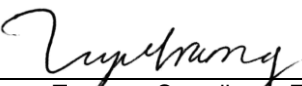
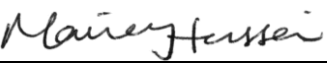




**BUREAU  
VERITAS**

# Test Report

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

Report No	EN0025-1
Client	Wavemark Rich Leitermann
Address	1 Monarch Drive Littleton, MA 01460
Phone	(978) 431-1633
Item tested	SW1500
Standards	FCC Part 15 Section 15.225
FCC ID	UQY-SW1500
FRN	0013630066
Test Dates	May 9 and July 15, 2013
Results	As detailed within this report
Prepared by	 Tuyen Truong – Compliance Engineer
Authorized by	 Mairaj Hussian – EMC Supervisor
Issue Date	<u>9/16/2013</u>
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.

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.



**Curtis-Straus LLC, a wholly owned subsidiary of BV CPS**  
One Distribution Center Circle, #1 • Littleton, MA • TEL (978) 486-8880 • FAX (978) 486-8828



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## Summary

On May 9 and Jul 15, 2013 we tested SW1500 for compliance with the following requirements:

### EMC Emissions:

- 47 CFR Part 15 for following tests only:
  - Section 15.225 (a), (b), (c) and (d)
  - Section 15.207 - AC Mains Conducted Emission
  - Section 15.209 – Spurious Radiated Emission

Registration numbers for all open area test sites can be found in the *Test Equipment Used* Section starting on page 12.

The purpose of this test report is to support an application for certification of a transmitter operating pursuant to 47 CFR 15.225. The SW1500 assembly contains a Tagsys RFID module FCC ID QHKLIBREADERLP101. Frequency stability data is obtained from the Tagsys original filing with FCC.

Please note that the followings were done in order for the SW1500 to meet the requirement, as stated below:

- For Spurious Radiated Emission (FCC 15.225(d)):
  - Added 2 Laird straight through ferrites (PN: 28B0870-000 and 28B0686-000) to RFID reader jacks internally.
  - Added metal shield around transmitter
- For AC Conducted Emission (FCC 15.207):
  - Added a two looped ferrite (Fair-rite 0446164181) on SW1500's charger.

Prior to the modifications, EUT failed Spurious Radiated Emission and AC Line Conducted Emission throughout the test range. With modifications in place, EUT then passed.



## Test Methodology

Radiated emission testing was performed according to the procedures specified in ANSI C63.4 (2009). Emissions were maximized by rotating the system around its vertical axis as well as varying the test antenna's height and polarity. Furthermore, EUT emissions were maximized by rotating product around 3 orthogonal axes.

Frequency range investigated: 0.009MHz – 150MHz

Measurement distance:	0.15 - 30MHz	AC Mains Conducted
	0.009 – 30MHz	3m (loop antenna)
	30MHz – 150MHz	3m

AC Line conducted emissions testing was performed with a 50 $\Omega$ /50 $\mu$ H LISN.

All readings are peak unless otherwise specified on the respective table.

Rich Leitermann from Wavemark was present during the testing. The test sample was received in good condition.

**Product Tested - Configuration Documentation**

EUT Configuration												
Work Order: N0025 Company: Wavemark Company Address: 1 Monarch Dr #104 Littleton, MA 01460 Contact: Rich Leitermann Person Present: Rich Leitermann												
			<b>MN</b>				<b>PN</b>				<b>SN</b>	
EUT:			SW1500								15	
Power supply/charger:			Globtek GTM41060-2512								None	
EUT Description: SmartWand RFID reader												
EUT Max Frequency: 128MHz												
EUT Tx Frequency: 13.56MHz												
<b>Support Equipment:</b>			<b>MN</b>								<b>SN</b>	
None												
<b>EUT Ports:</b>												
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason		
Charger port	Round	1	1	DC power	No	One, molded	1.5m	1.5m	In			
Charger AC side	2-prong	1	1	AC power	No	None	1m	n/a	In			
Mini-USB	Mini-USB	1	0							Management only		
<b>Software / Operating Mode Description:</b>												
Radio transmitting constantly at 13.56MHz. Powered by battery. Charger will charge battery when radio is off. If radio is turned on when charger is plugged in, the battery will not charge and the EUT will be powered directly by the charger.												



**Statement of Conformity**

The SW1500 has been found to conform to the following parts of 47 CFR as detailed below:

Part 15	Comments
15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
15.207	The unit meets the AC conducted emissions requirements of 15.207.
15.225(a-d)	The unit complies with these requirements as shown in this test report.



## Test Results

### Fundamental Measurement

#### LIMITS

Frequency Range (MHz)	Limit @ 30m (µV/m)	Limit @ 30m (dBµV/m)
13.553-13.567	15,848	83.9
13.410-13.553 13.567-13.710	334	50.4
13.110-13.410 13.710-14.010	106	40.5

[15.225(a-c)]

#### MEASUREMENTS

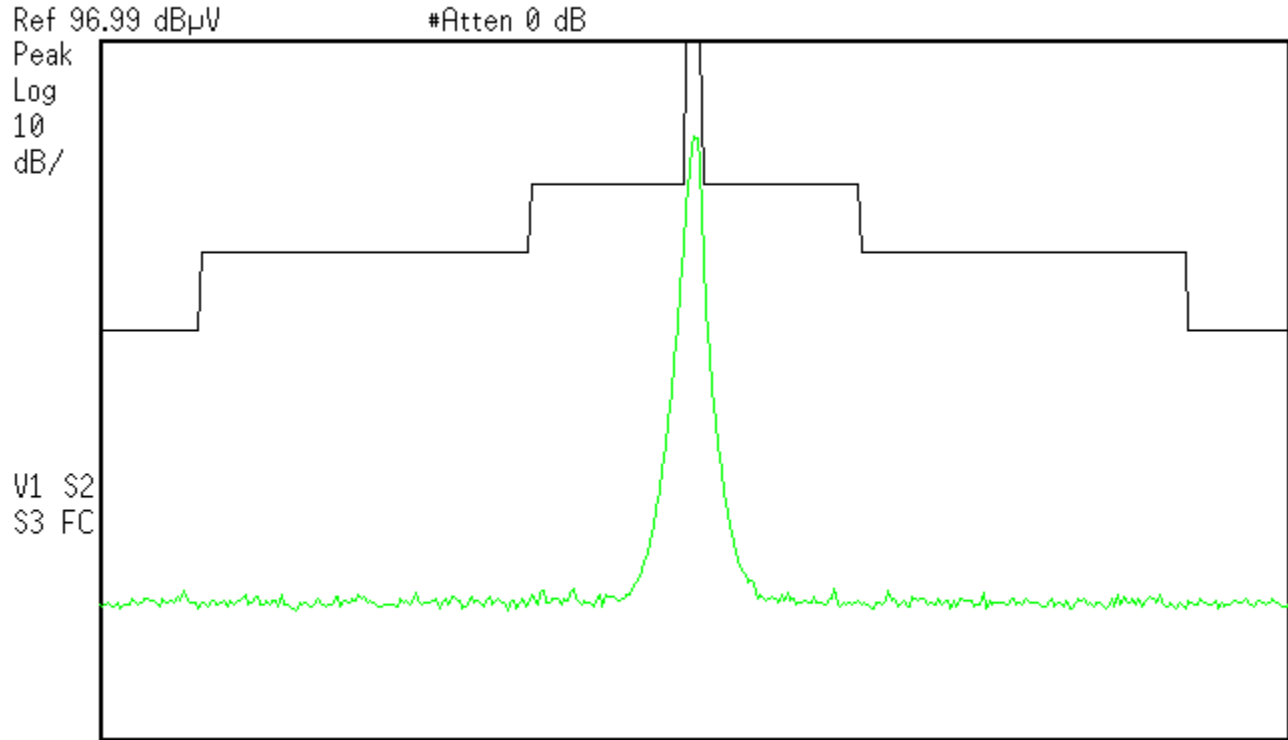
Radiated Emissions Table												
Date: 09-May-13			Company: Wavemark				Work Order: N0025					
Engineer: Edward Breen			EUT Desc: SW1500				EUT Operating Voltage/Frequency: 120Vac, 60Hz					
Temp: 26.8°C			Humidity: 26%				Pressure: 1003mBar					
Frequency Range: 9kHz-5MHz						Measurement Distance: 3 m						
Notes: Tx spectrum mask						EUT Max Freq: 128MHz						
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	FCC § 15.225			FCC § 15.225		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
<b>Table Result:</b> Pass by -7.7 dB Worst Freq: 13.553 MHz												
Test Site: EMI Chamber 1			Cable 1: Asset #1781				Cable 2: Asset #1785					
Analyzer: Rental SA#2			Preamp: Red				Antenna: Sm Loop (high)					



**ANALYZER PLOT**

✱ Agilent 14:03:59 May 9, 2013

R T



Ref 96.99 dBµV

#Atten 0 dB

Peak  
Log  
10  
dB/

V1 S2  
S3 FC

Center 13.56 MHz

#Res BW 9 kHz

#VBW 30 kHz

Span 1.09 MHz

Sweep 30.67 ms (401 pts)

**Missing parameter**

Fundamental Reading at 13.56 MHz





## Radiated Spurious Emissions

### LIMITS

“The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209” [15.225(d)]

### MEASUREMENTS

Radiated Emissions Table												
Date: 15-Jul-13			Company: Wavemark				Work Order: N0025					
Engineer: Tuyen Truong			EUT Desc: SW1500				EUT Operating Voltage/Frequency: 12Vdc					
Temp: 24°C			Humidity: 32%				Pressure: 1005mBar					
Frequency Range: 0.15 - 5MHz						Measurement Distance: 3 m						
Notes:						EUT Max Freq: 128 MHz						
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			47 CFR 15.209(a)		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
No emissions found in this range												
Test Site: EMI Chamber 1			Cable 1: Asset #1781			Cable 2: Asset #1785			Cable 3: ---			
Analyzer: Rental SA#2			Preamp: Blue			Antenna: Lg Loop			Preselector: ---			

Radiated Emissions Table												
Date: 15-Jul-13			Company: Wavemark				Work Order: N0025					
Engineer: Tuyen Truong			EUT Desc: SW1500				EUT Operating Voltage/Frequency: 12Vdc					
Temp: 24°C			Humidity: 32%				Pressure: 1005mBar					
Frequency Range: 5 -30 MHz						Measurement Distance: 3 m						
Notes:						EUT Max Freq: 128 MHz						
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			47 CFR 15.209(a)		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
90	27.12	22.5	22.5	37.3	0.4	37.7	---	---	---	69.5	-31.8	---
0	27.12	28.8	22.5	37.3	0.4	44.0	---	---	---	69.5	-25.5	---
<b>Table Result:</b> Pass						by -25.5 dB			<b>Worst Freq:</b> 27.12 MHz			
Test Site: EMI Chamber 1			Cable 1: Asset #1781			Cable 2: Asset #1785			Cable 3: ---			
Analyzer: Rental SA#2			Preamp: Blue			Antenna: 5m Loop (high)			Preselector: ---			



Radiated Emissions Table												
Date: 15-Jul-13			Company: Wavemark				Work Order: N0025					
Engineer: Tuyen Truong			EUT Desc: SW1500				EUT Operating Voltage/Frequency: 12Vdc					
Temp: 24°C			Humidity: 32%				Pressure: 1005mBar					
Frequency Range: 30 - 1000 MHz							Measurement Distance: 3 m					
Notes: Added 2 Laird straight through ferrites (PN: 28B0870-000 and 28B0686-000) to RFID reader jacks internally. EUT Max Freq: 128 MHz Added metal shield around transmitter.												
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			47 CFR 15.209(a)		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
X-orientation												
h	257.6	47.8	22.5	11.8	1.2	38.3	---	---	---	46.0	-7.7	Pass
h	271.2	47.1	22.5	13.1	1.3	39.0	---	---	---	46.0	-7.0	Pass
h	271.28	52.1	22.5	13.1	1.3	44.0	---	---	---	46.0	-2.0	Pass
h	298.3	52.6	22.5	13.3	1.2	44.6	---	---	---	46.0	-1.4	Pass
v	299.2	37.2	22.5	13.3	1.2	29.2	---	---	---	46.0	-16.8	Pass
h	307.5	48.3	22.5	13.5	1.2	40.5	---	---	---	46.0	-5.5	Pass
h	310.4	48.2	22.5	13.6	1.2	40.5	---	---	---	46.0	-5.5	Pass
h	311.8	49.9	22.5	13.6	1.2	42.2	---	---	---	46.0	-3.8	Pass
h	393.2	42.1	22.3	15.1	1.4	36.3	---	---	---	46.0	-9.7	Pass
Y - orientation												
h	287.1	29.7	22.5	13.2	1.2	21.6	---	---	---	46.0	-24.4	Pass
Z - orientation												
h	277.4	30.1	22.5	13.2	1.2	22.0	---	---	---	46.0	-24.0	Pass
h	321.0	33.1	22.4	13.8	1.3	25.8	---	---	---	46.0	-20.2	Pass
<b>Table Result:</b> Pass by -20.2 dB							<b>Worst Freq:</b> 321.0 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #1781				Cable 2: Asset #1785			Cable 3: ---		
Analyzer: Rental SA#2			Preamp: Blue				Antenna: Red-Black			Preselector: ---		

Radiated Emissions Table														
Date: 15-Jul-13			Company: Wavemark				Work Order: N0025							
Engineer: Tuyen Truong			EUT Desc: SW1500				EUT Operating Voltage/Frequency: 12Vdc							
Temp: 24°C			Humidity: 32%				Pressure: 1005mBar							
Frequency Range: 1 - 2GHz							Measurement Distance: 3 m							
Notes: EUT Max Freq: 128 MHz														
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	47 CFR 15.209(a) High Frequency - Peak			47 CFR 15.209(a) High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
h	1000.0	29.13	23.5	22.0	23.0	2.2	32.3	26.7	74.0	-41.7	Pass	54.0	-27.3	Pass
h	1030.0	30.7	21.8	21.9	23.6	2.3	34.7	25.8	74.0	-39.3	Pass	54.0	-28.2	Pass
h	1247.5	31.16	21.5	21.5	25.0	2.4	37.1	27.4	74.0	-36.9	Pass	54.0	-26.6	Pass
h	1275.0	31.02	22.4	21.2	25.1	2.3	37.2	28.6	74.0	-36.8	Pass	54.0	-25.4	Pass
h	1640.0	28.98	19.1	19.5	27.9	3.0	40.4	30.5	74.0	-33.6	Pass	54.0	-23.5	Pass
v	1640.0	29.87	21.2	19.5	27.9	3.0	41.3	32.6	74.0	-32.7	Pass	54.0	-21.4	Pass
v	1695.0	29.22	23.3	19.1	28.1	3.0	41.2	35.3	74.0	-32.8	Pass	54.0	-18.7	Pass
v	1722.5	29.73	22.0	18.9	28.4	2.9	42.1	34.4	74.0	-31.9	Pass	54.0	-19.6	Pass
<b>Table Result:</b> Pass by -18.7 dB							<b>Worst Freq:</b> 1695.0 MHz							
Test Site: EMI Chamber 1			Cable 1: Asset #1781				Cable 2: Asset #1785			Cable 3: ---				
Analyzer: Rental SA#2			Preamp: Blue				Antenna: Red-Black			Preselector: ---				

QP detector was used in the frequency range 30 – 1000MHz.



## AC Line Conducted Emission Measurements LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dBµV)	Average limit (dBµV)
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

AC Conducted Emissions Data Table														
Date: 09-May-13 Engineer: Edward Breen Temp: 26.8 °C					Company: Wavemark EUT Desc: SW1500 Humidity: 26%					Work Order: N0025 Pressure: 1003 mBar				
Notes: Battery charging; added ferrite on charger, two loop (Fair-rite 0446164181)														
Frequency Range: 0.15-30MHz										EUT Input Voltage/Frequency: 120V/60Hz				
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	FCC/CISPR Class A			FCC/CISPR Class A		
	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)			QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.16	17.8	15.0	8.2	3.0	-0.1	-0.1	-0.1	-20.8	79.0	-40.3	Pass	66.0	-36.9	Pass
0.42	13.6	13.6	9.2	11.2	0.0	-0.1	-0.1	-20.8	79.0	-44.5	Pass	66.0	-33.9	Pass
1.00	8.7	0.2	1.5	0.0	0.0	-0.1	-0.1	-20.8	73.0	-43.4	Pass	60.0	-37.6	Pass
2.23	8.1	1.2	1.0	0.0	0.0	-0.1	-0.1	-20.8	73.0	-44.0	Pass	60.0	-38.1	Pass
4.48	4.5	5.1	4.0	1.1	0.0	-0.1	-0.1	-20.8	73.0	-46.9	Pass	60.0	-35.1	Pass
7.62	1.4	0.3	0.0	0.0	0.0	-0.1	-0.1	-20.8	73.0	-50.6	Pass	60.0	-39.0	Pass
27.12	37.4	37.6	21.2	21.5	-0.1	-0.2	-0.3	-20.8	60.0	-1.1	Pass	50.0	-7.2	Pass
<b>Result:</b> Pass					<b>Worst Margin:</b> -33.9 dB					<b>Frequency:</b> 0.415 MHz				
Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2)					Cable: CEMI-12					Spectrum Analyzer: Yellow				
					Attenuator: 20dB Atten-4					Site: CEMI 3				

C-S CEMI Calculator Version 3.0.11

Equipment Factor Sheet rev: 5/4/2013



### Test Equipment Used

Rev. 8/4/2013

Spectrum Analyzers / Receivers / Preselectors									
	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Rental SA #2	9kHz-26.5 GHz	E7405A	Agilent	MY45104194	rental	I	12/8/2013	12/8/2012	
Yellow	9kHz-2.9GHz	8594E	Agilent	3523A01958	100	I	6/3/2014	6/3/2013	
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	2/16/2014	2/16/2012	
Preamps/Couplers Attenuators / Filters									
	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/31/2014	5/31/2013	
Red	0.009-2000MHz	ZFL-1000-LN	CS	N/A	798	II	2/2/2014	2/2/2013	
Antennas									
	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	1/28/2015	1/28/2013	
Small Loop	10kHz-30MHz	PLA-130/A	ARA	1024	755	I	4/27/2014	4/27/2012	
Large Loop	20Hz-5MHz	6511	EMCO	9704-1154	67	I	4/27/2014	4/27/2012	
Meteorological Meters									
		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Temp./Humidity/Atm. Pressure Gauge		7400 Perception II	Davis	N/A	965	I	5/29/2014	5/29/2013	
CHAMBER1 Thermohygrometer		35519-044	Control Company	72457642	1345	II	8/19/2013	8/19/2011	
Temp./Humidity/Atm. Pressure Gauge		7400 Perception II	Davis	N/A	965	I	5/29/2014	5/29/2013	
CEMI3 Thermohygrometer		35519-044	Control Company	72457729	1338	II	8/19/2013	8/19/2011	
Cables									
	Range		Mfr			Cat	Calibration Due	Calibrated on	
Asset #1781	9kHz - 18GHz		Florida RF			II	3/6/2014	3/6/2013	
Asset #1785	9kHz - 18GHz		Florida RF			II	3/14/2014	3/14/2013	
CEMI-12	9kHz - 2GHz		C-S			II	5/4/2014	5/3/2013	
LISNs/Measurement Probes									
	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
LISN Asset 1726	150kHz-30MHz	LI-150A	Com-Power	201092	1726	I	1/11/2014	1/11/2013	
LISN Asset 1727	150kHz-30MHz	LI-150A	Com-Power	201093	1727	I	1/2/2014	1/2/2013	
Conducted Test Sites (Mains / Telco)									
	FCC Code		VCCI Code			Cat	Calibration Due	Calibrated on	
CEMI 3	719150		A-0015			III	NA	NA	
Attenuators									
	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
20dB Atten-4	9kHz-2GHz			N/A		II	7/12/2014	12/7/2013	

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



## Frequency Tolerance & Voltage Variation

See original test report filed under **FCC ID QHKLIBREADERLP101** for test data.



## 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 where 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.

