



BUREAU
VERITAS

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

Test Report

Report No

EO0953-1

Client

InnCom
Ryan Gardner

Address

277 West Main Street
Niantic, CT 06357

Phone

860-739-4468

Items tested

B578
GTC201104TXR
1609A-201104TXR

FRN

0017924150

Equipment Type

Low Power Communication Device Transmitter

Equipment Code

DXX

Standards

47CFR 15.249, RSS 210 Issue 8, RSS GEN Issue 3

Test Dates

April 21 – 23, 2014 and May 19, 2014

Results

As detailed within this report

Prepared by

Tuyen Truong
Tuyen Truong A. – Test Engineer

Authorized by

Christopher Reynolds
Christopher Reynolds – EMC Supervisor

Issue Date

6/17/2014

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: O0953																																																					
Company: Inncom																																																					
Company Address: 277 West Main Street Niantic, CT 06357																																																					
Contact: Ryan Gardner																																																					
Person Present: Ryan Gardner, Ravi																																																					
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<p>Software / Operating Mode Description:</p> <p>EUT is set to transmit on Low, Mid and High channels from 2.4 to 2.4835GHz frequency range.</p>																																																					

Issue No. Reason for change Date Issued
 1 Original Release June 12, 2014



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Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.249. The product is B578. It is a transmitter that operates in the range 2402 - 2480MHz.

We found that the product met the above requirements. The test samples were received in good condition.

Test Methodology

Radiated emission 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 (x, y and z) as well as varying the test antenna's height and polarity. The device antenna cannot be maximized separately.

AC Main conducted emission was performed with a 50Ω/50µH LISN.

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 120Vac/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 B578 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 users 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	EUT AC Mains Conducted EMI met the limit in 15.207.
	A2.9(a)	15.249(a)	The fundamental frequencies 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 plots are provided.



Test Results

AC Line Conducted Emission Measurements

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: 23-Apr-14		Company: Inncom							Work Order: O0953										
Engineer: Socrates Perez		EUT Desc: B578 Ethernet to RF Protocol Converter							Pressure: 989 mBar										
Temp: 23.6 °C		Humidity: 27%																	
Notes: 120V/ac, 60Hz																			
Frequency Range: 0.15-30MHz EUT Input Voltage/Frequency: 120Vac, 60Hz																			
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor		ATTN Factor										
	QP1 (dB μ V)	QP2 (dB μ V)	AVG1 (dB μ V)	AVG2 (dB μ V)	L1 (dB)	L2 (dB)	(dB)	(dB)	(dB)	(dB)									
0.15	23.1	26.0	16.9	20.5	-0.1	-0.1	0.0	-19.2	66.0	-20.7	Pass	56.0	-16.3	Pass					
3.02	14.0	16.0	9.1	10.6	0.0	0.0	-0.1	-18.9	56.0	-21.1	Pass	46.0	-16.5	Pass					
8.89	26.9	21.6	22.9	19.4	-0.1	-0.1	-0.1	-18.8	60.0	-14.2	Pass	50.0	-8.2	Pass					
14.21	26.8	26.5	24.7	24.5	-0.1	-0.1	-0.1	-18.7	60.0	-14.3	Pass	50.0	-6.5	Pass					
16.23	28.2	22.1	26.2	25.8	-0.1	-0.1	-0.1	-18.7	60.0	-13.0	Pass	50.0	-5.0	Pass					
23.13	22.6	21.8	20.4	19.3	-0.1	-0.1	-0.1	-18.6	60.0	-18.6	Pass	50.0	-10.8	Pass					
26.61	18.1	16.8	16.0	14.3	-0.1	-0.1	-0.1	-18.6	60.0	-23.1	Pass	50.0	-15.2	Pass					
Result: Pass																			
Worst Margin: -5.0 dB																			
Frequency: 16.229 MHz																			
Measurement Device: LISN ASSET 1728(Line 1) LISN ASSET 1729(Line 2)																			
Cable: CEMI-11																			
Attenuator: 20dB Attenuator-100																			
Spectrum Analyzer: Yellow																			
Site: CEMI 5																			

Rev. 4/20/2014										
Spectrum Analyzers / Receivers/Preselectors										
Yellow										
Range										
9kHz-2.9GHz										
MN										
8594E										
Mfr										
Agilent										
SN										
3523A01958										
Asset										
100										
Cat										
I										
Calibration Due										
6/3/2014										
LISNs/Measurement Probes										
Range										
150kHz-30MHz										
MN										
LI-150A										
Mfr										
Com-Power										
SN										
201084										
Asset										
1728										
Cat										
I										
Calibration Due										
3/31/2015										
LISN Asset 1728										
LISN Asset 1729										
Range										
150kHz-30MHz										
MN										
LI-150A										
Mfr										
Com-Power										
SN										
201085										
Asset										
1729										
Cat										
I										
Calibration Due										
3/31/2015										
Conducted Test Sites (Mains / Telco)										
CEMI 5										
FCC Code										
719150										
VCCI Code										
A-0015										
Cat										
III										
Calibration Due										
NA										
Meteorological Meters										
Temp./Humidity/Atm. Pressure Gauge										
Range										
7400 Perception II										
MN										
35519-044										
Mfr										
Davis										
SN										
N/A										
Asset										
I										
Calibration Due										
5/29/2014										
MN										

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
 Average readings were taken with 30Hz VBW

Field Strength of Fundamental

Radiated Emissions Table														
Date: 21-Apr-14		Company: InnCom		Work Order: O0953										
Engineer: Tuyen Truong		EUT Desc: B578		EUT Operating Voltage/Frequency: 120Vac/60Hz										
Temp: 24°C		Humidity: 5%		Pressure: 1005mBar										
Frequency Range: 2400 - 2483.5 MHz											Measurement Distance: 3 m			
Notes: EUT duty cycle is 2.8ms on time in 100ms period or maximum duty cycle correction factor is 20dB all EUT orientations (x, y and z) were investigated.											EUT Max Freq: 32MHz			
											EUT TX Freq: 2.4-2.4835GHz			
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB _{UV})	Average Reading (dB _{UV})	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB _{UV/m})	Adjusted Avg Reading (dB _{UV/m})	FCC 15.249 High Frequency - Peak		FCC 15.249 High Frequency - Average			
									Limit (dB _{UV/m})	Margin (dB)	Result (Pass/Fail)	Limit (dB _{UV/m})	Margin (dB)	Result (Pass/Fail)
v	2405.0	96.99	77.0	22.3	28.1	4.0	106.8	86.8	113.9	-7.1	Pass	93.9	-7.1	Pass
h	2405.0	98.93	78.9	22.3	28.1	4.0	108.7	88.7	113.9	-5.2	Pass	93.9	-5.2	Pass
v	2445.0	96.62	76.6	22.5	28.2	4.0	106.3	86.3	113.9	-7.6	Pass	93.9	-7.6	Pass
h	2445.0	100.2	80.2	22.5	28.2	4.0	109.9	89.9	113.9	-4.0	Pass	93.9	-4.0	Pass
v	2481.0	98.29	78.3	22.7	28.3	4.0	107.9	87.9	113.9	-6.0	Pass	93.9	-6.0	Pass
h	2481.0	100.3	80.3	22.7	28.3	4.0	109.9	89.9	113.9	-4.0	Pass	93.9	-4.0	Pass
Table Result: Pass by -4.0 dB				Worst Freq: 2445.0 MHz										
Test Site: EMI Chamber 2				Cable 1: Asset #1506				Cable 2: Asset #1786				Cable 3: ---		
Analyzer: Gold				Preamp: Asset #1517				Antenna: Yellow Horn				Preselector: ---		

Rev. 4/20/2014

Spectrum Analyzers / Receivers /Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold		100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/28/2015	3/28/2014
Radiated Emissions Sites		FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2		719150	2762A-7	A-0015	>1GHz		I	5/16/2015	5/16/2013
Preamps /Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
1517 HF Preamp		1-20GHz	CS	CS	N/A	1517	II	9/11/2014	9/11/2013
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Yellow Horn		1-18GHz	3115	EMCO	9608-4898	37	I	7/19/2014	7/19/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Temp./Humidity/Atm. Pressure Gauge		7400 Perceptron	Davis	N/A	965	I	5/29/2014	5/29/2013	
TH A#1833		35519-044	Control Company	130318278	1833	II	6/13/2015	6/13/2013	
Cables		Range	Mfr			Cat	Calibration Due	Calibrated on	
Asset #1506		9kHz - 18GHz	Florida RF			II	3/7/2015	3/7/2014	
Asset #1786		9kHz - 18GHz	Florida RF			II	3/15/2015	3/15/2014	

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



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Field Strength of Harmonics

Radiated Emissions Table

Date: 21-Apr-14		Company: InnCom		Work Order: O0953																					
Engineer: Tuyen Truong		EUT Desc: B578		EUT Operating Voltage/Frequency: 120Vac/60Hz																					
Temp: 24°C		Humidity: 5%		Pressure: 1005mBar																					
Frequency Range: 1-6GHz																									
Notes: EUT duty cycle is 2.8ms on time in 100ms period or maximum duty cycle correction factor is 20dB																									
Measurement Distance: 3 m																									
EUT Max Freq: 32MHz																									
EUT TX Freq: 2.4-2.4835GHz																									
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 15.249 High Frequency - Peak			FCC 15.249 High Frequency - Average													
									Limit (dB _µ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB _µ V/m)	Margin (dB)	Result (Pass/Fail)											
h	4809.19	50.9	30.9	20.7	33.0	5.8	69.0	49.0	74.0	-5.0	Pass	54.0	-5.0	Pass											
v	4809.19	49.25	29.3	20.7	33.0	5.8	67.4	47.4	74.0	-6.6	Pass	54.0	-6.7	Pass											
h	4890.0	48.59	28.6	20.8	33.1	5.8	66.7	46.7	74.0	-7.3	Pass	54.0	-7.3	Pass											
v	4890.0	54.83	34.8	20.8	33.1	5.8	72.9	52.9	74.0	-1.1	Pass	54.0	-1.1	Pass											
h	4962.0	47.52	27.5	20.7	33.2	5.9	65.9	45.9	74.0	-8.1	Pass	54.0	-8.1	Pass											
v	4962.0	54.85	34.9	20.7	33.2	5.9	73.3	53.3	74.0	-0.7	Pass	54.0	-0.7	Pass											
Table Result:		Pass	by	-0.7 dB																					
Test Site: EMI Chamber 2		Cable 1: Asset #1506		Cable 2: Asset #1786		Cable 3: ---		Antenna: Yellow Horn		Preselector: ---															
Analyzer: Gold		Preamp: Asset #1517																							

Radiated Emissions Table

Date: 21-Apr-14		Company: InnCom		Work Order: O0953																					
Engineer: Tuyen Truong		EUT Desc: B578		EUT Operating Voltage/Frequency: 120Vac/60Hz																					
Temp: 24°C		Humidity: 5%		Pressure: 1005mBar																					
Frequency Range: 6-10GHz																									
Notes: No Duty cycle correction factor was applied from 6 to 10GHz test range.																									
Measurement Distance: 1 m																									
EUT Max Freq: 32MHz																									
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 15.249 High Frequency - Peak			FCC 15.249 High Frequency - Average													
									Limit (dB _µ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB _µ V/m)	Margin (dB)	Result (Pass/Fail)											
v	7215.0	41.45	30.6	20.6	37.3	7.0	65.2	54.3	83.5	-18.3	Pass	63.5	-9.2	Pass											
h	7215.0	42.27	30.7	20.6	37.3	7.0	66.0	54.4	83.5	-17.5	Pass	63.5	-9.1	Pass											
v	7335.0	43.58	30.7	20.5	37.7	7.1	67.9	55.0	83.5	-15.6	Pass	63.5	-8.5	Pass											
h	7335.0	42.54	31.7	20.5	37.7	7.1	66.8	56.0	83.5	-16.7	Pass	63.5	-7.5	Pass											
v	7443.0	42.5	32.0	20.4	37.8	7.0	66.9	56.4	83.5	-16.6	Pass	63.5	-7.1	Pass											
h	7443.0	42.4	31.9	20.4	37.8	7.0	66.8	56.3	83.5	-16.7	Pass	63.5	-7.2	Pass											
Table Result:		Pass	by	-7.1 dB																					
Test Site: EMI Chamber 2		Cable 1: Asset #1506		Cable 2: Asset #1786		Cable 3: ---		Antenna: Yellow Horn		Preselector: ---															
Analyzer: Gold		Preamp: Asset #1517																							

Radiated Emissions Table

Date: 23-Apr-14		Company: Inncom		Work Order: O0953																					
Engineer: Tuyen Truong		EUT Desc: B578		EUT Operating Voltage/Frequency: 120Vac/60Hz																					
Temp: 24°C		Humidity: 8%		Pressure: 1001mBar																					
Frequency Range: 10 to 18GHz																									
Notes:																									
Measurement Distance: 1 m																									
EUT Max Freq: 32MHz																									
EUT TX Freq: 2.4-2.4835GHz																									
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 15.249 High Frequency - Peak			FCC 15.249 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 in this range																									
Test Site: EMI Chamber 1		Cable 1: Asset #1505		Cable 2: Asset #1507		Cable 3: ---		Antenna: Orange Horn		Preselector: ---															
Analyzer: Rental SA#2		Preamp: Asset #1517																							



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Spectrum Analyzers / Receivers /Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold		100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/28/2015	3/28/2014
Radiated Emissions Sites	EMI Chamber 2	FCC Code	2762A-7	VCCI Code	Range		Cat	Calibration Due	Calibrated on
		719150		A-0015	>1GHz		I	5/16/2015	5/16/2013
Preamps /Couplers Attenuators / Filters	1517 HF Preamp High Pass Filter	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
		1-20GHz 0.03-14.5 GHz	CS 11SH10-3000/T9000-0/0	CS K&L	N/A 1	1517 1311	II	9/11/2014 1/8/2015	9/11/2013 1/8/2014
Antennas	Yellow Horn	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
		1-18GHz	3115	EMCO	9608-4898	37	I	7/19/2014	7/19/2013
Meteorological Meters	Temp./Humidity/Atm. Pressure Gauge	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
	TH A#1833		7400 Perception II	Davis	N/A	965	I	5/29/2014	5/29/2013
			35519-044	Control Company	130318278	1833	II	6/13/2015	6/13/2013
Cables	Asset #1506 Asset #1786	Range		Mfr			Cat	Calibration Due	Calibrated on
		9kHz - 18GHz 9kHz - 18GHz		Florida RF Florida RF			II	3/7/2015 3/15/2015	3/7/2014 3/15/2014

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

Radiated Emissions Table

Date: 23-Apr-14	Company: Inncom	Work Order: O0953									
Engineer: Tuyen Truong	EUT Desc: B578	EUT Operating Voltage/Frequency: 120Vac/60Hz									
Temp: 24°C	Humidity: 8%	Pressure: 1001mBar									
Frequency Range: 18-25GHz		Measurement Distance: 0.1 m									
Notes:		EUT Max Freq: 32MHz									
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 15.249 High Frequency - Peak	High Frequency - Average	FCC 15.249 High Frequency - Average
									Limit (dB _µ V/m)	Margin (dB)	Result (Pass/Fail)
No Emissions Found in this range											
Test Site: EMI Chamber 1			Cable 1: EMIR-HIGH-13			Cable 2: ---			Cable 3: ---		
Analyzer: Rental SA#2			Preamp: 18-26.5GHz			Antenna: 18-26.5GHz Horn			Preselector: ---		

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Spectrum Analyzers / Receivers/Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental SA #2 (1860)		9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	5/15/2014	4/15/2013
Radiated Emissions Sites	EMI Chamber 1	FCC Code	2762A-6	VCCI Code	Range		Cat	Calibration Due	Calibrated on
		719150		A-0015	>1GHz		I	5/17/2015	5/17/2013
Preamps /Couplers Attenuators / Filters	HF (Yellow)	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
	HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	I	3/30/2015	3/30/2014
Antennas	HF (White) Horn	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
		18-26.5GHz	801-WLM	Waveline	758	758	I	Verify before Use	date of test
Meteorological Meters	Temp./Humidity/Atm. Pressure Gauge	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
	TH A#1832		7400 Perception II	Davis	N/A	965	I	5/29/2014	5/29/2013
			35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013
Cables	REMI-High-13	Range		Mfr			Cat	Calibration Due	Calibrated on
		9kHz - 26.5GHz		C-S			II	2/12/2015	2/12/2014

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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

Radiated Emissions Table								Work Order: 00953						
Date: 23-Apr-14		Company: Inncom		EUT Operating Voltage/Frequency: 120Vac/60Hz										
Engineer: Tuyen Truong		EUT Desc: B578		Humidity: 8%										
Temp: 24°C		Pressure: 1001mBar												
Frequency Range: 30-1000MHz								Measurement Distance: 3 m						
Notes: using Preselector (asset#: 1512) in line with PA								EUT Max Freq: 32MHz						
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)		
v	61.5	36.1	25.3	7.9	0.7	19.4				40.0	-20.6	Pass		
v	100.0	46.2	25.3	10.4	0.8	32.1				43.5	-11.4	Pass		
v	300.0	47.7	25.3	13.9	1.5	37.8				46.0	-8.2	Pass		
h	300.0	51.2	25.3	13.9	1.5	41.3				46.0	-4.7	Pass		
h	350.0	47.3	24.9	15.0	1.6	39.0				46.0	-7.0	Pass		
v	400.0	41.4	25.2	16.1	1.7	34.0				46.0	-12.0	Pass		
v	450.0	37.9	25.5	17.0	1.8	31.2				46.0	-14.8	Pass		
v	500.0	39.1	25.6	17.8	1.9	33.2				46.0	-12.8	Pass		
v	625.0	41.9	25.4	19.8	2.1	38.4				46.0	-7.6	Pass		
v	750.0	43.5	24.6	21.2	2.4	42.5				46.0	-3.5	Pass		
Table Result: Pass by -4.7 dB								Worst Freq: 300.0 MHz						
Test Site: EMI Chamber 1			Cable 1: Asset #1505			Cable 2: Asset #1507			Cable 3: ---					
Analyzer: Rental SA#2			Preamp: Blue-Blk			Antenna: Red-White			Preselector: ---					

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Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental SA #2 (1860)	EMI Chamber Preselector	9kHz-26.5 GHz 9kHz-1.8GHz	E7405A EM-2701	Agilent Electro-Metrics	MY45104916 540	1860 1512	I II	5/15/2014 8/4/2014	4/15/2013 8/4/2013
Radiated Emissions Sites		FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1		719150	2762A-6	A-0015	>1GHz		I	5/17/2015	5/17/2013
Preamps / Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue-Black		0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	11/19/2014	11/19/2013
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog		30-2000MHz	JB1	Sunol	A091604-1	1105	I	7/24/2015	7/24/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Temp./Humidity/Atm. Pressure Gauge		7400 Perception 35519-044	Davis Control Company	N/A	965 130318277	1832	I II	5/29/2014 6/13/2015	5/29/2013 6/13/2013
Cables		Range	Mfr			Cat	Calibration Due	Calibrated on	
Asset #1505		9kHz - 18GHz	Florida RF			II	3/7/2015	3/7/2014	
Asset #1507		9kHz - 18GHz	Florida RF			II	2/23/2015	2/23/2014	

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Band Edge

Radiated Emissions Table											Work Order: O0953								
Date: 21-Apr-14			Company: InnCom						EUT Operating Voltage/Frequency: 120Vac/60Hz										
Engineer: Tuyen Truong			EUT Desc: B578						EUT Max Freq: 32MHz										
Temp: 24°C			Humidity: 5%						EUT TX Freq: 2.4-2.4835GHz										
Frequency Range: Band Edge											Measurement Distance: 3 m								
Notes: EUT duty cycle is 2.8ms on time in 100ms period or -31.06 Marker Delta method was applied to upper band edge at 2483.5MHz.											EUT Max Freq: 32MHz								
											EUT TX Freq: 2.4-2.4835GHz								
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB ₁ V)	Average Reading (dB ₁ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB ₁ V/m)	Adjusted Avg Reading (dB ₁ V/m)	FCC 15.209			FCC 15.209							
									High Frequency - Peak	Margin	Result (Pass/Fail)	High Frequency - Average	Margin	Result (Pass/Fail)					
h	2400.0	58.11	27.1	22.3	28.1	4.0	67.9	36.9	74.0	-6.1	Pass	54.0	-17.2	Pass					
h	2483.5	52.2	21.1	22.7	28.3	4.0	61.8	30.7	74.0	-12.2	Pass	54.0	-23.3	Pass					
v	2485.5	59.31	28.3	22.7	28.3	4.0	68.9	37.9	74.0	-5.1	Pass	54.0	-16.2	Pass					
Table Result:		Pass	by	-5.1	dB							Worst Freq: 2485.5 MHz							
Test Site: EMI Chamber 2			Cable 1: Asset #1506			Cable 2: Asset #1786			Cable 3: ---			Antenna: Yellow Horn							
Analyzer: Gold			Preamp: Asset #1517						Preselector: ---										

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/28/2015	3/28/2014
Radiated Emissions Sites EMI Chamber 2	FCC Code 719150	IC Code 2762A-7	VCCI Code A-0015	Range >1GHz		II	Calibration Due 5/16/2015	Calibrated on 5/16/2013
Preamps/Couplers Attenuators / Filters 1517 HF Preamp	Range 1-20GHz	MN CS	Mfr CS	SN N/A	Asset 1517	II	Calibration Due 9/11/2014	Calibrated on 9/11/2013
Antennas Yellow Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 9608-4898	Asset 37	I	Calibration Due 7/19/2014	Calibrated on 7/19/2013
Meteorological Meters Temp./Humidity/Atm. Pressure Gauge TH A#1833	MN 7400 Perception 35519-044	Mfr Davis Control Company	SN N/A	Asset 965 1833	Cat I II	II	Calibration Due 5/29/2014 6/13/2015	Calibrated on 5/29/2013 6/13/2013
Cables Asset #1506 Asset #1786	Range 9kHz - 18GHz 9kHz - 18GHz	Mfr Florida RF Florida RF			Cat II II		Calibration Due 3/7/2015 3/15/2015	Calibrated on 3/7/2014 3/15/2014

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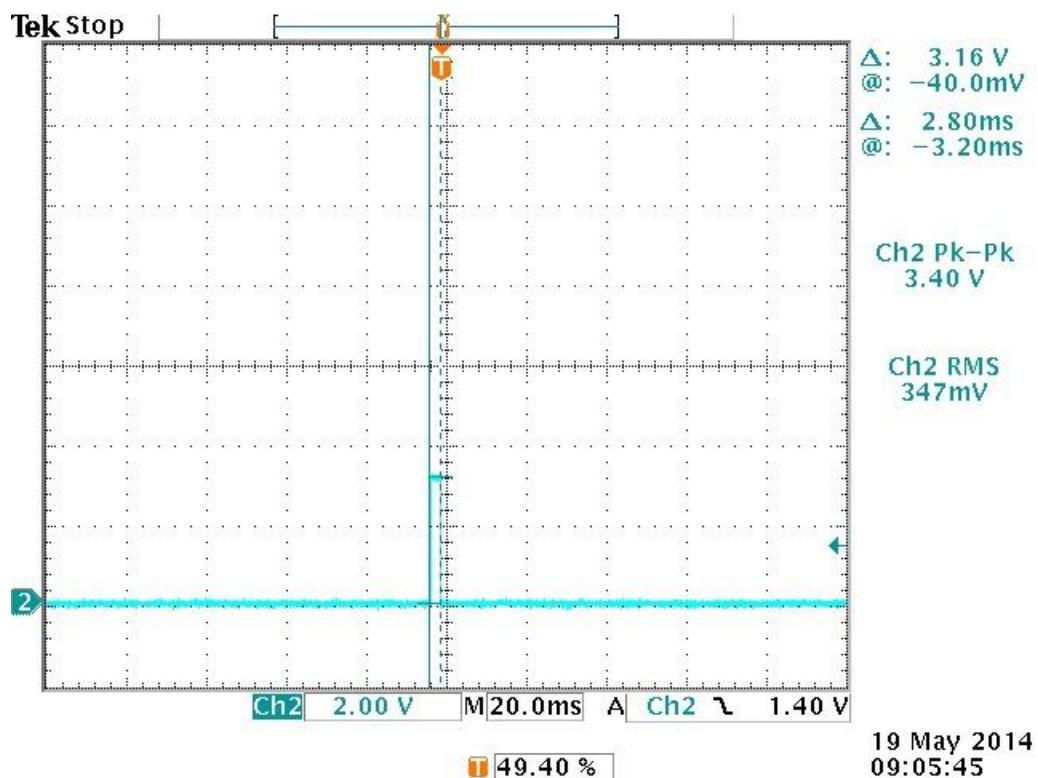
Duty Cycle Correction Calculation

MEASUREMENTS / CALCULATIONS

Engineer	Tuyen Truong
Date	5/19/2014
Site	3meter Indoor
Environmental Conditions	24.1°C, 31%, 1005mb

$$\begin{aligned}
 \text{DCCF} &= 20 \cdot \log (\text{total On Time} / 100\text{ms}) \\
 &= 20 \cdot \log (2.8/100) \\
 &= -31.06
 \end{aligned}$$

PLOTS



Individual Pulse On time – 2.8ms in 100ms Window

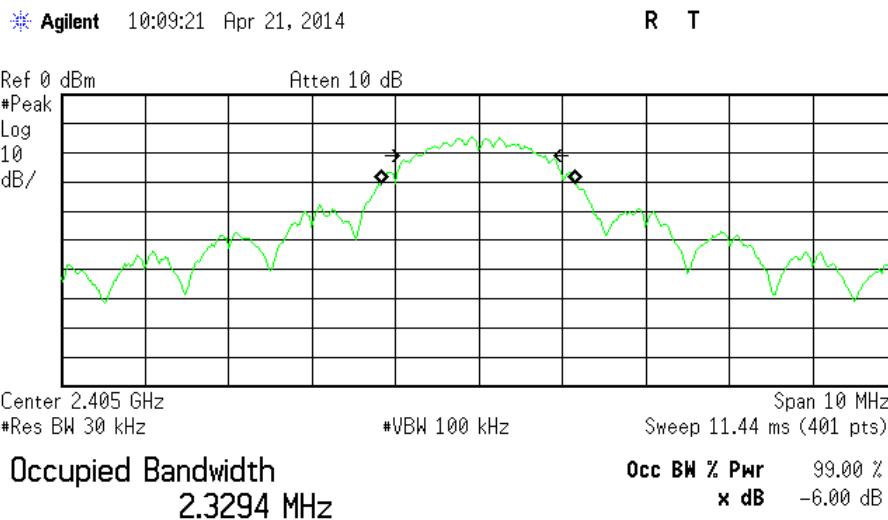


Occupied Bandwidth

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]

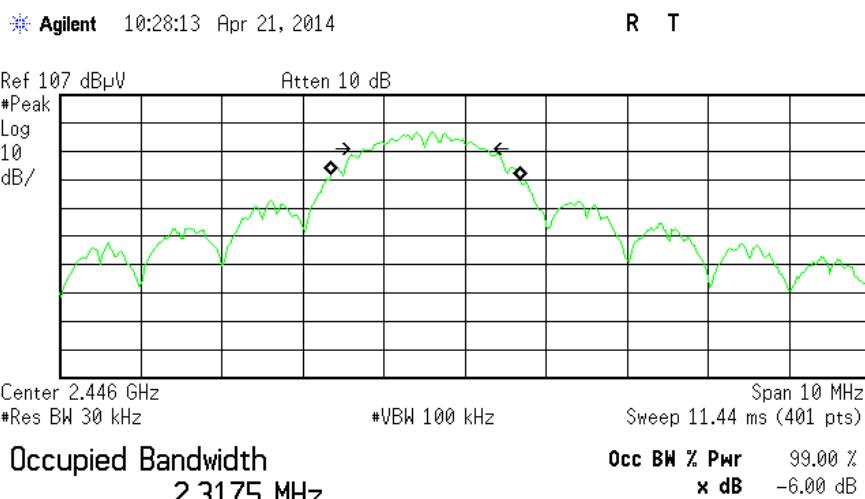
PLOT



Transmit Freq Error -4.754 kHz
x dB Bandwidth 1.485 MHz

C:\temp.gif file saved

Occupied Bandwidth - Low Channel



Transmit Freq Error -491.973 kHz
x dB Bandwidth 1.458 MHz

C:\temp.gif file saved

Occupied Bandwidth - Mid Channel



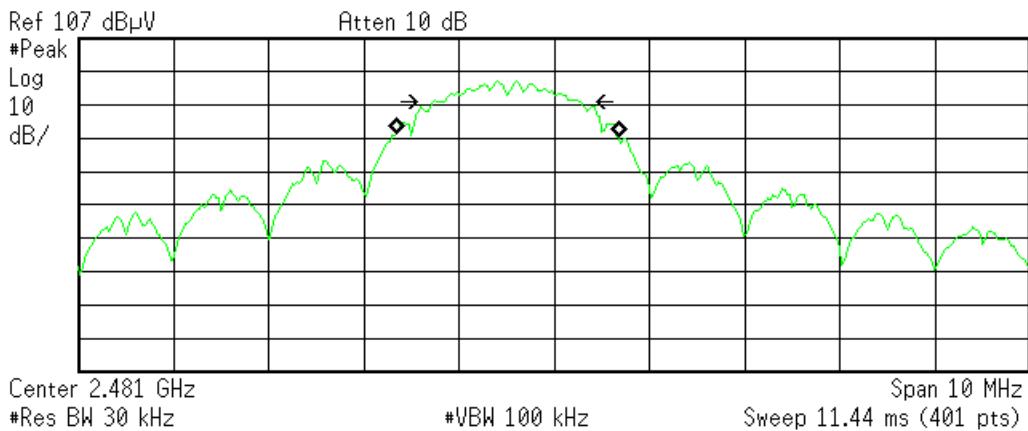
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Agilent 10:49:15 Apr 21, 2014

R T



Occupied Bandwidth
2.3254 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -497.556 kHz
x dB Bandwidth 1.531 MHz

C:\temp.gif file saved

Occupied Bandwidth – High Channel

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/28/2015	3/28/2014
Radiated Emissions Sites EMI Chamber 2	FCC Code 719150	IC Code 2762A-7	VCCI Code A-0015	Range >1GHz		Cat I	Calibration Due 5/16/2015	Calibrated on 5/16/2013
Preamps/Couplers Attenuators / Filters 1517 HF Preamp	Range 1-20GHz	MN CS	Mfr CS	SN N/A	Asset 1517	Cat II	Calibration Due 9/11/2014	Calibrated on 9/11/2013
Antennas Yellow Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 9608-4898	Asset 37	Cat I	Calibration Due 7/19/2014	Calibrated on 7/19/2013
Meteorological Meters Temp./Humidity/Atm. Pressure Gauge TH A#1833	Range	MN 7400 Perception 35519-044	Mfr Davis Control Company	SN N/A 130318278	Asset 965 1833	Cat I II	Calibration Due 5/29/2014 6/13/2015	Calibrated on 5/29/2013 6/13/2013
Cables Asset #1506 Asset #1786	Range 9kHz - 18GHz 9kHz - 18GHz		Mfr Florida RF Florida RF			Cat II II	Calibration Due 3/7/2015 3/15/2015	Calibrated on 3/7/2014 3/15/2014

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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)		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)	3.23×10^{-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.

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.

The complete list of the Approved Subcontractors Curtis-Straus may use to delegate the performance of work can be provided upon request.



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