Test Report



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

Report No	EL2270-6
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Client AirPointe of New Hampshire

Address 35E Industrial Way Suite 101 Rochester, NH 03867

Phone 603-994-2200

Items tested FCC ID WUS00045 0018228197

FCC Rule Parts 47 CFR 15.231(a)

Test Dates December 15-16, 2011

Results As detailed within this report

Prepared by

Matthew Burman – Test Engineer

Authorized by

Mairaj Hussain – EMC Supervisor

Issue Date

April 25, 2012

Conditions of Issue

This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 14 of this report.





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Form Final Report REV 7-20-07 (DW)



Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.231(a). The product is the Mako 440. The operating frequency is 440MHz. It is powered by +3VDC coin cell batteries. Line Conducted Emissions was not performed.

We found that the product met the requirements without modification. Don Proulx from AirPointe was present during the testing. The test sample was received in good condition.

Test Methodology

Testing was performed according to ANSI C63.4-2009 and ANSI C63.10-2009. Radiated emissions were maximized by rotating the device around its three orthogonal axes, as well as varying the test antenna's height and polarity. The EUT's antenna cannot be maximized separately. Fresh batteries were used for testing.

Frequency range investigated: 30MHz – 4.5GHz

Measurement distance: 30-4500MHz 3m

This device has no receiver portion.

Release Control Record

Issue No. Reason for change

1 Original Release

Date Issued



Product Tested - Configuration Documentation

				EUT Con	figuratio	n				
Work Orde	r: L2270									
	: airPointe									
Company Address	35E Industri	al Way								
	Rochester, I	NH 03867								
	t: Don Proulx									
Person Presen	t: Don Proulx									
		MN						SN		
EUT	Г:	E3490						Sample 1		
EUT Description	1: MAKO 440 -	Active RFID T	ag							
EUT TX Frequency	/: 440MHz									
Support Equipment:		MN						SN		
NONE										
EUT Ports:										
			No.					Max	In/Out	
Port Label	Port Type	No. of ports	Populated	Cable Type	Shielded	Ferrites	Length	Length	NEBS Type	Unpopulated Reason
NONE										
ftware / Operating Mode Des	cription:								-	
T is continuously transmitting a	440MHz signa	al								





Test Results

Fundamental Emission LIMIT

Fundamental	Field Strength	Field Strength
Frequency	of Fundamental	of Spurious
	(microvolts/meter)	Emission
		(microvolts/meter)
260-470MHz	3,750 to 12,500	375 to 1,250

[15.231(a)]

MEASUREMENT

Date:	05-Mar-12		Company:	Airpointe				Work Order: L2270						
Engineer: Tuyen Truong			EUT Desc:	Mako440					EUT Opera	ating Voltage	/Frequency:	3Vdc		
Temp: 23.3 ℃			Humidity:	13%		Pressure:	1011mBar		•					
Frequency Range: Fundamental									Measureme	nt Distance:	3 m			
Notes	DCCF = 20.0db Y-orientation is EUT's power is	the worst ca		to 1.4dBm)					EU	T Max Freq:	440 MHz			
Antenna			Preamp	Antenna	Cable	Adjusted				47 CFR 15.231(a)				
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading	Limit	Margin	Result	Limit	Margin	Result		
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBμV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fail)		
v, pk	440.0	73.9	0.0	16.6	1.9	92.4				101.2	-8.8	Pass		
v, avg	440.0	53.9	0.0	16.6	1.9	72.4				81.2	-8.8	Pass		
h, pk	440.0	71.4	0.0	16.6	1.9	89.9				101.2	-11.3	Pass		
h, avg	440.0	51.4	0.0	16.6	1.9	69.9				81.2	-11.3	Pass		
Table Result: Pass		by -8.8 dB						14/	orst Freq:	440.0	NAL I-			

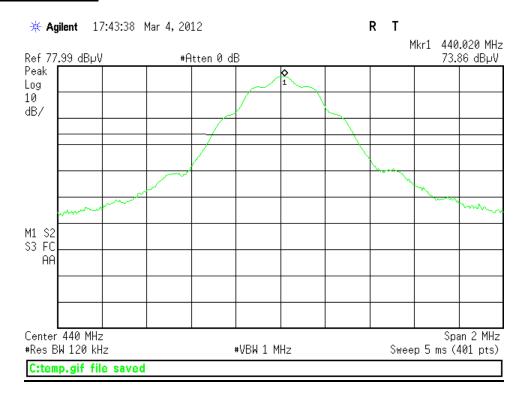
2/17/20	112						
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	3/6/2012
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code			Cat	Calibration Due
EMI Chamber 2	719150	2762A-7	R-3033, G-107			- 1	3/12/2013
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	1	1/28/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge		7400 Perception II	Davis	N/A	965	1	4/4/2013
CHAMBER2 Thermohygrometer		35519-044	Control Company	72457639	1347	II	8/19/2013
Cables	Range		Mfr			Cat	Calibration Due
Asset #1506	9kHz - 18GHz		Florida RF			Ш	2/2/2013
Asset #1507	9kHz - 26.5GHz		Florida RF			Ш	1/31/2013

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





Analyzer Screen Plot







Bandwidth

LIMIT

"The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz...Bandwidth is determined at the points 20dB down from the modulated carrier". [15.231(c)]

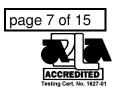
MEASUREMENTS / RESULTS

Bandwid	th Measure	ement				
Engineer: Tuy	en Truong		Temp: 23.3 ℃			
Date: 3-5-12	_		Humidity: 13%			
Site: EMI Cha	ure: 1011mBar					
RBW = 120kF	łz					
Frequency	20dB BW	Limit	Results			
(MHz)	(MHz)	(MHz)	(Pass/Fail)			
440	0.615	1.1	Pass			

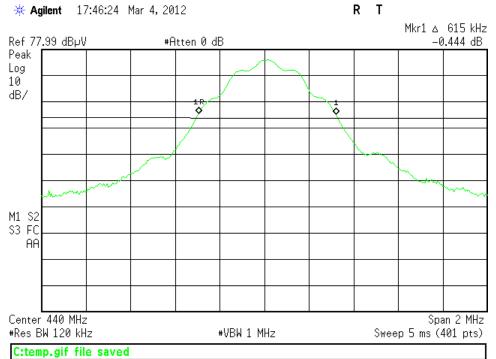
2/17/20	12						
Spectrum Analyzers / Receivers / Preselectors SA EMI Chamber (1328)	Range 9kHz-13.2 GHz	MN E4405B	Mfr Agilent	SN MY44210241	Asset 1328	Cat I	Calibration Due 3/6/2012
Radiated Emissions Sites EMI Chamber 2	FCC Code 719150	IC Code 2762A-7	VCCI Code R-3033, G-107			Cat 	Calibration Due 3/12/2013
Antennas Red-White Bilog	Range 30-2000MHz	MN JB1	Mfr Sunol	SN A091604-1	Asset 1105	Cat I	Calibration Due 1/28/2013
Meteorological Meters Temp./Humidity/Atm. Pressure Gauge CHAMBER2 Thermohygrometer		MN 7400 Perception II 35519-044	Mfr Davis Control Company	SN N/A 72457639	Asset 965 1347	Cat 	Calibration Due 4/4/2013 8/19/2013
Cables Asset #1506 Asset #1507	Range 9kHz - 18GHz 9kHz - 26.5GHz		Mfr Florida RF Florida RF			Cat II II	Calibration Due 2/2/2013 1/31/2013

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





Analyzer Plot







Harmonics and Spurious Emissions LIMIT

Fundamental	Field Strength	Field Strength
Frequency	of Fundamental	of Spurious
	(microvolts/meter)	Emission
		(microvolts/meter)
260 - 470 MHz	3,750 to 12,500	375 to 1,250

[15.231(a)]

MEASUREMENTS

Date:	05-Mar-12		Company:	AirPointe						,	Nork Order:	L2270
Engineer:	neer: Tuyen Truong EUT Desc: Mako440								EUT Opera	ating Voltage	Frequency:	3Vdc
Temp:	Temp: 23.3℃ Humidity: 13%					Pressure:	1011mBar		•			
	Freque	ncy Range:	30 to 1000	MHz					Measureme	nt Distance:	3 m	
Notes:	TX mode								EU	T Max Freq:	440MHz	
A			D	Antenna	Cable	A di				FCC Class B		
Antenna Polarization	Frequency	Reading	Preamp Factor	Antenna Factor	Factor	Adjusted Reading	Limit	Margin	Result	Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fai
V	44.6	14.3	0.0	11.1	0.5	25.9				40.0	-14.1	Pass
v	192.5	16.7	0.0	11.8	1.1	29.6				43.5	-13.9	Pass
v	410.7	12.0	0.0	15.9	1.8	29.7				46.0	-16.3	Pass
h	413.2	12.1	0.0	16.0	1.8	29.9				46.0	-16.1	Pass
h	464.1	11.9	0.0	17.1	1.9	30.9				46.0	-15.1	Pass
v	464.1	11.8	0.0	17.1	1.9	30.8				46.0	-15.2	Pass
h	823.0	11.3	0.0	21.5	2.9	35.7				46.0	-10.3	Pass
h	825.4	11.4	0.0	21.5	2.9	35.8				46.0	-10.2	Pass
V	880.0	12.3	0.0	21.8	3.0	37.1				46.0	-8.9	Pass
V	987.9	15.6	0.0	22.9	3.0	41.5				54.0	-12.5	Pass
		Pass		-8.9						orst Freg:	880.0	

2/17/201	2						
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	- 1	3/6/2012
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code			Cat	Calibration Due
EMI Chamber 2	719150	2762A-7	R-3033, G-107			1	3/12/2013
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	1/28/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge		7400 Perception II	Davis	N/A	965	- 1	4/4/2013
CHAMBER2 Thermohygrometer		35519-044	Control Company	72457639	1347	II	8/19/2013
Cables	Range		Mfr			Cat	Calibration Due
Asset #1506	9kHz - 18GHz		Florida RF			П	2/2/2013
Asset #1507	9kHz - 26.5GHz		Florida RF			Ш	1/31/2013

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





Date:	05-Mar-12			Company:	AirPointe							1	Work Order:	L2270
Engineer:	Tuyen Truong			EUT Desc:	Mako440						EUT Opera	iting Voltage	/Frequency:	3Vdc
Temp: 23.3 ℃ Humidity: 13%							Pressure	: 1011mBar						
		Freque	ency Range:	1 - 5 GHz							Measureme	nt Distance:	3 m	
Notes:											EU	T Max Freq:	440MHz	
									FCC Class	B High Frequ	iency - Peak	ss B High Frequency -		
Antenna		Peak	Average	Preamp	Antenna	Cable	Adjusted	Adjusted					Average	
Polarization	Frequency	Reading	Reading	Factor	Factor	Factor	Peak Reading	Avg Reading	Limit	Margin	Result	Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fail)
v	1040.0	35.2	21.4	22.3	24.2	2.6	39.7	25.9	74.0	-34.3	Pass	54.0	-28.1	Pass
h	1320.0	34.13	25.4	20.8	25.3	2.9	41.5	32.8	74.0	-32.5	Pass	54.0	-21.2	Pass
v	2200.0	40.1	32.2	19.5	27.6	3.7	51.9	44.0	74.0	-22.1	Pass	54.0	-10.0	Pass
h	3080.0	33.9	25.6	21.6	30.6	4.6	47.5	39.2	74.0	-26.5	Pass	54.0	-14.8	Pass
v	3080.5	36.76	29.4	21.6	30.6	4.6	50.4	43.0	74.0	-23.6	Pass	54.0	-11.0	Pass
v	3520.5	34.5	24.2	21.3	31.4	4.9	49.5	39.2	74.0	-24.5	Pass	54.0	-14.8	Pass
V	3960.0	32.55	21.7	20.9	32.6	5.3	49.6	38.7	74.0	-24.4	Pass	54.0	-15.3	Pass
V	4400.5	33.1	21.3	20.2	32.2	5.5	50.6	38.8	74.0	-23.4	Pass	54.0	-15.2	Pass
Tab	le Result:		Pass	by	-10.0	dB					W	orst Freq:	2200.0	MHz
Table Result: Pass by -10.0 dB Worst Freq: Test Site: EMI Chamber 2 Cable 1: Asset #1506 Cable 2: Asset #1507 Analyzer: Asset #1328 Preamp: Asset #1517 Antenna: Yellow Horn							2200.0	IVIH						

2/17/20	12						
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	- 1	3/6/2012
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code			Cat	Calibration Due
EMI Chamber 2	719150	2762A-7	R-3033, G-107			I	3/12/2013
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Yellow Horn	1-18GHz	3115	EMCO	9608-4898	37	1	6/17/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge		7400 Perception II	Davis	N/A	965	- 1	4/4/2013
CHAMBER2 Thermohygrometer		35519-044	Control Company	72457639	1347	II	8/19/2013
Cables	Range		Mfr			Cat	Calibration Due
Asset #1506	9kHz - 18GHz		Florida RF			Ш	2/2/2013
Asset #1507	9kHz - 26.5GHz		Florida RF			II	1/31/2013
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	3/29/2012

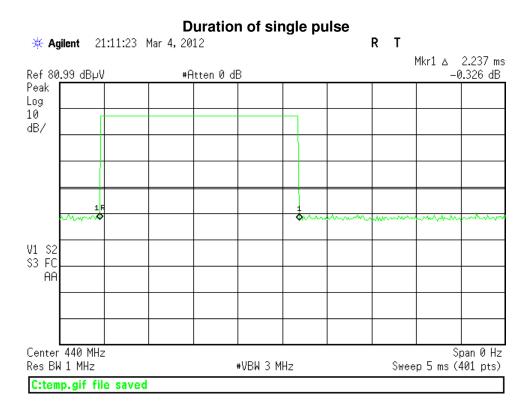
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Note: 15.231(b)(3) states "Spurious emissions shall be attenuated to the average...limits shown in this table [15.231(e)] or to the general limits shown in Section 15.209, whichever limit permits a higher field strength." Since the emissions above meet the 15.209 limits, those limits are displayed in the data table to show worst case.





Duty Cycle Correction Factor



Silent Period



Res BW 1 MHz

C:temp.gif file saved

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Sweep 50 s (401 pts)

#VBW 1 MHz

The worst case duty cycle is represented by the two analyzer plots immediately above.

DCCF = 20*log (2.237ms/100ms)

DCCF = 20*log(0.02237)

DCCF = -33.00dB

A 20dB Duty Cycle Correction Factor was used in this report.





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 uncertaint
Radiated Emissions (30-1000MHz)	•	
NIST	5.6dB	N/A
CISPR	4.6dB	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	0.040	NI/A
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
	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
mum frequency deviation: Within 300Hz and 6kHz of audio frequency / Within 6kHz and	3.4%	5%
25kHz of audio frequency	0.3dB	3% 3dB

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℃	1.0℃
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



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ACCREDITED
Testing Cert. No. 1627-01

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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