

Test Report

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

Report No ER0115-7

Client Hanchett Entry Systems, Inc.

Address 10027 S. 51st Street Suite 102

Phoenix, AZ 85044

Phone 1-623-582-4626

Items tested Aperio V3 Wireless Reader (Model: R100-V3)

FCC ID VC3-R100V3 IC 7160A-R100V3 FRN 0016550824

Equipment Type Part 15 Low Power Communication Device Transmitter

Equipment Code DXX Emission Designator 2K49F1D

Standards | CFR Title 47 FCC Part 15.209, ISED Canada RSS-210 Issue 9

Test Dates February 24 to March 24, 2017

Results As detailed within this report

Prepared by Vulveny (

Authorized by Junus Fazilogla – Sr. EMC Engineer

Issue Date 5/12/2017

Conditions of Issue

This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 10 of this report.





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



Summary and Test Methodology

This test report supports a "Limited Modular Approval" certification application for Aperio V3 Wireless Reader (Model: R100-V3) operating under:

CFR Title 47 FCC Part 15.209, ISED Canada RSS-210 Issue 9

EUT is an RFID reader module operating at 124.6 kHz. All testing was performed in accordance with ANSI C63.10 2013. Emissions were maximized around 3 orthogonal planes (X, Y and Z). EUT has an integral loop antenna.

EUT operating voltage is 3V DC via 2xAA batteries.

We found that the product complied with the requirements above without modification. Test sample was received in good condition.

The environmental conditions during testing are documented on the associated data tables.

The following bandwidths were used during emissions testing.

Frequency	RBW	VBW
9kHz-150kHz	200Hz	1kHz
150kHz-30MHz	9kHz	30kHz
30MHz-1GHz	120kHz	1MHz

Issue No. Reason for change Date Issued

1 Original Release May 12, 2017





Product Tested - Configuration Documentation

					EUT	Configuration							
Work O	rder:	R0115											
Com	pany:	Assa A	Assa Abloy										
Company Add	dress:	10027	10027 S. 51st St. Ste. 102										
		Phoenix, AZ 85044											
Cor	ntact:	Baruch	Baruch Spence										
				MN			PN			SN			
	EUT:		R	100-V3						Test San	iple 1		
EUT Descrip	ption:	Aperio	V3 Wireless	Reader									
EUT TX Frequ	ency:	124.6k	Hz										
Support Equipment				MN	N .				SN				
ASSA ABLOY Wirele	ss	AH30											
Hub													
Dell Laptop		Latitud	e										
Port Label	Port	t Type	# ports	# populated	cable type	shielded	ferrites	length (m) in/out	under	comment		
										test			
0.00													
Software Operating N		escriptio	n:										
EAC Simulator 2.0100			15 1 2270										
Aperio Programming A			on:15.1.32/2	.6									
Aperio radio protocol v	ersion:	36											
Performance Criteria													
		م المعام عام		ndata aand naad a	vonto in o loo d	ionlayed by EAC	Cimanilatan aaft	*****					
EUT monitors card rea	uer whi	en snail e	continue to u	puate card read e	vents in a log d	ispiayed by EAC	Simulator soft	ware.					

Issue No. Reason for change Date Issued

1 Original Release May 12, 2017





Statement of Conformity

Aperio V3 Wireless Reader (Model: R100-V3) complied with the following requirements:

RSS-GEN	RSP-100	RSS 210	Part 15	Comments
6.3			15.15(b)	There are no controls accessible to the user that
				varies the output power to operate in violation of the
				regulatory requirements.
	3.1		15.19	The label is shown in the label exhibit.
	4		15.21	Information to the user is shown in the instruction
				manual exhibit.
			15.27	No special accessories are required for compliance.
3, 6.1			15.31	The EUT was tested in accordance with the
				measurement standards in this section.
6.13			15.33	Frequency range was investigated according to this
				section, unless noted in specific rule section under
				which the equipment operates.
8.1			15.35	The EUT emissions were measured using the
				measurement detector and bandwidth specified in
				this section, unless noted in specific rule section
				under which the equipment operates.
8.3			15.203	EUT has an integral loop antenna
8.10			15.205	The fundamental is not in a Restricted band and the
			15.209	spurious and harmonic emissions in the Restricted
				bands comply with the general emission limits of
				15.209 or RSS-Gen as applicable
8.8			15.207	N/A. EUT is battery powered.
6.6				Occupied Bandwidth measurements were made.

Issue No.

Reason for change

Date Issued

1

Original Release

May 12, 2017





Test Results

RADIATED EMISSIONS

Date:	27-Feb-17		Company:	Assa Ablo	у					V	Vork Order:	R0115
Engineer:	Zac Johnson		EUT Desc:	R100					EUT Operat	ing Voltage/	Frequency:	3V DC
Temp:	23.7C		Humidity:	26%		Pressure:	1017					Battery
	Freque	ncy Range:	Fundamen	tal					Measureme	nt Distance:	3 m	
Notes:	Worst Case O	rientation Y										
Antenna			.		0-1-1-	Adhasa						
Antenna Polarization	Frequency	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
(0° - 90°)	(MHz)											
	(MHz) 0.1246 0.1246	14.6 15.1	26.1 26.1	63.3 63.3	0.1 0.1	51.9 52.4				105.7 105.7	-53.8 -53.3	Pass Pass
(0° - 90°) 0 90	0.1246	14.6	_		0.1							Pass
(0° - 90°) 0 90 Tabl	0.1246 0.1246	14.6 15.1 Pass	26.1 by	63.3	0.1 dB					105.7 orst Freq:	-53.3	Pass MHz

	4 Emiceic	ne lan	IP .										
Radiated	: 27-Feb-17	ino rab		A A I-I -								Work Order	D0445
			Company: EUT Desc:		у								
	: Zac Johnson		Humidity:			Duana	ıre: 1017		EU1 Ope	erating	g voltage	/Frequency	
remp	: 23.7C					Pressu	ire: 1017		-				Battery
		ncy Range:	9kHz-1MHz	Z					Measure	ment	Distance:	3 m	
Notes	: Worst Case O	rientation Y											
												FCC 15.20	9
Antenna			Preamp	Antenna	Cable	Adjusted							
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading	Limit	Margin	Result		Limit	Margin	Result
(0° - 90°) 0 / 90	(MHz) No emsissions	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fa	ul)	(dBµV/m)	(dB)	(Pass/Fail) Pass
										- 1			1
Tabl	e Result:	Pass	by		dB					Wor	st Freq:		MHz
	: EMI Chamber : Rental SA#2	1		Asset #209 Red-White				Cable 2: Antenna:				Cable 3 Preselector	
	ed Emissions C		v 1.017.183			Factor		Amerina.	отт соор	(IOW)			
Adjusted Read Rev. 2/26/2017	ed Emissions C ding = Reading -	Preamp Fa	v 1.017.183 ctor + Anten	na Factor -	+ Cable							Copyright Cui	rtis-Straus LLC 2000
Adjusted Read Rev. 2/26/2017	ed Emissions C	Preamp Fa	v 1.017.183 ctor + Anten		+ Cable	Factor MN N9038A	Mfr Agilent	SN MY51210181	Asset 2093	Cat	Calibrat	Copyright Cui	
Adjusted Read Rev. 2/26/2017	ed Emissions C ding = Reading - n Analyzers / Re	ceivers / Prest Receiver Receiver	v 1.017.183 ctor + Anten	na Factor - Rar	+ Cable nge 6.5GHz Code	MN		SN	Asset	Cat	Calibrat 8/9/2	Copyright Cur tion Due 2017	rtis-Straus LLC 2000
Adjusted Read Rev. 2/26/2017 Spectrum	ed Emissions C ding = Reading - n Analyzers / Re 2093 MXE EM Radiated Emis EMI Chan	Preamp Face receivers / Preservers / Preserv	v 1.017.183 ctor + Anten	Rar 20Hz-26 FCC (+ Cable nge 6.5GHz Code 150	MN N9038A IC Code	Agilent VCCI Code	SN MY51210181 Range	Asset	Cat	Calibrat 8/9/2 Calibrat 3/21/	Copyright Cur tion Due 2017 tion Due	Calibrated on 8/9/2016 Calibrated on
Adjusted Read Rev. 2/26/2017 Spectrum	ed Emissions C ding = Reading - n Analyzers / Re 2093 MXE EM Radiated Emis	ceivers / Prediction of the ceiver serious Sites and the ceiver states and the ceiver serious sites and the ceiver serious s	v 1.017.183 ctor + Anten	Rar 20Hz-20 FCC 0 719	+ Cable nge 6.5GHz Code 150	MN N9038A IC Code 2762A-6	Agilent VCCI Code A-0015	SN MY51210181 Range 30-1000MHz	Asset 2093	Cat Cat 	Calibrat 8/9/2 Calibrat 3/21/	tion Due 2017 tion Due 2017	Calibrated on 8/9/2016 Calibrated on 3/21/2015
Adjusted Read Rev. 2/26/2017 Spectrum	ed Emissions C ding = Reading - n Analyzers / Re 2093 MXE EM Radiated Emis EMI Chan	Preamp Far receivers / Pre II Receiver ssions Sites inber 1 ttenuators / F hite	v 1.017.183 ctor + Anten	Rar 20Hz-20 FCC 0 719	+ Cable nge 6.5GHz Code 150 nge 000MHz	MN N9038A IC Code 2762A-6 MN	Agilent VCCI Code A-0015 Mfr	SN MY51210181 Range 30-1000MHz SN	Asset 2093	Cat Cat Cat	Calibrat 8/9/2 Calibrat 3/21/ Calibrat 10/30	Copyright Cur tion Due 2017 tion Due (2017 tion Due	Calibrated on 8/9/2016 Calibrated on 3/21/2015 Calibrated on 3/21/2015
Adjusted Reac Rev. 2/26/2017 Spectrun	ed Emissions C ding = Reading - n Analyzers / Re 2093 MXE EM Radiated Emis EMI Chan nps /Couplers Ai Red-Wi Anteni Small L Meteorologic	Preamp Far receivers / Pre II Receiver ssions Sites inber 1 ttenuators / Fi hite	v 1.017.183 ctor + Anten selectors	Rar 20Hz-26 FCC 0 719 Rar 0.009-20	+ Cable nge 6.5GHz Code 150 nge 000MHz	MN N9038A IC Code 2762A-6 MN ZFL-1000-LN MN PLA-130/A MN	Agilent VCCI Code A-0015 Mfr CS Mfr ARA	SN MY51210181 Range 30-1000MHz SN N/A SN 1024 SN	Asset 2093 Asset 1258 Asset 755 Asset	Cat Cat Cat Cat Cat Cat	Calibrat 8/9/2 Calibrat 3/21/ Calibrat 10/30 Calibrat 6/14/ Calibrat	tion Due 2017 tion Due 2017 tion Due 2017 tion Due 2018 tion Due	Calibrated on 3/21/2016 Calibrated on 3/21/2015 Calibrated on 10/30/2016 Calibrated on 6/14/2016 Calibrated on 6/14/2016
Adjusted Reac Rev. 2/26/2017 Spectrun	ed Emissions C ding = Reading - n Analyzers / Re 2093 MXE EM Radiated Emis EMI Chan nps / Couplers Ai Red-Wi Antenr Small L	Preamp Far receivers / Pre- II Receiver ssions Sites inber 1 ttenuators / If hite nas oop	v 1.017.183 ctor + Anten selectors	Rar 20Hz-26 FCC 0 719 Rar 0.009-20	+ Cable nge 6.5GHz Code 150 nge 000MHz	MN N9038A IC Code 2762A-6 MN ZFL-1000-LN MN PLA-130/A	Agilent VCCI Code A-0015 Mfr CS Mfr ARA	SN MY51210181 Range 30-1000MHz SN N/A SN 1024	Asset 2093 Asset 1258 Asset 755	Cat Cat Cat Cat Cat	Calibrat 8/9/2 Calibrat 3/21/ Calibrat 10/30 Calibrat 6/14/ Calibrat 4/28/	tion Due 2017 tion Due 2017 tion Due /2017 tion Due /2018	Calibrated on 8/9/2016 Calibrated on 3/21/2015 Calibrated on 10/30/2016 Calibrated on 6/14/2016

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





Measurement Distance: 3 m

Radiated Emissions Table

Date: 27-Feb-17 Company: Assa Abloy Work Order: R0115 Engineer: Zac Johnson EUT Desc: R100 EUT Operating Voltage/Frequency: 3V DC

Temp: 23.7C Humidity: 26% Pressure: 1017 Battery

Notes: Worst Case Orientation Y

Frequency Range: 1-30MHz

Antenna			Preamp	Antenna	Antenna Cable Adjusted FCC 15.209							1
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading	Limit	Margin	Result	Limit	Margin	Result
(0° - 90°)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fail)
0	2.07	21.2	25.7	51.1	0.1	46.7				69.5	-22.8	Pass
90	6.45	20.7	25.6	42.3	0.2	37.6				69.5	-31.9	Pass
0	11.0	19.2	25.5	39.6	0.2	33.5				69.5	-36.0	Pass
90	11.0	18.8	25.5	39.6	0.2	33.1				69.5	-36.4	Pass
90	16.28	20.3	25.5	38.3	0.3	33.4				69.5	-36.1	Pass
0	22.72	20.6	25.5	37.6	0.3	33.0				69.5	-36.5	Pass

Table Result: Pass -22.8 dB Worst Freq: 2.07 MHz

Test Site: EMI Chamber 1

Cable 1: Asset #2051

Cable 2: Asset #2054

Cable 3: -

Analyzer: Rental SA#2

Preamp: Red-White

Antenna: Sm Loop (high)

Preselector: ---

CSsoft Radiated Emissions Calculator v 1.017.183
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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. 2/20/2017								
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	ı	8/9/2017	8/9/2016
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	3/21/2017	3/21/2015
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	10/30/2017	10/30/2016
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Small Loop	10kHz-30MHz	PLA-130/A	ARA	1024	755	1	6/14/2018	6/14/2016
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	- 1	4/28/2018	4/28/2016
TH A#2080		HTC-1	HDE		2080	II	4/5/2017	4/5/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2051	9kHz - 18GHz		Florida RF			Ш	3/2/2017	3/2/2016
Asset #2054	9kHz - 18GHz		Florida RF			II	10/1/3017	10/30/2016

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





OCCUPIED BANDWIDTH

REQUIREMENT

When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is its 99% emission bandwidth, as calculated or measured. [RSS-GEN 6.6]

99% Occupied Bandwidth = 2.486kHz

*Resolution Bandwidth is higher than 1-5% due to narrowness of emission being measured



99% Occupied Bandwidth



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 CISPR	5.6dB 4.6dB	N/A 5.2dB (Ucispr)
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 CISPR	3.9dB 3.6dB	N/A 3.6dB (Ucispr)
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 x 10 ⁻⁸	1 x 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
- 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 turnished 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.
- 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
- 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





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ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

- 14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. IS MADE.
- 15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B)NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.\$10,000, WHICHEVER IS THE LESSER AMOUNT.

- 16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.
- 17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

Rev.160009121(2)_#684340 v13CS



