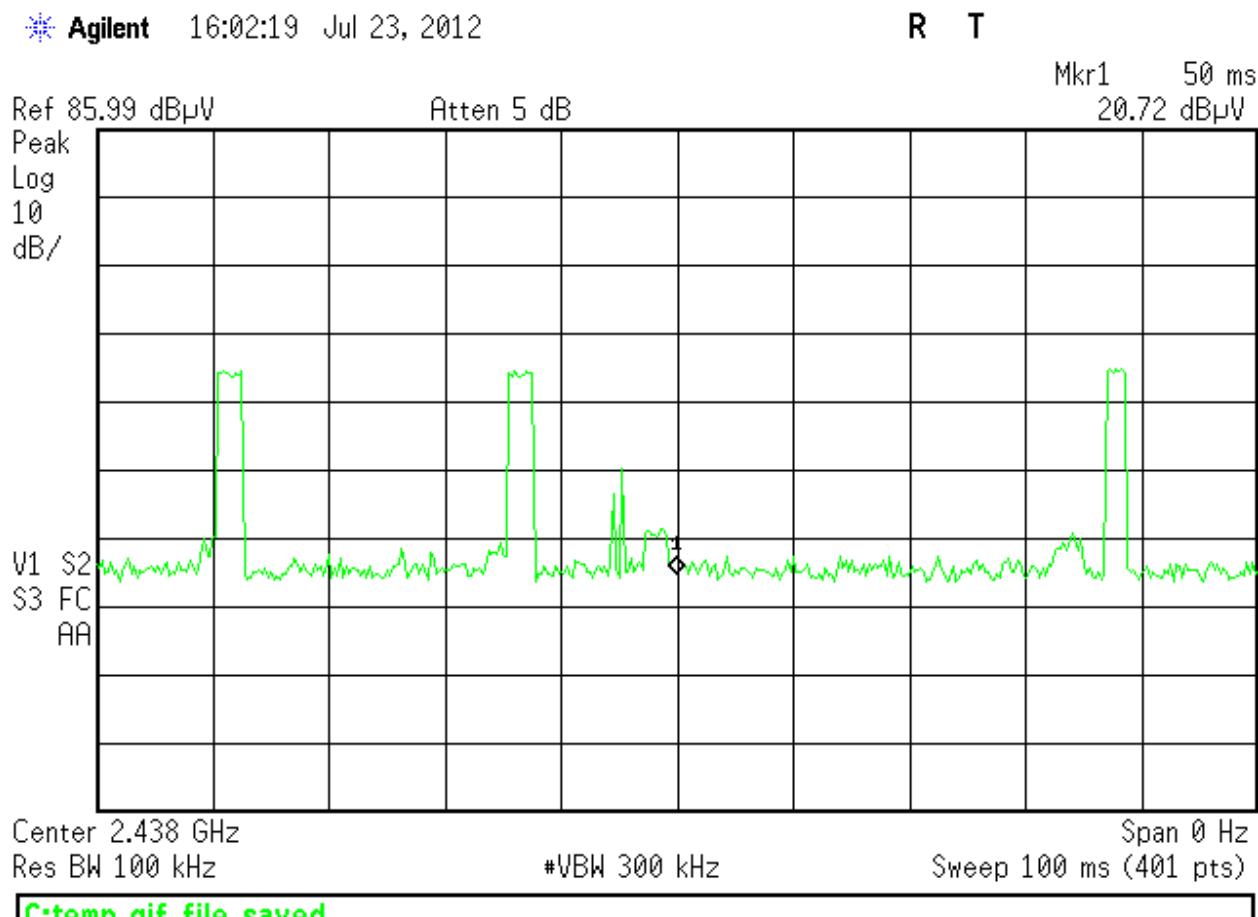
Test Results**Duty Cycle Correction Factor (DCCF)**

In any 100ms time period, the product could be on for 5.31ms

$$\text{DCCF} = 20 \times \log ((1.77^*3)/100)$$

$$\text{DCCF} = -25.49\text{dB}$$

A duty cycle correction factor of -25.49dB was applied



3 Pulses in 100ms window



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Testing Cert. No. 1627-01

Agilent 16:03:41 Jul 23, 2012

R T

Mkr1 Δ 1.775 ms
0.825 dBRef 85.99 dB μ V

Atten 5 dB

Peak
Log
10
dB/V1 S2
S3 FS
AACenter 2.438 GHz
Res BW 100 kHz

#VBW 300 kHz

Span 0 Hz
Sweep 10 ms (401 pts)

C:\temp.gif file saved

Duration of one pulse



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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

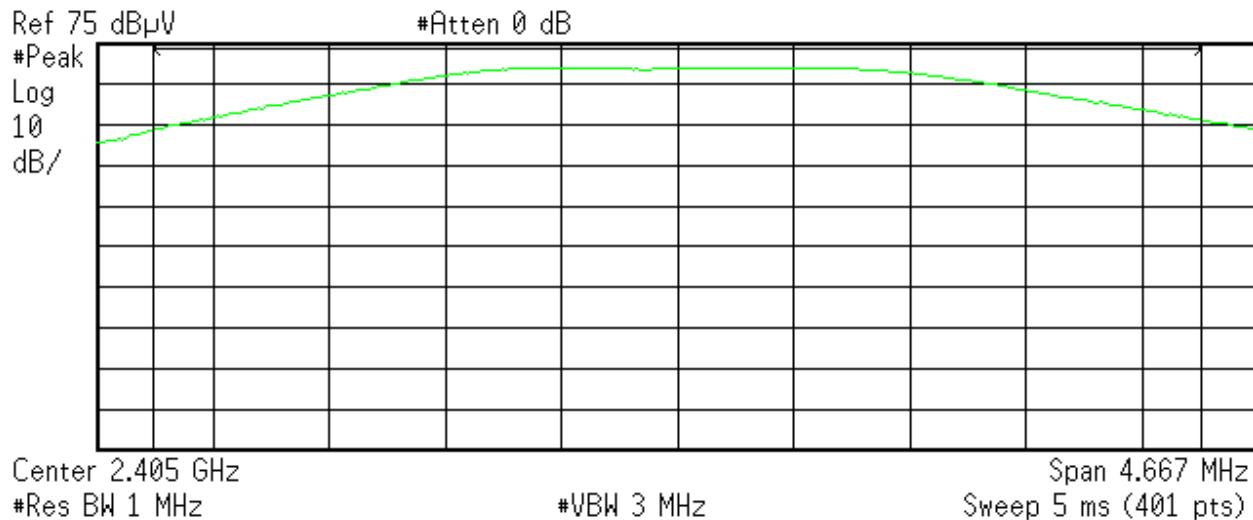
Adjusted Peak Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
 Adjusted Average Reading = Adjusted Peak Reading - DCCF

Peak Output Power											
Date: 19-Jul-12		Company: Inncom		M1798							
Engineer: Matthew Burman		EUT Desc: E528.4G 0dB Thermostat		120Vac 60Hz							
Temp: 24.9°C		Humidity: 31%		1010mBar							
Frequency Range: 2400-2483.5MHz				Measurement Distance: 3 m							
Notes: Duty Cycle Correction Factor -25.49dB											
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB μ V/m)	15.249(a)				
							Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)		
Low Channel (pk)	2405.0	71.8	0.0	28.2	3.3	103.3	113.97	-10.7	Pass		
low Channel (avg)	2405.0	46.3	0.0	28.2	3.3	77.8	93.97	-16.1	Pass		
Mid Channel	2445.0	71.3	0.0	28.2	3.3	102.8	113.97	-11.2	Pass		
Mid Channel (avg)	2445.0	45.8	0.0	28.2	3.3	77.3	93.97	-16.7	Pass		
High Channel	2480.0	71.2	0.0	28.5	3.3	103.0	113.97	-11.0	Pass		
High Channel (avg)	2480.0	45.7	0.0	28.5	3.3	77.5	93.97	-16.5	Pass		
Table Result:		Pass	by	-10.7 dB	Worst Freq:			2405.0 MHz			
Test Site: 1DCC-OATS-3M-I			Cable 1: EMIR-HIGH-22			Cable 3: ---					
Analyzer: Rental SA#1			Preamp: none			Preselector: ---					



Agilent 10:07:33 Jul 27, 2012

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Channel Power

71.82 dB μ V/4.2000 MHz

Power Spectral Density

5.58 dB μ V/Hz

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Rev.7/14/2012									
93.9794001	Spectrum Analyzers / Receivers /Pre	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	A-0015			II	8/7/2012	
	Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	
	Cables	Range		Mfr			Cat	Calibration Due	
	REMI-High-22	9kHz - 15GHz		C-S			II	1/31/2013	
	Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due		
	Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/28/2013		
	1DCC-OATS-3M-I Thermohygrometer	35519-044	Control Company	72457635	1334	II	8/19/2013		

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



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Radiated Spurious Emissions

LIMITS

15.249 (d) *Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.*

MEASUREMENTS / RESULTS

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

Adjusted Average Reading = Adjusted Peak Reading - DCCF

Spurious Emissions																			
Test Parameters			Test Results							Report									
Test Parameters			Test Results							Report									
Frequency Range: 30 to 1000 MHz										Measurement Distance: 3 m									
Notes:																			
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB μ V/m)				FCC Class B									
							Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)							
v	44.99	49.1	25.5	10.8	0.4	34.8	---	---	---	40.0	-5.2	Pass							
v	48.63	47.5	25.5	8.9	0.4	31.3	---	---	---	40.0	-8.7	Pass							
v	59.36	45.9	25.5	7.4	0.5	28.3	---	---	---	40.0	-11.7	Pass							
v	62.6	46.5	25.5	7.7	0.5	29.2	---	---	---	40.0	-10.8	Pass							
v	106.5	48.3	25.5	11.8	0.6	35.2	---	---	---	43.5	-8.3	Pass							
v	138.6	35.7	25.5	13.5	0.7	24.4	---	---	---	43.5	-19.1	Pass							
v	224.0	41.5	25.6	11.5	0.9	28.3	---	---	---	46.0	-17.7	Pass							
h	167.6	40.4	25.5	12.2	0.8	27.9	---	---	---	43.5	-15.6	Pass							
Table Result: Pass							Worst Freq: 44.99 MHz												
Test Site: EMI Chamber 1	Cable 1: Asset #1505				Cable 2: Asset #1522				Cable 3: ---										
Analyzer: Asset #1327	Preamp: Orange				Antenna: Red-White				Preselector: ---										

Rev.7/14/2012

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	5/30/2013
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code			Cat	Calibration Due
EMI Chamber 1	719150	2762A-6	A-0015			II	2/16/2014
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Orange	0.009-2000MHz	ZFL-1000-LN	CS	N/A	765	II	12/10/2012
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-White BiLog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	1/28/2013
Cables	Range	Mfr				Cat	Calibration Due
Asset #1505	9kHz - 18GHz	Florida RF				II	8/19/2012
Asset #1522	9kHz - 26.5GHz	Florida RF				II	9/21/2012
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	
Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/28/2013	
CHAMBER1 Thermohygrometer	35519-044	Control Company	72457642	1345	II		8/19/2013

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Radiated Emissions Table

Date: 19-Jul-12		Company: Inncom		Work Order: M1798											
Engineer: Matthew Burman		EUT Desc: E528.4G 0dB Thermostat		EUT Operating Voltage/Frequency: 120Vac 60Hz											
Temp: 24.9°C		Humidity: 31%		Pressure: 1010mBar											
Frequency Range: 1-6GHz					Measurement Distance: 3 m										
Notes: DCCF = -25.49dB															
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB _u V)	Average Reading (dB _u V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Filter Factor (dB)	Adjusted Peak Reading (dB _u V/m)	Adjusted Avg Reading (dB _u V/m)	FCC Class B High Frequency - Peak		FCC Class B High Frequency - Average			
v	4810.0	35.6	10.1	20.7	33.3	5.0	0.5	53.7	28.2	Limit (dB _u V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB _u V/m)	Margin (dB)	Result (Pass/Fail)
h	4810.0	34.8	9.3	20.7	33.3	5.0	0.5	52.9	27.4	74.0	-20.3	Pass	54.0	-25.8	Pass
h	4810.0	34.8	9.3	20.7	33.3	5.0	0.5	52.9	27.4	74.0	-21.1	Pass	54.0	-26.6	Pass
Table Result:		Pass	by -20.3 dB					Worst Freq:		4810.0 MHz					
Test Site: 1DCC-OATS-3M-I		Cable 1: EMR-HIGH-22		High Pass Filter: Asset #1311		Cable 3: ---		Antenna: Black Horn		Preselector: ---					

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Spectrum Analyzers / Receivers /Preselectors Rental SA #1 (Brown)			Range	MN	Mfr	SN	Asset	Cat	Calibration Due
			9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	2/14/2013
Radiated Emissions Sites 1DCC-OATS-3M-I			FCC Code	IC Code	VCCI Code			Cat	Calibration Due
			719150	2762A-8	A-0015			II	8/7/2012
Preamps /Couplers Attenuators / Filters 1517 HF Preamp			Range	MN	Mfr	SN	Asset	Cat	Calibration Due
			1-20GHz	CS	CS	N/A	1517	II	4/17/2013
Antennas Black Horn			Range	MN	Mfr	SN	Asset	Cat	Calibration Due
			1-18GHz	3115	EMCO	9703-5148	56	I	6/29/2013
High Pass Filter			0.03-14.5 GHz	10-3000/T90	K&L	1	1311	II	1/2/2013
Cables REMI-High-22			Range	Mfr				Cat	Calibration Due
			9kHz - 15GHz	C-S				II	1/31/2013
Meteorological Meters Weather Clock (Pressure Only)			MN	Mfr	SN	Asset	Cat	Calibration Due	
1DCC-OATS-3M-I Thermohygrometer			BA928	Oregon Scientific	C3166-1	831	I	3/28/2013	
			35519-044	Control Company	72457635	1334	II		8/19/2013

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

Spurious Emissions

Date: 19-Jul-12		Company: Inncom		Work Order: M1798											
Engineer: Matthew Burman		EUT Desc: E528.4G 0dB Thermostat		EUT Operating Voltage/Frequency: 120Vac 60Hz											
Temp: 24.9°C		Humidity: 31%		Pressure: 1010mBar											
Frequency Range: 6-18GHz					Measurement Distance: 1 m										
Notes:															
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB _u V)	Average Reading (dB _u V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Filter Factor (dB)	Adjusted Peak Reading (dB _u V/m)	Adjusted Avg Reading (dB _u V/m)	FCC Class B High Frequency - Peak		FCC Class B High Frequency - Average			
v	7215.0	34.3	24.5	20.3	37.7	6.5	6.5	58.2	48.4	Limit (dB _u V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB _u V/m)	Margin (dB)	Result (Pass/Fail)
v - nf	9620.0	33.2	24.4	19.9	38.9	7.4	59.6	50.8	83.5	-25.3	Pass	63.5	-15.1	Pass	
v - nf	12025.0	34.5	24.8	19.7	39.3	8.8	62.9	53.2	83.5	-23.9	Pass	63.5	-12.7	Pass	
v - nf	14430.0	36.6	27.3	19.4	41.9	11.0	70.1	60.8	83.5	-20.6	Pass	63.5	-10.3	Pass	
v - nf	16835.0	34.7	25.7	19.4	42.3	11.1	68.7	59.7	83.5	-13.4	Pass	63.5	-2.7	Pass	
v - nf									83.5	-14.8	Pass	63.5	-3.8	Pass	
Table Result:		Pass	by -2.7 dB					Worst Freq:		14430.0 MHz					
Test Site: 1DCC-OATS-3M-I		Cable 1: EMR-HIGH-22		Cable 2: ---		Cable 3: ---		Antenna: Black Horn		Preselector: ---					

Rev.7/14/2012

Spectrum Analyzers / Receivers /Preselectors Rental SA #1 (Brown)			Range	MN	Mfr	SN	Asset	Cat	Calibration Due
			9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	2/14/2013
Radiated Emissions Sites 1DCC-OATS-3M-I			FCC Code	IC Code	VCCI Code			Cat	Calibration Due
			719150	2762A-8	A-0015			II	8/7/2012
Preamps /Couplers Attenuators / Filters 1517 HF Preamp			Range	MN	Mfr	SN	Asset	Cat	Calibration Due
			1-20GHz	CS	CS	N/A	1517	II	4/17/2013
Antennas Black Horn			Range	MN	Mfr	SN	Asset	Cat	Calibration Due
			1-18GHz	3115	EMCO	9703-5148	56	I	6/29/2013
Cables REMI-High-22			Range	Mfr				Cat	Calibration Due
			9kHz - 15GHz	C-S				II	1/31/2013
Meteorological Meters Weather Clock (Pressure Only)			MN	Mfr	SN	Asset	Cat	Calibration Due	
1DCC-OATS-3M-I Thermohygrometer			BA928	Oregon Scientific	C3166-1	831	I	3/28/2013	
			35519-044	Control Company	72457635	1334	II		8/19/2013

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Cert. No. 1627-02

Radiated Emissions Table

Date: 19-Jul-12	Company: Inncom	Work Order: M1798												
Engineer: Matthew Burman	EUT Desc: E528.4G 0dB Thermostat	EUT Operating Voltage/Frequency: 120Vac 60Hz												
Temp: 24.9°C	Humidity: 31%	Pressure: 1010mBar												
Frequency Range: 18-26.5GHz		Measurement Distance: 1 m												
Notes:														
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB μ V)	Average Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB μ V/m)	Adjusted Avg Reading (dB μ V/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)

no emissions found

Table Result:	---	by	---	dB	Worst Freq:	---	MHz
Test Site: 1DCC-OATS-3M-I	Cable 1: EMIR-HIGH-22	Cable 2: ---	Cable 3: ---				
Analyzer: Rental SA#1	Preamp: 18-26.5GHz	Antenna: 18-26.5GHz Horn	Preselector: ---				

Rev.7/14/2012

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
Radiated Emissions Sites 1DCC-OATS-3M-I	FCC Code 719150	IC Code 2762A-8	VCCI Code A-0015			II	Calibration Due 8/7/2012
Preamps /Couplers Attenuators / Filters HF (Yellow)	Range 18-26.5GHz	MN AFS4-18002650-60-8P-4	Mfr CS	SN 467559	Asset 1266	I	Calibration Due 10/6/2012
Antennas HF (White) Horn	Range 18-26.5GHz	MN 801-WLM	Mfr Waveline	SN 758	Asset 758	I	Calibration Due Verify before Use
Cables REMI-High-22	Range 9kHz - 15GHz		Mfr C-S			II	Calibration Due 1/31/2013
Meteorological Meters Weather Clock (Pressure Only) 1DCC-OATS-3M-I Thermohygrometer	MN BA928 35519-044	Mfr Oregon Scientific Control Company	SN C3166-1 72457635	Asset 831 1334	Cat I II	Calibration Due 3/28/2013 8/19/2013	

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



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AC Line Conducted Emissions

LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dB μ V)	Average limit (dB μ 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 Conducted Emissions Data Table																		
Date: 8/29/2012, 8/30/2012							Work Order: M1798											
Engineer: Edward Breen																		
8/29, Temp: 23.9 °C							Pressure: 1007 mBar											
8/30, Temp: 23.6 °C							Pressure: 1010 mBar											
Notes: Replaced AC power supply with a DC power supply: PS564.DIN. New supply has an output of 12Vdc. Measured AC side of this DC power supply.																		
Frequency Range: 0.15-30MHz EUT Input Voltage/Frequency: 120V/Hz																		
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor	ATTN Factor	FCC/CISPR Class B		FCC/CISPR Class B							
	QP1 (dB μ V)	QP2 (dB μ V)	AVG1 (dB μ V)	AVG2 (dB μ V)	L1 (dB)	L2 (dB)	(dB)	(dB)	QP Limit (dB)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dB)	Margin (dB)	Result (Pass/Fail)				
>transmit mode									---	---	---	---	---	---				
0.65	21.6	25.1	5.7	13.3	-0.1	-0.2	-0.1	-20.1	56.0	-10.6	Pass	46.0	-12.4	Pass				
3.90	33.2	33.1	18.2	18.2	-0.1	-0.1	-0.1	-20.1	56.0	-2.6	Pass	46.0	-7.5	Pass				
5.35	21.3	21.1	13.3	15.0	-0.1	-0.1	-0.1	-20.1	60.0	-18.5	Pass	50.0	-14.7	Pass				
18.37	26.1	25.7	20.5	20.4	-0.1	-0.1	-0.2	-20.1	60.0	-13.6	Pass	50.0	-9.2	Pass				
22.27	13.9	19.3	13.5	14.6	-0.1	-0.1	-0.3	-20.1	60.0	-20.3	Pass	50.0	-15.0	Pass				
26.46	12.4	16.8	9.1	12.6	-0.1	-0.1	-0.2	-20.1	60.0	-22.8	Pass	50.0	-17.0	Pass				
>standby mode									---	---	---	---	---	---				
0.66	17.8	22.0	5.0	13.7	-0.1	-0.2	-0.1	-20.1	56.0	-13.7	Pass	46.0	-12.0	Pass				
3.94	29.4	28.6	15.2	20.6	-0.1	-0.1	-0.1	-20.1	56.0	-6.4	Pass	46.0	-5.1	Pass				
5.96	19.0	18.6	11.0	13.2	-0.1	-0.1	-0.1	-20.1	60.0	-20.8	Pass	50.0	-16.5	Pass				
18.09	21.7	21.7	18.2	17.9	-0.1	-0.1	-0.2	-20.1	60.0	-17.9	Pass	50.0	-11.5	Pass				
21.96	16.0	16.1	11.5	12.0	-0.1	-0.1	-0.3	-20.1	60.0	-23.5	Pass	50.0	-17.6	Pass				
26.30	13.0	13.6	8.9	9.5	-0.1	-0.1	-0.2	-20.1	60.0	-26.0	Pass	50.0	-20.1	Pass				
Result: Pass					Worst Margin: -2.6 dB			Frequency: 3.90 MHz										
Measurement Device: Green LISN					Cable: CEMI-02			Spectrum Analyzer: Remtal #2										
Attenuator: 20dB Attenuator-43								Site: CEMI 3										
C-S CEMI Calculator Version 3.0.8										Equipment Factor Sheet rev: 7/22/2012								

Rev. 8/20/2012

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Rental SA #2	9kHz-26.5 GHz	E7405A	Agilent	MY45104194	rental	I	1/5/2013
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Green LISN	9kHz-50MHz	8012-50-R-24-BNC	Solar	411658	987	I	5/10/2013
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code				Cat	Calibration Due
CEMI 3	719150	A-0015				III	NA
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	
Temp./Humidity/Atm. Pressure Gauge CEMI3 Thermohygrometer	7400 Perception II 35519-044	Davis Control Company	N/A 72457729	965 1338	I II	4/4/2013 8/19/2013	
Cables	Range	Mfr			Cat	Calibration Due	
CEMI-02	9kHz - 2GHz	C-S			II	4/10/2013	
Attenuators	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
20dB Attenuator-43	9kHz-2GHz		N/A		II		6/18/2013

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



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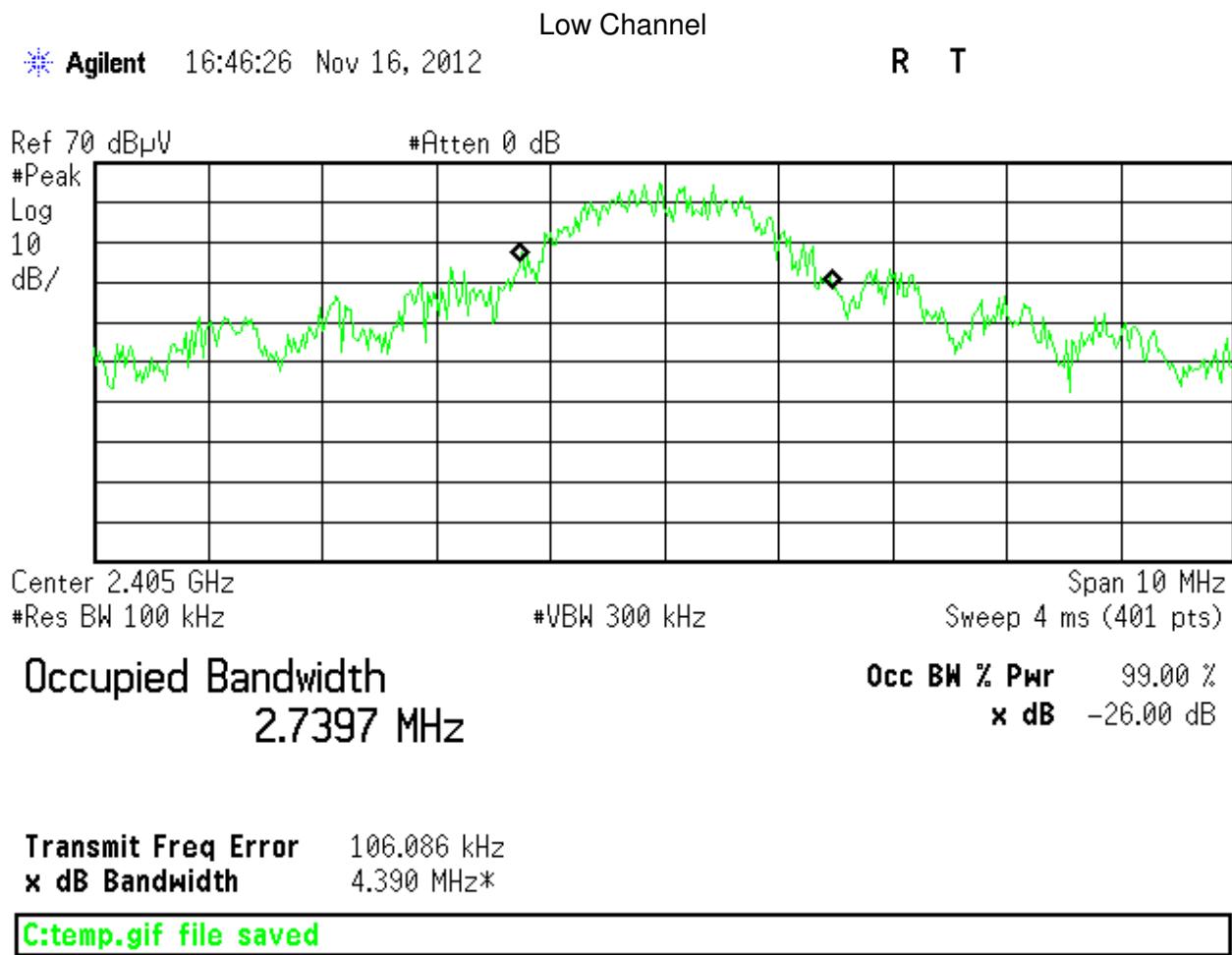
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Cert. No. 1627-02

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]



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)	3.23×10^{-8}	1×10^{-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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