Test Report

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

Report No	EM2102-19
Client	Balluff, Inc. Jim Ramler
Address	8125 Holton Drive Florence, KY 41042
Phone	(859) 727 - 2200
Items tested	BIS C-6XX
Standards	47 CFR FCC Part 15.207, 47 CFR FCC Part 15.209, RSS GEN Issue 4, RSS 210 Issue 8
Test Dates	June 3 and 15, 2015
Results	As detailed within this report
Prepared by	Tuyen Truong A. – Test Engineer
Authorized by	Arik Zwirner – EMC Senior Engineer
Issue Date	May 19, 2016
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 19 of this report.

Contents

REV 14-AUG-13 (SC)

Regulatory Information

FRN number	0006334478
FCC ID	HLH-BISC6XX
IC	12121A-BISC6XX
HVIN (for IC)	BF-IDC01

Summary

This report is written to support the “Limited Modular Approval” certification of the BIS C-6XX module from Balluff. On June 3 and 15, 2015 we tested the BIS C-6XX module inside the “Converter BIS C-901” host also from Balluff for compliance with the following requirements:

EMC Emissions:
- CFR 47 FCC Part 15.207 – Conducted limits
- CFR 47 FCC Part 15.209 - Radiated emission limits; general requirements
- RSS GEN Issue 4 - General Requirements and Information for the Certification of Radio Apparatus
- RSS 210 – License - exempt Radio Apparatus (All Frequency Bands): Category I Equipment - Issue 8

EUT is an RFID module which operates at 70kHz. Emissions were maximized by rotating the host around its axis. The module was tested with 4 external antennas as detailed in the “EUT Configuration” section below. Antennas were maximized separately.

AC Mains conducted emissions testing was performed on AC side of AC/DC power supply of the support equipment.

We found that the product met the above requirements without modification. The test sample was received in good condition. The sample was received on May 1, 2015.

Product Tested

Configuration Documentation

EUT Configuration			
Work Order:	M2102		
Company:	Balluff Inc.		
Company Address:	8125 Holton Drive		
	Florence, KY, 41042		
Contact:	Martin Franke		
	MN	**PN**	**SN**
EUT:	Converter BIS C-901	--	Sample 1
EUT Description:	Modular transmitter for C-series of RFID read/write devices		
EUT Tx Frequency:	0.07 MHz		

EUT Components	**MN**	**SN**
Analog Converter BIS C-901	BIS C-901	Sample 1
Antenna	BIS C-300	Sample 1
Antenna	BIS C-305	Sample 1
Antenna	BIS C-351-PU1-05	Sample 1
Antenna (BIS008E)	BIS C-355/05-S92	Sample 1

Support Equipment	**MN**	**SN**
Process Control Equipment (BIS008U)	BIC C-600-007-xxx-00-KL1	Sample 1
HP DC Power Supply (Curtis Straus)	E3612A	860

Port Label	**Port Type**	**# ports**	**# populated**	**cable type**	**shielded**	**ferrites**	**length (m)**	**max length (m)**	**in/out**	**under test**	**comment**
R/W Head	other	1	1	other	Yes	No	3		in	yes	
Controller	other	1	1	other	Yes	No	3		in	yes	24Vdc and I/O

Software Operating Mode Description:

EUT is set to transmit when 24Vdc power applied. EUT was set up with 4 different antennas and tested; with one antenna at a time.

Compliance Statement

TEST	RESULT	STANDARD	MARGIN	COMMENTS
Radiated Emissions	PASS	47 CFR FCC Part 15.209, RSS GEN Section 8.9	-0.5dB @ 61.5MHz	
AC Mains Conducted Emissions	PASS	47 CFR FCC Part 15.207, RSS GEN Section 8.8	-5.0dB @ MHz	AC side of support DC Power Supply tested
Occupied Bandwidth	DONE	RSS-Gen Section 6.6		

Modifications Required for Compliance

There were no modifications required for compliance.

RADIATED EMISSIONS

Test Method:

In accordance with the following:

- 47 CFR FCC Part 15.209
- RSS GEN Issue 4 Section 8.9

Results:

TEST	RESULT	TEST LEVEL	MARGIN	COMMENTS
Radiated Emissions	PASS	FCC 15.209	-0.5dB @ 61.5MHz	

Radiated Emissions Data Table(s):

Radiated Emissions Table

Date: 03-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Tuyen Truong **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24Vdc
Temp: 23°C **Humidity:** 35% **Pressure:** 1015mBar
Frequency Range: 9KHz to 30MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-300 **EUT Max Freq:** 70KHz

Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC Part 15.209 Limit (dBµV/m)	FCC Part 15.209 Margin (dB)	FCC Part 15.209 Result (Pass/Fail)
90	0.053	22.6	25.1	54.5	0.0	52.0	---	---	---	113.1	-61.1	Pass
90	0.058	23.0	25.4	53.5	0.0	51.1	---	---	---	112.3	-61.2	Pass
90, 226.6	0.07	30.6	25.7	52.1	0.0	57.0	---	---	---	110.7	-53.7	Pass
90	0.079	16.2	25.9	51.2	0.0	41.5	---	---	---	109.7	-68.2	Pass
90	0.1313	12.7	26.1	50.1	0.0	36.7	---	---	---	105.2	-68.5	Pass
90	0.211	22.8	26.1	49.2	0.0	45.9	---	---	---	101.1	-55.2	Pass
0	0.07	31.9	25.7	52.1	0.0	58.3	---	---	---	110.7	-52.4	Pass
0	0.053	27.2	25.1	54.5	0.0	56.6	---	---	---	113.1	-56.5	Pass
0	0.079	18.2	25.9	51.2	0.0	43.5	---	---	---	109.7	-66.2	Pass
0	0.131	12.4	26.1	50.1	0.0	36.4	---	---	---	105.3	-68.9	Pass
0	0.199	24.2	26.1	49.2	0.0	47.3	---	---	---	101.6	-54.3	Pass
90	9.75	28.9	25.5	40.3	0.2	43.9	---	---	---	69.5	-25.6	Pass
0	9.75	15.6	25.5	40.3	0.2	30.6	---	---	---	69.5	-38.9	Pass
90	29.18	18.5	25.4	36.8	0.3	30.2	---	---	---	69.5	-39.3	Pass

Table Result: Pass by -25.6 dB ***Worst Freq:*** 9.75 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054
Analyzer: Asset #1328 **Preamp:** Black **Antenna:** Lg Loop (9KHz-5MHz) and Sm Loop (5-30MHz)

Radiated Emissions Table

Date: 15-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Ryan Brown **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24VDC
Temp: 23.7°C **Humidity:** 42% **Pressure:** 1011mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-300 **EUT Max Freq:** 0.07MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
V	48.8	47.4	25.4	8.7	0.4	31.1	---	---	---	40.0	-8.9	Pass
V	61.5	55.4	25.4	7.6	0.5	38.1	---	---	---	40.0	-1.9	Pass
V	88.2	49.3	25.4	7.7	0.5	32.1	---	---	---	43.5	-11.4	Pass
V	102.75	49.3	25.4	10.9	0.5	35.3	---	---	---	43.5	-8.2	Pass
V	160.1	51.2	25.3	12.3	0.8	39.0	---	---	---	43.5	-4.5	Pass
V	190.05	47.2	25.1	11.3	0.8	34.2	---	---	---	43.5	-9.3	Pass
V	204.6	47.4	25.2	11.0	0.9	34.1	---	---	---	43.5	-9.4	Pass
V	219.15	45.4	25.3	10.8	0.9	31.8	---	---	---	46.0	-14.2	Pass
V	233.7	47.2	25.3	11.3	0.9	34.1	---	---	---	46.0	-11.9	Pass
V	248.25	45.2	25.4	11.7	0.9	32.4	---	---	---	46.0	-13.6	Pass
H	160.1	50.8	25.3	12.3	0.8	38.6	---	---	---	43.5	-4.9	Pass
H	219.15	49.8	25.3	10.8	0.9	36.2	---	---	---	46.0	-9.8	Pass
H	204.6	48.8	25.2	11.0	0.9	35.5	---	---	---	43.5	-8.0	Pass
H	71.225	47.6	25.4	8.3	0.5	31.0	---	---	---	40.0	-9.0	Pass
H	233.7	47.4	25.3	11.3	0.9	34.3	---	---	---	46.0	-11.7	Pass
H	379.2	47.0	25.4	15.1	1.2	37.9	---	---	---	46.0	-8.1	Pass
H	321.0	46.7	25.4	13.8	1.1	36.2	---	---	---	46.0	-9.8	Pass
H	291.9	46.1	25.4	13.4	0.9	35.0	---	---	---	46.0	-11.0	Pass
H	262.8	45.6	25.5	12.6	1.0	33.7	---	---	---	46.0	-12.3	Pass
H	350.1	45.6	25.3	14.3	1.0	35.6	---	---	---	46.0	-10.4	Pass

Table Result: Pass by -1.9 dB ***Worst Freq:*** 61.5 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** ---
Analyzer: Rental SA#1 **Preamp:** Black **Antenna:** Red-Brown **Preselector:** ---

Radiated Emissions Table

Date: 03-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Tuyen Truong **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24Vdc
Temp: 23°C **Humidity:** 35% **Pressure:** 1015mBar
Frequency Range: 9KHz to 30MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-305 **EUT Max Freq:** 70KHz

Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC Part 15.209 Limit (dBµV/m)	FCC Part 15.209 Margin (dB)	FCC Part 15.209 Result (Pass/Fail)
0	0.053	26.8	25.1	54.5	0.0	56.2	---	---	---	113.1	-56.9	Pass
90	0.053	26.7	25.1	54.5	0.0	56.1	---	---	---	113.1	-57.0	Pass
0	0.058	26.7	25.4	53.5	0.0	54.8	---	---	---	112.3	-57.5	Pass
0	0.07	30.3	25.7	52.1	0.0	56.7	---	---	---	110.7	-54.0	Pass
90	0.07	14.9	25.7	52.1	0.0	41.3	---	---	---	110.7	-69.4	Pass
0	0.079	18.6	25.9	51.2	0.0	43.9	---	---	---	109.7	-65.8	Pass
0	0.131	12.8	26.1	50.1	0.0	36.8	---	---	---	105.3	-68.5	Pass
0	0.211	25.3	26.1	49.2	0.0	48.4	---	---	---	101.1	-52.7	Pass
90	0.211	21.8	26.1	49.2	0.0	44.9	---	---	---	101.1	-56.2	Pass
90	10.68	27.3	25.5	40.0	0.2	42.0	---	---	---	69.5	-27.5	Pass

Table Result: Pass by -27.5 dB ***Worst Freq:*** 10.68 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054
Analyzer: Asset #1328 **Preamp:** Black **Antenna:** Lg Loop (9KHz-5MHz) and Sm Loop (5-30MHz)

Radiated Emissions Table

Date: 15-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Ryan Brown **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24VDC
Temp: 23.7°C **Humidity:** 42% **Pressure:** 1011mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-305 **EUT Max Freq:** 0.07MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
V	61.5	55.5	25.4	7.6	0.5	38.2	---	---	---	40.0	-1.8	Pass
V	48.8	49.5	25.4	8.7	0.4	33.2	---	---	---	40.0	-6.8	Pass
V	160.1	48.6	25.3	12.3	0.8	36.4	---	---	---	43.5	-7.1	Pass
V	102.75	49.6	25.4	10.9	0.5	35.6	---	---	---	43.5	-7.9	Pass
V	83.35	49.2	25.4	7.5	0.5	31.8	---	---	---	40.0	-8.2	Pass
V	190.05	47.9	25.1	11.3	0.8	34.9	---	---	---	43.5	-8.6	Pass
V	219.15	46.9	25.3	10.8	0.9	33.3	---	---	---	46.0	-12.7	Pass
V	233.7	46.7	25.3	11.3	0.9	33.6	---	---	---	46.0	-12.4	Pass
V	204.6	46.2	25.2	11.0	0.9	32.9	---	---	---	43.5	-10.6	Pass
V	248.25	45.1	25.4	11.7	0.9	32.3	---	---	---	46.0	-13.7	Pass
H	160.1	49.5	25.3	12.3	0.8	37.3	---	---	---	43.5	-6.2	Pass
H	219.15	50.1	25.3	10.8	0.9	36.5	---	---	---	46.0	-9.5	Pass
H	204.6	49.6	25.2	11.0	0.9	36.3	---	---	---	43.5	-7.2	Pass
H	233.7	47.5	25.3	11.3	0.9	34.4	---	---	---	46.0	-11.6	Pass
H	379.2	47.2	25.4	15.1	1.2	38.1	---	---	---	46.0	-7.9	Pass
H	291.9	47.2	25.4	13.4	0.9	36.1	---	---	---	46.0	-9.9	Pass
H	350.1	46.9	25.3	14.3	1.0	36.9	---	---	---	46.0	-9.1	Pass
H	190.05	46.2	25.1	11.3	0.8	33.2	---	---	---	43.5	-10.3	Pass
H	321.0	45.9	25.4	13.8	1.1	35.4	---	---	---	46.0	-10.6	Pass
H	248.25	45.7	25.4	11.7	0.9	32.9	---	---	---	46.0	-13.1	Pass

Table Result: Pass by -1.8 dB ***Worst Freq:*** 61.5 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** ---
Analyzer: Rental SA#1 **Preamp:** Black **Antenna:** Red-Brown **Preselector:** ---

Radiated Emissions Table

Date: 03-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Tuyen Truong **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24Vdc
Temp: 23°C **Humidity:** 35% **Pressure:** 1015mBar
Frequency Range: 9KHz to 30MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-351-PU1-05 **EUT Max Freq:** 70KHz

Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC Part 15.209 Limit (dBµV/m)	FCC Part 15.209 Margin (dB)	FCC Part 15.209 Result (Pass/Fail)
90	0.07	72.7	25.7	52.1	0.0	99.1	---	---	---	110.7	-11.6	Pass
0	0.07	79.0	25.7	52.1	0.0	105.4	---	---	---	110.7	-5.3	Pass
90	0.14	49.1	26.1	50.0	0.0	73.0	---	---	---	106.5	-33.5	Pass
0	0.14	51.0	26.1	50.0	0.0	74.9	---	---	---	106.5	-31.6	Pass
0	0.15	48.6	26.1	49.8	0.0	72.3	---	---	---	104.1	-31.8	Pass
0	0.211	44.9	26.1	49.2	0.0	68.0	---	---	---	101.1	-33.1	Pass
0	0.283	38.6	26.0	48.8	0.0	61.4	---	---	---	98.6	-37.2	Pass
0	0.356	32.4	26.0	48.7	0.0	55.1	---	---	---	96.5	-41.4	Pass
90	8.875	23.7	25.5	40.7	0.1	39.0	---	---	---	69.5	-30.5	Pass
90	11.0	23.4	25.5	40.0	0.2	38.1	---	---	---	69.5	-31.4	Pass
90	29.8	19.7	25.4	36.6	0.3	31.2	---	---	---	69.5	-38.3	Pass

Table Result: Pass by -5.3 dB ***Worst Freq:*** 0.07 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054
Analyzer: Asset #1328 **Preamp:** Black **Antenna:** Lg Loop (9KHz-5MHz) and Sm Loop (5-30MHz)

Radiated Emissions Table

Date: 15-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Ryan Brown **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24VDC
Temp: 23.7°C **Humidity:** 42% **Pressure:** 1011mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-351 **EUT Max Freq:** 0.07MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
V	61.5	55.9	25.4	7.6	0.5	38.6	---	---	---	40.0	-1.4	Pass
V	160.1	50.4	25.3	12.3	0.8	38.2	---	---	---	43.5	-5.3	Pass
V	44.3	48.3	25.4	10.9	0.4	34.2	---	---	---	40.0	-5.8	Pass
V	102.75	50.3	25.4	10.9	0.5	36.3	---	---	---	43.5	-7.2	Pass
V	83.35	49.5	25.4	7.5	0.5	32.1	---	---	---	40.0	-7.9	Pass
V	204.6	48.5	25.2	11.0	0.9	35.2	---	---	---	43.5	-8.3	Pass
V	233.7	46.6	25.3	11.3	0.9	33.5	---	---	---	46.0	-12.5	Pass
V	190.05	45.7	25.1	11.3	0.8	32.7	---	---	---	43.5	-10.8	Pass
V	248.25	44.8	25.4	11.7	0.9	32.0	---	---	---	46.0	-14.0	Pass
V	219.15	43.9	25.3	10.8	0.9	30.3	---	---	---	46.0	-15.7	Pass
H	203.8	49.8	25.2	11.3	0.9	36.8	---	---	---	43.5	-6.7	Pass
H	160.1	49.0	25.3	12.3	0.8	36.8	---	---	---	43.5	-6.7	Pass
H	71.225	48.3	25.4	8.3	0.5	31.7	---	---	---	40.0	-8.3	Pass
H	219.15	48.1	25.3	10.8	0.9	34.5	---	---	---	46.0	-11.5	Pass
H	233.7	47.6	25.3	11.3	0.9	34.5	---	---	---	46.0	-11.5	Pass
H	379.2	47.3	25.4	15.1	1.2	38.2	---	---	---	46.0	-7.8	Pass
H	321.0	46.7	25.4	13.8	1.1	36.2	---	---	---	46.0	-9.8	Pass
H	350.1	46.3	25.3	14.3	1.0	36.3	---	---	---	46.0	-9.7	Pass
H	291.9	46.2	25.4	13.4	0.9	35.1	---	---	---	46.0	-10.9	Pass
H	262.8	46.1	25.5	12.6	1.0	34.2	---	---	---	46.0	-11.8	Pass

Table Result: Pass by -1.4 dB ***Worst Freq:*** 61.5 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** ---
Analyzer: Rental SA#1 **Preamp:** Black **Antenna:** Red-Brown **Preselector:** ---

Radiated Emissions Table

Date: 03-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Tuyen Truong **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24Vdc
Temp: 23°C **Humidity:** 35% **Pressure:** 1015mBar
Frequency Range: 9KHz to 30MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-355/05-S92 **EUT Max Freq:** 70KHz

Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC Part 15.209 Limit (dBµV/m)	FCC Part 15.209 Margin (dB)	FCC Part 15.209 Result (Pass/Fail)
0	0.07	76.6	25.7	52.1	0.0	103.0	---	---	---	110.7	-7.7	Pass
90	0.07	75.0	25.7	52.1	0.0	101.4	---	---	---	110.7	-9.3	Pass
0	0.14	44.8	26.1	50.0	0.0	68.7	---	---	---	104.7	-36.0	Pass
90	0.14	42.2	26.1	50.0	0.0	66.1	---	---	---	104.7	-38.6	Pass
90	0.15	38.8	26.1	49.8	0.0	62.5	---	---	---	104.1	-41.6	Pass
0	0.211	39.0	26.1	49.2	0.0	62.1	---	---	---	101.1	-39.0	Pass
90	0.211	38.2	26.1	49.2	0.0	61.3	---	---	---	101.1	-39.8	Pass
90	11.56	20.4	25.5	39.8	0.2	34.9	---	---	---	65.9	-31.0	Pass

Table Result: Pass by -7.7 dB ***Worst Freq:*** 0.07 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054
Analyzer: Asset #1328 **Preamp:** Black **Antenna:** Lg Loop (9KHz-5MHz) and Sm Loop (5-30MHz)

Radiated Emissions Table

Date: 15-Jun-15 **Company:** Balluff **Work Order:** M2102
Engineer: Ryan Brown **EUT Desc:** C-series for modular transmitter approval **EUT Operating Voltage/Frequency:** 24VDC
Temp: 23.7°C **Humidity:** 42% **Pressure:** 1011mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Converter BIS C-901 with BIS C-355/05-S92 **EUT Max Freq:** 0.07MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
V	61.5	56.8	25.4	7.6	0.5	39.5	---	---	---	40.0	-0.5	Pass
V	160.1	51.4	25.3	12.3	0.8	39.2	---	---	---	43.5	-4.3	Pass
V	46.975	50.1	25.4	9.5	0.4	34.6	---	---	---	40.0	-5.4	Pass
V	87.3	48.7	25.4	7.6	0.5	31.4	---	---	---	40.0	-8.6	Pass
V	189.3	47.5	25.1	11.3	0.8	34.5	---	---	---	43.5	-9.0	Pass
V	218.4	49.0	25.3	10.7	0.9	35.3	---	---	---	46.0	-10.7	Pass
V	203.8	45.4	25.2	11.3	0.9	32.4	---	---	---	43.5	-11.1	Pass
V	174.7	46.6	25.2	11.3	0.8	33.5	---	---	---	43.5	-10.0	Pass
V	232.9	46.5	25.3	11.3	0.9	33.4	---	---	---	46.0	-12.6	Pass
V	247.5	43.5	25.4	11.7	0.9	30.7	---	---	---	46.0	-15.3	Pass
H	218.4	50.4	25.3	10.7	0.9	36.7	---	---	---	46.0	-9.3	Pass
H	160.1	49.8	25.3	12.3	0.8	37.6	---	---	---	43.5	-5.9	Pass
H	203.8	48.2	25.2	11.3	0.9	35.2	---	---	---	43.5	-8.3	Pass
H	69.8	47.3	25.4	8.3	0.5	30.7	---	---	---	40.0	-9.3	Pass
H	378.6	45.7	25.4	15.1	1.2	36.6	---	---	---	46.0	-9.4	Pass
H	87.3	47.3	25.4	7.6	0.5	30.0	---	---	---	40.0	-10.0	Pass
H	232.9	47.0	25.3	11.3	0.9	33.9	---	---	---	46.0	-12.1	Pass
H	291.2	46.6	25.4	13.5	0.9	35.6	---	---	---	46.0	-10.4	Pass
H	247.5	46.5	25.4	11.7	0.9	33.7	---	---	---	46.0	-12.3	Pass
H	320.3	46.4	25.4	13.8	1.1	35.9	---	---	---	46.0	-10.1	Pass

Table Result: Pass by -0.5 dB ***Worst Freq:*** 61.5 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** ---
Analyzer: Rental SA#1 **Preamp:** Black **Antenna:** Red-Brown **Preselector:** ---

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	2/20/2016	2/20/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	799	II	4/11/2016	4/11/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Large Loop	20Hz-5MHz	6511	EMCO	9704-1154	67	I	6/29/2015	5/29/2014
Small Loop	10kHz-30MHz	PLA-130/A	ARA	1024	755	I	6/29/2015	5/29/2014
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2054	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

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

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	7/12/2015	5/12/2014
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	799	II	4/11/2016	4/11/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	12/4/2016	12/4/2014
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2054	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	

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

Radiated Emissions Modifications:

None

CONDUCTED EMISSIONS

Test Method:

In accordance with the following:

- CFR 47 FCC Part 15.207
- RSS GEN Issue 4 Section 8.8

Results:

TEST	RESULT	TEST LEVEL	MARGIN	COMMENTS
AC Mains Conducted Emissions	Pass	FCC 15.207	-5.0dB @ MHz	AC side of support DC Power Supply tested

Conducted Emissions Data Table(s):

AC Side of a DC Supply Conducted Emissions

Date: 27-Aug-15 **Company:** Balluff **Work Order:** M2102
Engineer: Chris LoPiccolo, Jason Haley **EUT Desc:** C-series for modular transmitter approval
Temp: 23.7 ºC **Humidity:** 53% **Pressure:** 1007 mBar
Notes: Antenna: Config-BIS-C-351-PU1-05
Frequency Range: 0.15-30 MHz **EUT Input Voltage/Frequency:** 120V/60Hz

Frequency (MHz)	Quasi-Peak Readings QP1 (dBµV)	QP2 (dBµV)	Average Readings AVG1 (dBµV)	AVG2 (dBµV)	LISN Factors L1 (dB)	L2 (dB)	Cable Factor (dB)	ATTN Factor (dB)	FCC/CISPR Class B QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	FCC/CISPR Class B AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.15	30.8	32.0	4.2	0.3	-0.1	-0.1	0.0	-19.7	66.0	-14.3	Pass	56.0	-32.0	Pass
0.31	27.7	27.7	3.1	0.2	0.0	-0.1	0.0	-19.7	60.0	-12.6	Pass	50.0	-27.2	Pass
1.76	10.2	2.2	-3.1	-2.6	0.0	-0.1	-0.1	-19.7	56.0	-26.1	Pass	46.0	-28.8	Pass
8.60	14.5	13.8	10.1	10.2	-0.1	-0.1	-0.1	-19.6	60.0	-25.7	Pass	50.0	-20.0	Pass
11.13	28.1	27.3	25.3	24.8	-0.1	-0.1	-0.1	-19.6	60.0	-12.1	Pass	50.0	-5.0	Pass
18.55	16.2	16.0	12.0	10.2	-0.1	-0.1	-0.1	-19.7	60.0	-23.9	Pass	50.0	-18.1	Pass

Result: Pass ***Worst Margin:*** -5.0 dB ***Frequency:*** 11.130 MHz

Measurement Device: LISN ASSET 1732(Line 1) LISN ASSET 1733(Line 2) **Cable:** CEMI-04 **Spectrum Analyzer:** 1328
Attenuator: 20dB Attenuator-01 **Site:** CEMI 3

C-S CEMI Calculator Version 3.0.13 *Equipment Factor Sheet rev: 8/26/2015*

Rev. 8/27/2015

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	8/19/2016	8/19/2015
LISNs/Measurement Probes	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
LISN Asset 1732	150kHz-30MHz	LI-150A	Com-Power	201094	1732	I	2/12/2016	2/12/2015
LISN Asset 1733	150kHz-30MHz	LI-150A	Com-Power	201095	1733	I	2/12/2016	2/12/2015
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 3	719150		A-0015			III	NA	N/A
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2086		HTC-1	HDE		2086	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI-04	9kHz - 2GHz		C-S			II	1/31/2016	1/31/2015
Attenuators	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
20dB Attenuator-01	9kHz-2GHz	PE7000-20	Pasternack	N/A		II	7/29/2016	7/29/2015

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

Conducted Emissions Modifications:

None

OCCUPIED BANDWIDTH

Test Method:

In accordance with:

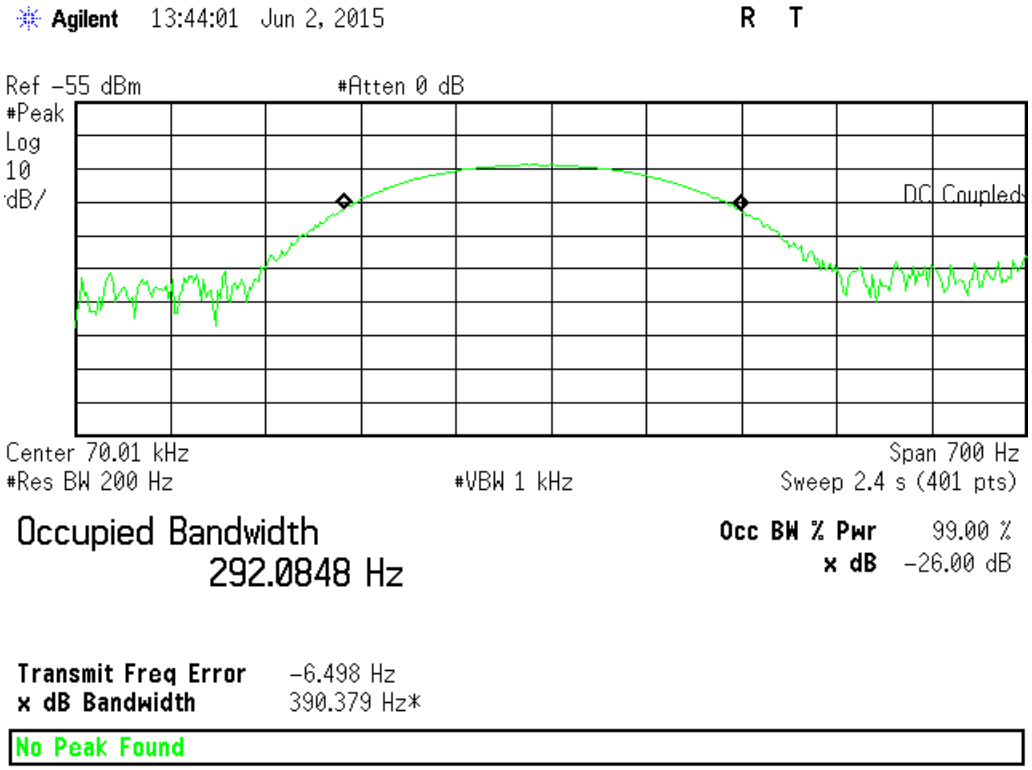
- RSS Gen, Issue 4 Section 6.6

Results:

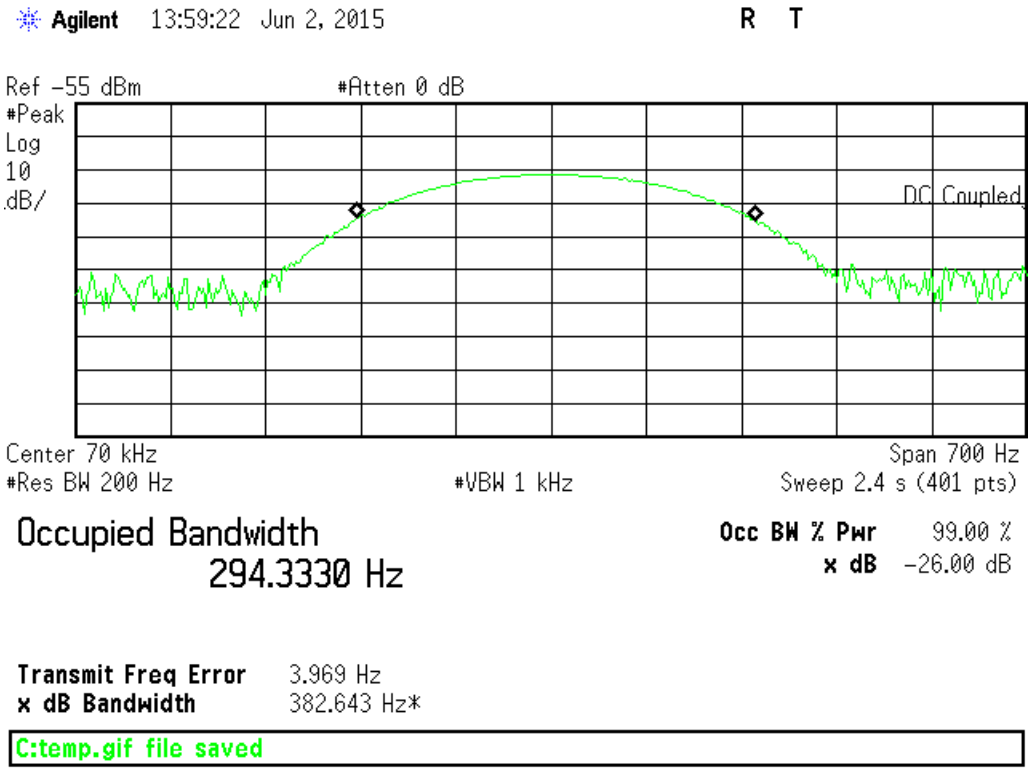
TEST	RESULT	TEST LEVEL	MARGIN	COMMENTS
Occupied Bandwidth	DONE	RSS-Gen Issue 4	N/A	

Note: To have a meaningful reading, RBW could not be reduced below 200Hz.

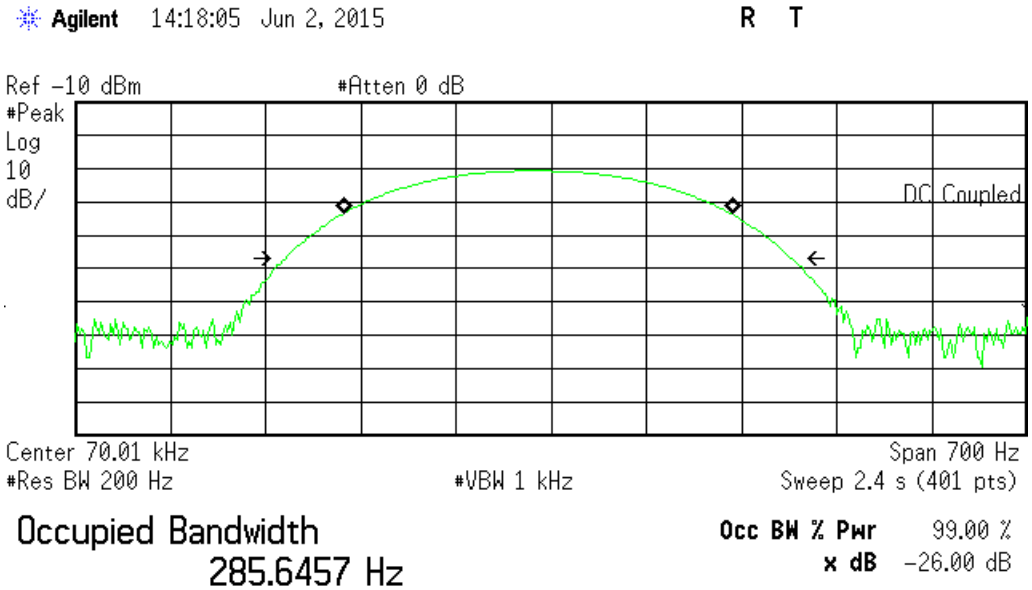
Occupied Bandwidth Plot(s):



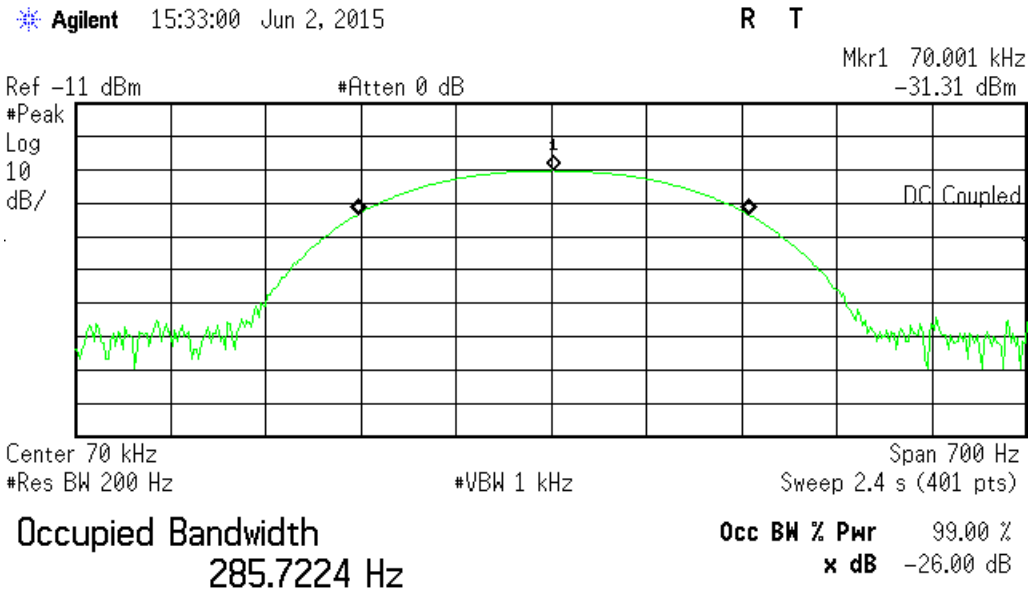
99% Occupied Bandwidth – EUT with C BIS-300



99% Occupied Bandwidth – EUT with C BIS-305



99% Occupied Bandwidth – EUT with C BIS-351



99% Occupied Bandwidth – EUT with C BIS-355

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)	3.23×10^{-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.