
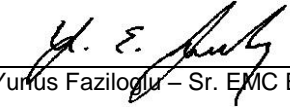




Test Report

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

Report No	ES0557-1
Client	Ideal Industries, Inc.
Address	Becker Place Sycamore, IL 60178
Phone	(815) 895-1295
Items tested	SCDMET1002
FCC ID	2AAMXSCDMET1002
IC	11250A-SCDMET1002
FRN	0002862225
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	755KG1D
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2
Test Dates	February 28, 2018 and March 1-2, 5, and 12, 2018
Results	As detailed within this report
Prepared by	 Christopher Bramley - Test Engineer
Authorized by	 Yunus Faziloglu - Sr. EMC Engineer
Issue Date	4/4/2018
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 39 of this report.

Curtis-Straus LLC is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



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



Summary

This test report supports an application for certification of a transmitter operating pursuant to: CFR Title 47 FCC Part 15.247, ISSED Canada RSS-247 Issue 2.

The product is the SCDMET1002. It is a digitally modulated transmitter that operates in the 902.7-927.3MHz frequency range. The product was tested with a permanently installed wire antenna with 4.55 dBi gain.

We found that the product met the above requirements without modification. The test samples were received in good condition.



Test Methodology

All testing was performed according to the following rules/procedures/documents;

CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2, ISED Canada RSS-Gen Issue 4, FCC KDB 558074 D01 DTS Measurement Guidance v04 and ANSI C63.10-2013.

Radiated emissions were maximized by rotating the device around three orthogonal planes (X, Y and Z) as well as varying the test antenna's height and polarity. Worst case results are reported. AC line conducted emissions testing was performed with a 50 Ω /50 μ H LISN. The EUT operating voltage was 120/277/347VAC at 60Hz.

RF measurements were performed at the antenna port on 3 channels as follows:

Low channel = 902.7MHz

Mid channel = 915MHz

High channel = 927.3MHz

The following bandwidths were used during radiated spurious and AC line conducted emissions tests:

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-10GHz	1MHz	3MHz

Product Tested - Configuration Documentation

EUT Configuration										
Work Order:	S0557									
Company:	Ideal Industries									
Company Address:	Becker Place									
	Sycamore, IL 60178									
Contact:	Tim Tunnell									
	MN							SN		
EUT:	SCDMET1002							Sample 1		
EUT Description:	CFL Luminaire Controller - Metal Box									
EUT Tx Frequency:	902.7-927.3 MHz									
Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	in/out	under test	comment
AC Mains	Power AC	1	1	Power AC	No	No	1.5	in	yes	
Antenna	other	1	1	other	No	No	0.1	in	yes	
Load	other	1	1	other	No	No	0.1	in	yes	Power output from Smart Connector
Dim	other	1	1	other	No	No	1	in	yes	0-10Vdc Dimming control
Software Operating Mode Description:										
The EUT provides AC power and a 0-10V dimming control to an electronic ballast. The EUT will be mounted to a light fixture during normal operation. The EUT was set to transmit at Low(902.7MHz), Mid(915MHz), and High(927.3MHz) channels.										

Statement of Conformity

RSS-GEN	RSP-100	RSS 247	Part 15	Comments
6.3			15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
	3.1		15.19	The label is shown in the label exhibit.
	4		15.21	Information to the user is shown in the instruction manual exhibit.
			15.27	No special accessories are required for compliance.
3, 6.1			15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13			15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
8.1			15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
8.3			15.203	The antenna for this device is a permanently installed wire antenna with 3dBi gain.
8.10			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 or RSS-Gen as applicable
8.8			15.207	EUT meets the AC Line conducted emissions requirements of this section.
			15.247	The unit complies with the requirements of 15.247
		RSS 247		The unit complies with the requirements of RSS-247
6.6				Occupied Bandwidth measurements were made.

Test Results

Bandwidth

LIMIT

The minimum 6 dB bandwidth shall be at least 500 kHz. [15.247(a) (2)]

MEASUREMENTS / RESULTS

DTS Bandwidth Table				
Date: 12-Mar-18		Company: Ideal Industries, Inc.		Work Order: S0557
Engineer: Chris Bramley		EUT Desc: Smart Connector - SCDMET1002		EUT Operating Voltage/Frequency: 120V/60Hz
Temp: 21.3°C		Humidity: 32%		Pressure: 1007mBar
Frequency Range: Fundamental			Measurement Type: Conducted	
Notes: Per FCC KDB 558074 D01 DTS Meas Guidance v04 Section 8.2.				
Channel	Frequency (MHz)	DTS Bandwidth (kHz)	DTS Bandwidth Limit (kHz)	Test Results (Pass/Fail)
Low	902.7	661.4	≥500	Pass
Middle	915	662.3	≥500	Pass
High	927.3	662.3	≥500	Pass

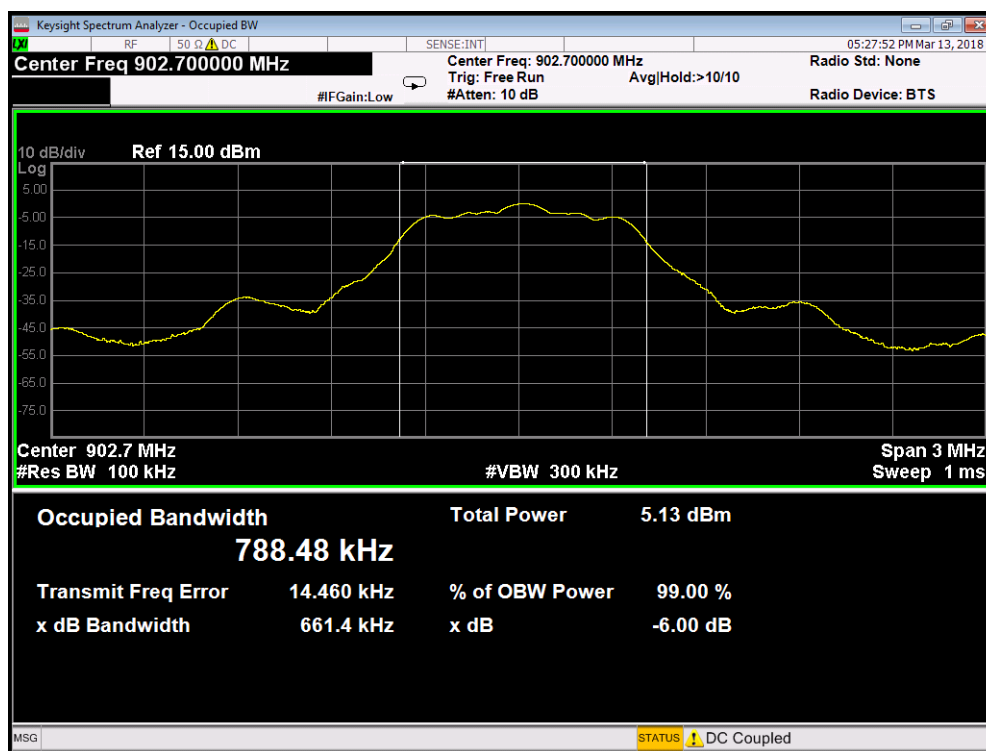
Rev. 3/7/2018

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118473)	9KHz-26.5GHz	N9010A-526;N	AT	MY51170076	1118473	I	5/19/2018	5/19/2017
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	8/19/2018	8/19/2017
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2078		HTC-1	HDE		2078	II	3/23/2018	3/23/2017

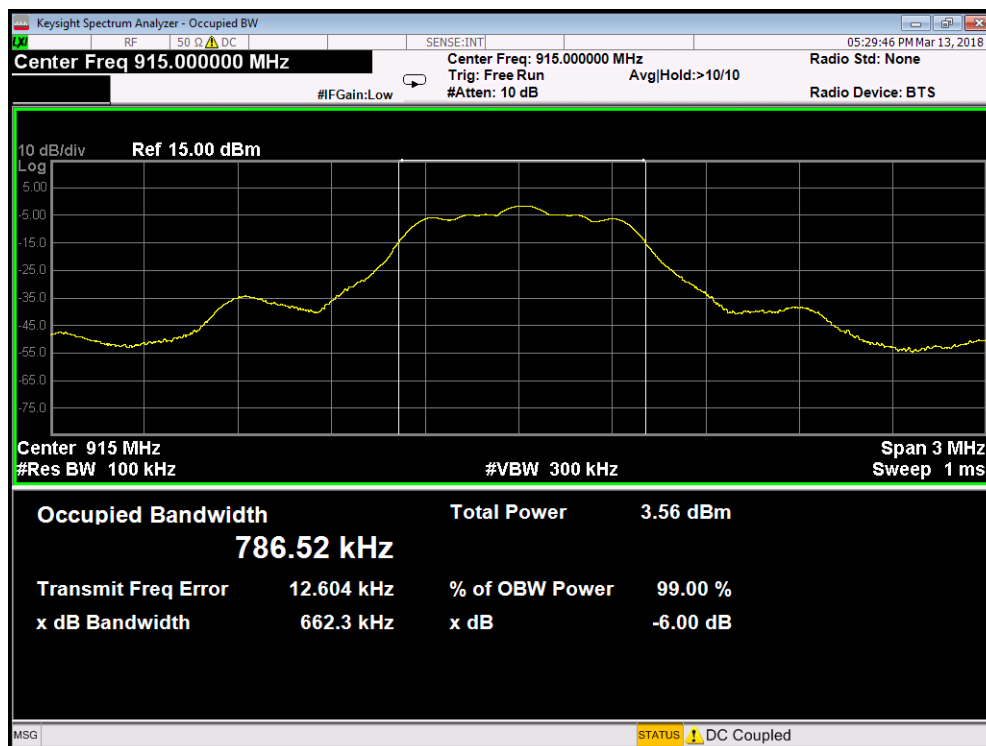
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



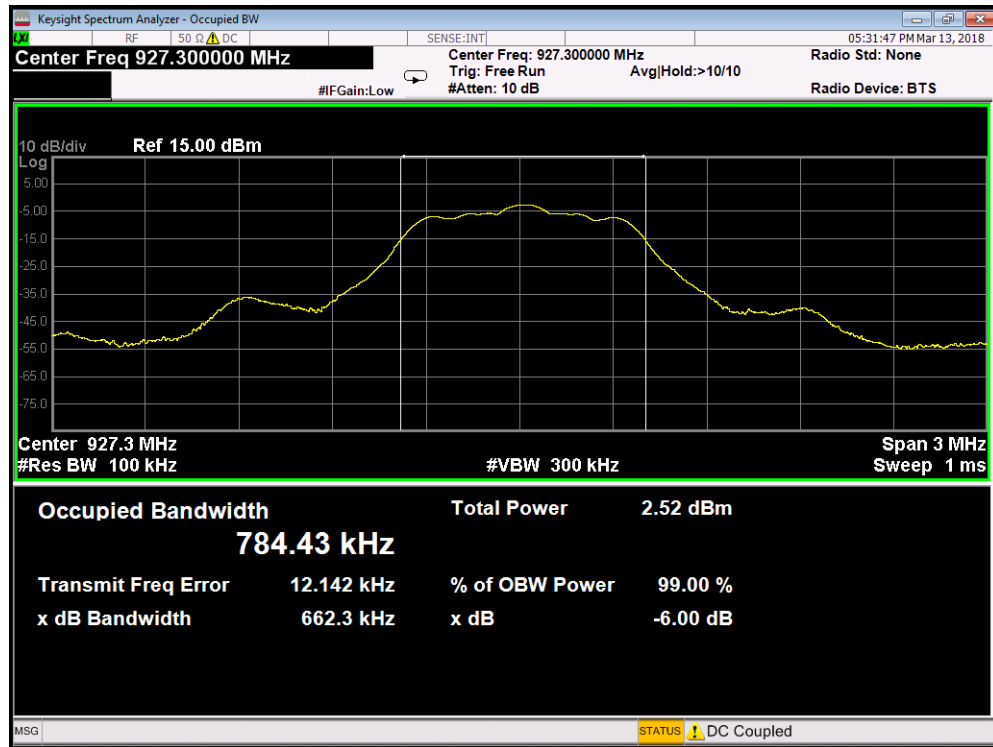
PLOT(S)



6dB Bandwidth – Low Channel



6dB Bandwidth – Mid Channel



6dB Bandwidth – High Channel

Fundamental Emission Output Power**LIMIT**

Conducted Output Power

1 Watt

[15.247(b) (3)]

Per 558074 D01 DTS Measurement Guidance v03r05 Section 9.2.2.2 (AVGSA-1 Average Conducted Output Power)

MEASUREMENTS / RESULTS

Fundamental Emission Output Power Table						
Date: 12-Mar-18		Company: Ideal Industries, Inc.			Work Order: S0557	
Engineer: Chris Bramley		EUT Desc: Smart Connector - SCDMET1002			EUT Operating Voltage/Frequency: 120V/60Hz	
Temp: 21.3°C		Humidity: 32%		Pressure: 1007mBar		
Frequency Range: Fundamental						
Measurement Type: Conducted						
Notes: Per FCC KDB 558074 D01 DTS Meas Guidance v04 Section Section 9.2.2.2, Method AVGSA-1						
Path losses are accounted for with reference level offset to the spectrum analyzer allowing measurements to be taken directly.						
Channel	Frequency (MHz)	Output Power (dBm)	Reference Level Offset (dB)	Output Power Limit (dBm)	Margin (dB)	Test Results (Pass/Fail)
Low	902.7	19.26	19.34	30	-10.74	Pass
Middle	915	17.85	19.34	30	-12.15	Pass
High	927.3	16.77	19.34	30	-13.23	Pass

Rev. 3/7/2018

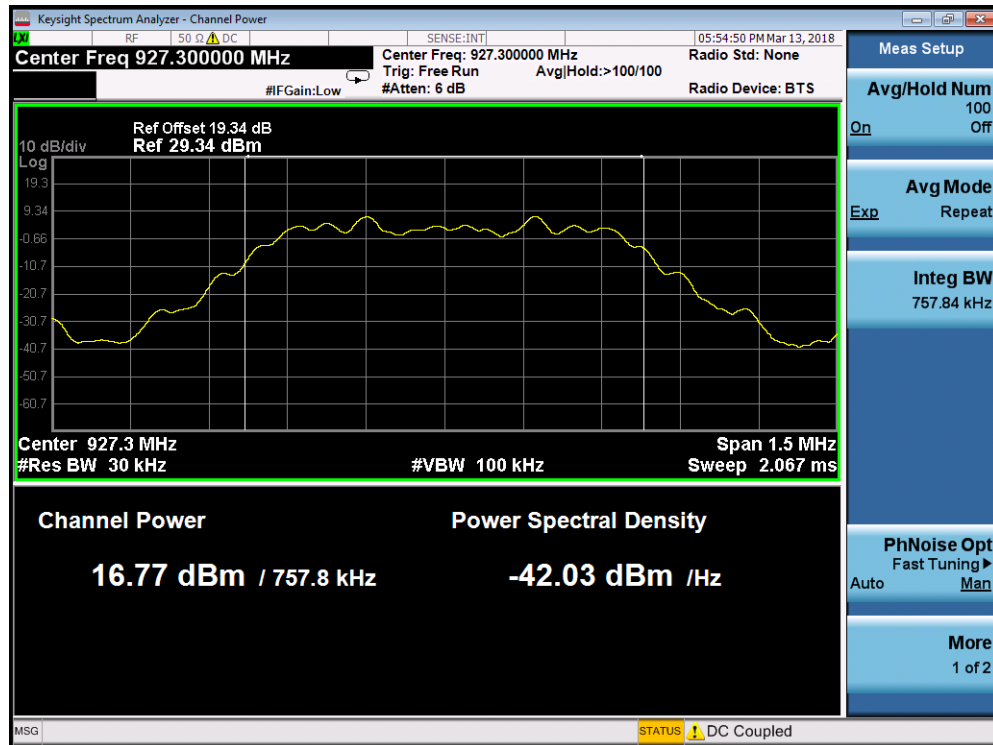
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118473)	9KHz-26.5GHz	N9010A-526;N	AT	MY51170076	1118473	I	5/19/2018	5/19/2017
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	8/19/2018	8/19/2017
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2078		HTC-1	HDE		2078	II	3/23/2018	3/23/2017

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



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Channel Power – High Channel

Band Edge (Conducted)

Band Edge readings must be more than 30dB below the value of the fundamental.

MEASUREMENTS / RESULTS

Conducted Bandedge			
Date: 12-Mar-18		Company: Ideal Industries, Inc.	
Engineer: Chris Bramley		Work Order: S0557	
EUT: Smart Connector - SCDMET1002		Operating Voltage/Frequency: 120V/60Hz	
Temp: 21.3°C		Humidity: 32%	
		Pressure: 1007mBar	
Frequency Range: 902.7-927.3MHz		Measurement Type: Conducted	
		Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance V04	
Notes: 30dB limit since average method was used for peak			
	Delta to Peak (dB)	Limit	
		(dB)	(Pass/Fail)
Low Bandedge	34.24	≥ 30	Pass
High Bandedge	37.36	≥ 30	Pass
Test Site: CEMI5		Attenuator: Asset#791 20dB	
Analyzer: 1118473 EXA		Copyright Curtis-Straus LLC 2000	

Rev. 3/7/2018

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118473)	9KHz-26.5GHz	N9010A-526;N	AT	MY51170076	1118473	I	5/19/2018	5/19/2017
Preamps/Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	8/19/2018	8/19/2017
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2078		HTC-1	HDE		2078	II	3/23/2018	3/23/2017

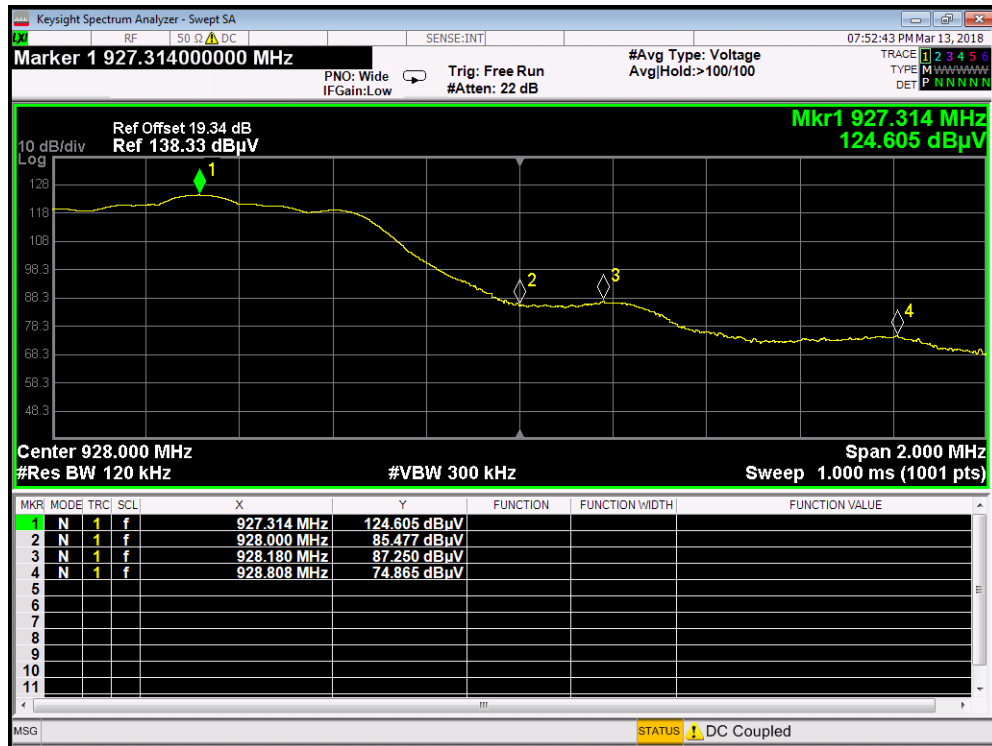
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOTS



Low Band Edge



High Band Edge

Radiated Spurious Emissions

LIMITS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

[15.247(d)]

MEASUREMENTS / RESULTS

Digital Modulation, 40Kbps for all channels

Curtis Straus - a Bureau Veritas Company	Work Order - S0557
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 120V 60Hz
Top Peaks Horizontal 30-1000MHz	Test Site - CH1
Operator: CCH	Conditions - 24°C; 22%RH; 1012mBar
Notes:	0
Low channel 902MHz	EUT Maximum Frequency - 928MHz

Data Taken at 04:54:39 AM, Wednesday, February 28, 2018

Frequency (MHz)	Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Lim1: FCC_pt15_2 09 (dBμV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_2 09 (dBμV/m)	Lim2 Margin (dB)	Lim2 Test Results (Pass/Fail)	Worst Margin Lim2 (dB)
179.113	50	-17.5	32.5	43.5	-11	PASS		43.5	-11	PASS	
180.762	49.4	-17.6	31.8	43.5	-11.7	PASS		43.5	-11.7	PASS	
269.323	50.5	-15.1	35.4	46	-10.6	PASS		46	-10.6	PASS	
273.009	51.1	-14.9	36.2	46	-9.8	PASS	-9.8	46	-9.8	PASS	-9.8
274.197	50.5	-14.9	35.6	46	-10.4	PASS		46	-10.4	PASS	
816.767	37.2	-2.4	34.8	46	-11.2	PASS		46	-11.2	PASS	



Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 Top Peaks Vertical 30-1000MHz
 Operator: CCH
 Notes:
 Low channel 902MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Lim1: FCC_pt15_2 09 (dBμV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_2 09 (dBμV/m)	Lim2 Margin (dB)	Lim2 Test Results (Pass/Fail)	Worst Margin Lim2 (dB)
175.961	48.4	-17.3	31.1	43.5	-12.4	PASS		43.5	-12.8	PASS	
177.197	50	-17.6	32.4	43.5	-11.1	PASS	-11.1	43.5	-11.6	PASS	-11.6
179.113	49.1	-17.5	31.6	43.5	-11.9	PASS		43.5	-12.3	PASS	
182.435	49.9	-17.7	32.2	43.5	-11.3	PASS		43.5	-11.8	PASS	
184.327	49.7	-17.6	32.1	43.5	-11.4	PASS		43.5	-11.9	PASS	
185.952	48.8	-17.9	30.9	43.5	-12.6	PASS		43.5	-13.1	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 Top Peaks Horizontal 30-1000MHz
 Operator: CCH
 Notes:
 Center channel 915MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Lim1: FCC_pt15_2 09 (dBμV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_2 09 (dBμV/m)	Lim2 Margin (dB)	Lim2 Test Results (Pass/Fail)	Worst Margin Lim2 (dB)
178.458	50.3	-18	32.3	43.5	-11.2	PASS		43.5	-11.2	PASS	
183.309	49.4	-18.3	31.1	43.5	-12.4	PASS		43.5	-12.4	PASS	
268.935	49	-15.7	33.3	46	-12.7	PASS		46	-12.7	PASS	
270.827	51.2	-15.6	35.6	46	-10.4	PASS	-10.4	46	-10.4	PASS	-10.4
273.155	49.8	-15.6	34.2	46	-11.8	PASS		46	-11.8	PASS	
275.386	48.7	-15.5	33.2	46	-12.8	PASS		46	-12.8	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 Top Peaks Vertical 30-1000MHz
 Operator: CCH
 Notes:
 Center channel 915MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Lim1: FCC_pt15_2 09 (dBμV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_2 09 (dBμV/m)	Lim2 Margin (dB)	Lim2 Test Results (Pass/Fail)	Worst Margin Lim2 (dB)
32.352	40.8	-10.5	30.3	40	-9.7	PASS	-9.7	40	-9.7	PASS	-9.7
176.955	49.1	-18.1	31	43.5	-12.5	PASS		43.5	-12.5	PASS	
178.992	51.2	-17.9	33.3	43.5	-10.2	PASS		43.5	-10.3	PASS	
180.641	48.3	-18.1	30.2	43.5	-13.3	PASS		43.5	-13.3	PASS	
182.242	50.3	-18.1	32.2	43.5	-11.3	PASS		43.5	-11.3	PASS	
184.23	49.5	-18.1	31.4	43.5	-12.1	PASS		43.5	-12.1	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 Top Peaks Horizontal 30-1000MHz
 Operator: CCH
 Notes:
 High channel 928MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Lim1: FCC_pt15_2 09 (dBμV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_2 09 (dBμV/m)	Lim2 Margin (dB)	Lim2 Test Results (Pass/Fail)	Worst Margin Lim2 (dB)
177.197	49.3	-17.6	31.7	43.5	-11.8	PASS		43.5	-12.3	PASS	
178.725	49.4	-17.5	31.9	43.5	-11.6	PASS		43.5	-12.1	PASS	
270.196	50	-15	35	46	-11	PASS		46	-11.7	PASS	
271.312	50.4	-15	35.4	46	-10.6	PASS		46	-11.2	PASS	
273.446	50.3	-14.9	35.4	46	-10.6	PASS		46	-11.3	PASS	
816.573	38.5	-2.4	36.1	46	-9.9	PASS	-9.9	46	-10.8	PASS	-10.8

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 Top Peaks Vertical 30-1000MHz
 Operator: CCH
 Notes:
 High channel 928MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Lim1: FCC_pt15_2 09 (dBμV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_2 09 (dBμV/m)	Lim2 Margin (dB)	Lim2 Test Results (Pass/Fail)	Worst Margin Lim2 (dB)
49.934	50.7	-21.4	29.3	40	-10.7	PASS		40	-11	PASS	
178.095	50.9	-17.5	33.4	43.5	-10.1	PASS	-10.1	43.5	-10.6	PASS	-10.6
180.471	49.3	-17.7	31.6	43.5	-11.9	PASS		43.5	-12.4	PASS	
181.684	49.8	-17.6	32.2	43.5	-11.3	PASS		43.5	-11.8	PASS	
183.309	50.3	-17.8	32.5	43.5	-11	PASS		43.5	-11.5	PASS	
184.933	49	-17.6	31.4	43.5	-12.1	PASS		43.5	-12.6	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 1-6GHz Horizontal Data
 Operator: CCH
 Notes:
 Low channel 902MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)
1276.9	33.3	24.4	4.6	37.9	74	-36.1	PASS		29	54	-25	PASS	
2463.5	34.3	25.3	10.8	45.1	74	-28.9	PASS		36.1	54	-17.9	PASS	
5260.1	33.6	25	14.2	47.8	74	-26.2	PASS	-26.2	39.2	54	-14.8	PASS	-14.8

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 1-6GHz Vertical Data
 Operator: CCH
 Notes:
 Low channel 902MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
2461.6	34.3	25.4	10.8	45.1	74	-28.9	PASS		36.2	54	-17.8	PASS	
4286.8	34.4	24.6	13.7	48.1	74	-25.9	PASS	-25.9	38.3	54	-15.7	PASS	
5259.6	33.1	25	14.2	47.3	74	-26.7	PASS		39.2	54	-14.8	PASS	-14.8



Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 1-6GHz Horizontal Data
 Operator: CCH
 Notes:
 Center channel 915MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)
2435.5	34.3	25.2	12.3	46.6	74	-27.4	PASS		37.5	54	-16.5	PASS	
2465.5	34.6	25.1	12.6	47.2	74	-26.8	PASS		37.7	54	-16.3	PASS	
3220.6	34.2	25.2	14.7	48.9	74	-25.1	PASS		39.9	54	-14.1	PASS	
5253.1	33.7	24.9	16.3	50	74	-24	PASS		41.2	54	-12.8	PASS	
5737.8	34	25.4	16.8	50.8	74	-23.2	PASS	-23.2	42.2	54	-11.8	PASS	-11.8

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 1-6GHz Vertical Data
 Operator: CCH
 Notes:
 Center channel 915MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
2443.7	33.9	25.2	12.4	46.3	74	-27.7	PASS		37.6	54	-16.4	PASS	
2461.1	35.9	25.5	12.6	48.5	74	-25.5	PASS		38.1	54	-15.9	PASS	
3232.1	35.4	25.2	14.7	50.1	74	-23.9	PASS		39.9	54	-14.1	PASS	
5176.8	35.7	25.3	16.1	51.8	74	-22.2	PASS		41.4	54	-12.6	PASS	
5263	32.8	24.9	16.3	49.1	74	-24.9	PASS		41.2	54	-12.8	PASS	
5963.6	35.3	25.3	17.5	52.8	74	-21.2	PASS	-21.2	42.8	54	-11.2	PASS	-11.2

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 1-6GHz Horizontal Data
 Operator: CCH
 Notes:
 High channel 928MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)
1369.8	31.8	23.9	6.1	37.9	74	-36.1	PASS		30	54	-24	PASS	
2459.9	34.2	25.2	12.6	46.8	74	-27.2	PASS		37.8	54	-16.2	PASS	
4288.7	34.1	24.6	15.7	49.8	74	-24.2	PASS		40.3	54	-13.7	PASS	
5252.5	35	25	16.3	51.3	74	-22.7	PASS	-22.7	41.3	54	-12.7	PASS	
5265	33.3	25	16.3	49.6	74	-24.4	PASS		41.3	54	-12.7	PASS	
5759	33.4	25.3	16.9	50.3	74	-23.7	PASS		42.2	54	-11.8	PASS	-11.8



Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 3m Distance
 1-6GHz Vertical Data
 Operator: CCH
 Notes:
 High channel 928MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at February 28, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
1323.4	32.7	24.3	6.3	39	74	-35	PASS		30.6	54	-23.4	PASS	
2434.2	33.3	25.3	12.3	45.6	74	-28.4	PASS		37.6	54	-16.4	PASS	
2454.3	33.6	25.1	12.5	46.1	74	-27.9	PASS		37.6	54	-16.4	PASS	
4127.9	34.2	24.9	15.5	49.7	74	-24.3	PASS		40.4	54	-13.6	PASS	
5176.7	34.6	25.3	16.1	50.7	74	-23.3	PASS	-23.3	41.4	54	-12.6	PASS	-12.6
5260	33.9	25	16.3	50.2	74	-23.8	PASS		41.3	54	-12.7	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 1m Distance
 6-18GHz Horizontal Data
 Operator: CCH
 Notes:
 Low channel 902MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at March 01, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)
13400	44.4	36.1	14.5	58.9	83.5	-24.6	PASS		50.6	63.5	-12.9	PASS	
14856.7	46.3	36.7	14.4	60.7	83.5	-22.8	PASS		51.1	63.5	-12.4	PASS	
15676.6	44.8	36.4	15.6	60.4	83.5	-23.1	PASS		52	63.5	-11.5	PASS	
16206.4	44.7	36	16.6	61.3	83.5	-22.2	PASS		52.6	63.5	-10.9	PASS	
16811.5	44.6	36	17.3	61.9	83.5	-21.6	PASS	-21.6	53.3	63.5	-10.2	PASS	-10.2
17966.2	40.3	31.8	20.5	60.8	83.5	-22.7	PASS		52.3	63.5	-11.2	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 1m Distance
 6-18GHz Vertical Data
 Operator: CCH
 Notes:
 Low channel 902MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at March 01, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
15321.7	44.7	35.3	15.1	59.8	83.5	-23.7	PASS		50.4	63.5	-13.1	PASS	
15677.3	44.9	36.3	15.6	60.5	83.5	-23	PASS		51.9	63.5	-11.6	PASS	
16225.1	44.5	36.2	16.7	61.2	83.5	-22.3	PASS		52.9	63.5	-10.6	PASS	
16848.5	44.2	35.8	17.4	61.6	83.5	-21.9	PASS		53.2	63.5	-10.3	PASS	-10.3
17501.8	41.5	33.3	18.7	60.2	83.5	-23.3	PASS		52	63.5	-11.5	PASS	
17964.1	41.5	31.8	20.5	62	83.5	-21.5	PASS	-21.5	52.3	63.5	-11.2	PASS	



Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 1m Distance
 6-18GHz Horizontal Data
 Operator: CCH
 Notes:
 Center channel 915MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at March 01, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)
13434.9	44.1	35.2	18.4	62.5	83.5	-21	PASS		53.6	63.5	-9.9	PASS	
15704.7	44.8	36.1	20.1	64.9	83.5	-18.6	PASS		56.2	63.5	-7.3	PASS	
16243.9	46.8	35.9	21	67.8	83.5	-15.7	PASS	-15.7	56.9	63.5	-6.6	PASS	
16846.1	44.8	36	21.8	66.6	83.5	-16.9	PASS		57.8	63.5	-5.7	PASS	-5.7
17446.4	43.6	33.8	23	66.6	83.5	-16.9	PASS		56.8	63.5	-6.7	PASS	
17974.7	39.2	31.7	25.2	64.4	83.5	-19.1	PASS		56.9	63.5	-6.6	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 1m Distance
 6-18GHz Vertical Data
 Operator: CCH
 Notes:
 Center channel 915MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at March 01, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)
15329.9	44.7	35.2	19.2	63.9	83.5	-19.6	PASS		54.4	63.5	-9.1	PASS	
15712.4	44.2	36	20	64.2	83.5	-19.3	PASS		56	63.5	-7.5	PASS	
16221.4	44.9	36.2	21	65.9	83.5	-17.6	PASS		57.2	63.5	-6.3	PASS	
16804	44.7	36.1	21.7	66.4	83.5	-17.1	PASS	-17.1	57.8	63.5	-5.7	PASS	-5.7
17451.7	42	33.9	23	65	83.5	-18.5	PASS		56.9	63.5	-6.6	PASS	
17944.7	41.5	31.9	25	66.5	83.5	-17	PASS		56.9	63.5	-6.6	PASS	

Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 1m Distance
 6-18GHz Horizontal Data
 Operator: CCH
 Notes:
 High channel 928MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at March 01, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)
11841.4	45.2	36.6	18	63.2	83.5	-20.3	PASS		54.6	63.5	-8.9	PASS	
15680.1	44.8	36.4	20	64.8	83.5	-18.7	PASS		56.4	63.5	-7.1	PASS	
16196.3	43.7	35.6	21.1	64.8	83.5	-18.7	PASS		56.7	63.5	-6.8	PASS	
16842.5	48.3	36.1	21.9	70.2	83.5	-13.3	PASS	-13.3	58	63.5	-5.5	PASS	-5.5
17493.1	43.2	33.8	23.3	66.5	83.5	-17	PASS		57.1	63.5	-6.4	PASS	
17968.4	41.9	31.7	25.3	67.2	83.5	-16.3	PASS		57	63.5	-6.5	PASS	



Curtis Straus - a Bureau Veritas Company
 Radiated Emissions Electric Field 1m Distance
 6-18GHz Vertical Data
 Operator: CCH
 Notes:
 High channel 928MHz

Work Order - S0557
 EUT Power Input - 120V 60Hz
 Test Site - CH1
 Conditions - 24°C; 22%RH; 1012mBar
 0
 EUT Maximum Frequency - 928MHz

Data Taken at March 01, 2018

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_2 09_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_2 09_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
14859.3	46.1	36.7	18.6	64.7	83.5	-18.8	PASS		55.3	63.5	-8.2	PASS	
15703.9	45.4	36	20.2	65.6	83.5	-17.9	PASS		56.2	63.5	-7.3	PASS	
16211.2	44.1	36.1	21.1	65.2	83.5	-18.3	PASS		57.2	63.5	-6.3	PASS	
16822.3	45.8	36	21.8	67.6	83.5	-15.9	PASS	-15.9	57.8	63.5	-5.7	PASS	-5.7
17466.7	44.4	33.8	23.2	67.6	83.5	-15.9	PASS		57	63.5	-6.5	PASS	
17978.4	42.2	31.6	25.4	67.6	83.5	-15.9	PASS		57	63.5	-6.5	PASS	

Rev. 2/20/2018

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	11/16/2018	11/16/2017
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Asset	Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz	1685	I	12/21/2018	12/21/2016
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/21/2018	12/21/2016
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2310 PA	1-1000MHz	PAM-103	COM-POWER	441175	2310	II	10/29/2018	10/29/2017
2443 PA	9KHz-6GHz	BBV9744	SCWARZBECK	63	2443	I	2/5/2019	2/5/2018
2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/19/2018	11/19/2017
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	10/16/2018	10/16/2017
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	1/13/2019	1/13/2017
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	III	Verify before Use	date of test
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/14/2019	2/14/2017
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2084		HTC-1	HDE		2084	II	3/23/2018	3/23/2017
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz		Florida RF			II	3/5/2018	3/5/2017
Asset #2456	9KHz-18GHz		MegaPhase			II	10/29/2018	10/29/2017
Asset #2466	9KHz-18GHz		MegaPhase			II	10/29/2018	10/29/2017
Asset #2328	1 - 26.5GHz	PE350-72	Pasternack	1539		II	2/12/2019	2/12/2018

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

Test Equipment Used



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



Conducted Spurious Emissions

LIMITS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of desired power based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB ...

[15.247(d)]

Conducted spurious emissions at the antenna port were measured in accordance with FCC KDB 558074 D01 DTS Measurement Guidance v04 Section 11.0.

Frequency range up to 10GHz was investigated for all 3 channels (low, middle and high) at the EUT antenna port. No emissions within 30dB of their corresponding fundamental were found.

Rev. 3/7/2018

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118473)	9KHz-26.5GHz	N9010A-526;N	AT	MY51170076	1118473	I	5/19/2018	5/19/2017
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2079		HTC-1	HDE		2079	II	3/23/2018	3/23/2017
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1509	9kHz - 18GHz		Florida RF			II	10/2/2018	10/2/2017
Asset #2467	9KHz-18GHz		MegaPhase			II	10/29/2018	10/29/2017
Preamps/Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	8/19/2018	8/19/2017

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



Power Spectral Density

LIMIT

...the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

[15.247(e)]

MEASUREMENTS / RESULTS

Maximum Power Spectral Density Level in the Fundamental Emission Table					
Date: 12-Mar-18		Company: Ideal Industries, Inc.		Work Order: R0557	
Engineer: Chris Bramley		EUT Desc: Smart Connector - SCDMET1002		EUT Operating Voltage/Frequency: 120V/60Hz	
Temp: 21.3°C		Humidity: 32%		Pressure: 1007mBar	
<div>Frequency Range: Fundamental</div> <div>Measurement Type: Conducted</div>					
Notes: Per FCC KDB 558074 D01 DTS Meas Guidance v04 Section 10.3, Method AVGPSD-1					
Path losses are accounted for with reference level offset to the spectrum analyzer allowing measurements to be taken directly.					
Channel	Frequency (MHz)	PSD Measured (dBm)	PSD Limit (dBm)	Margin (dB)	Test Results (Pass/Fail)
Low	902.7	6.341	8	-1.659	PASS
Middle	915	3.415	8	-4.585	PASS
High	927.3	2.956	8	-5.044	PASS

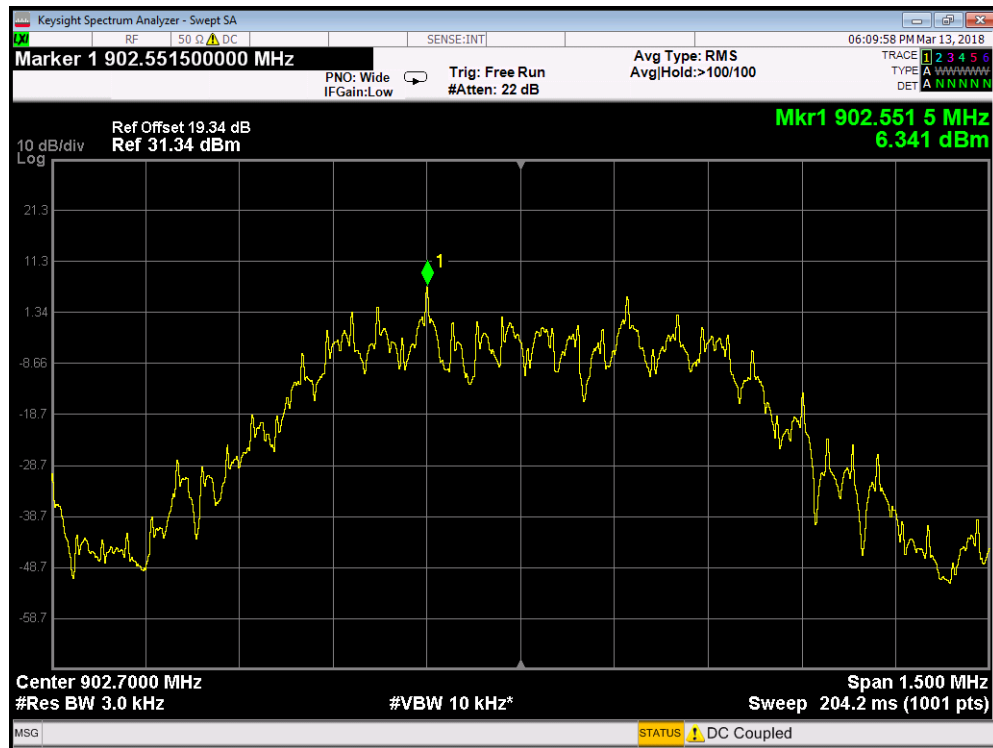
Rev. 3/7/2018

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118473)	9KHz-26.5GHz	N9010A-526;N	AT	MY51170076	1118473	I	5/19/2018	5/19/2017
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	8/19/2018	8/19/2017
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2078		HTC-1	HDE		2078	II	3/23/2018	3/23/2017

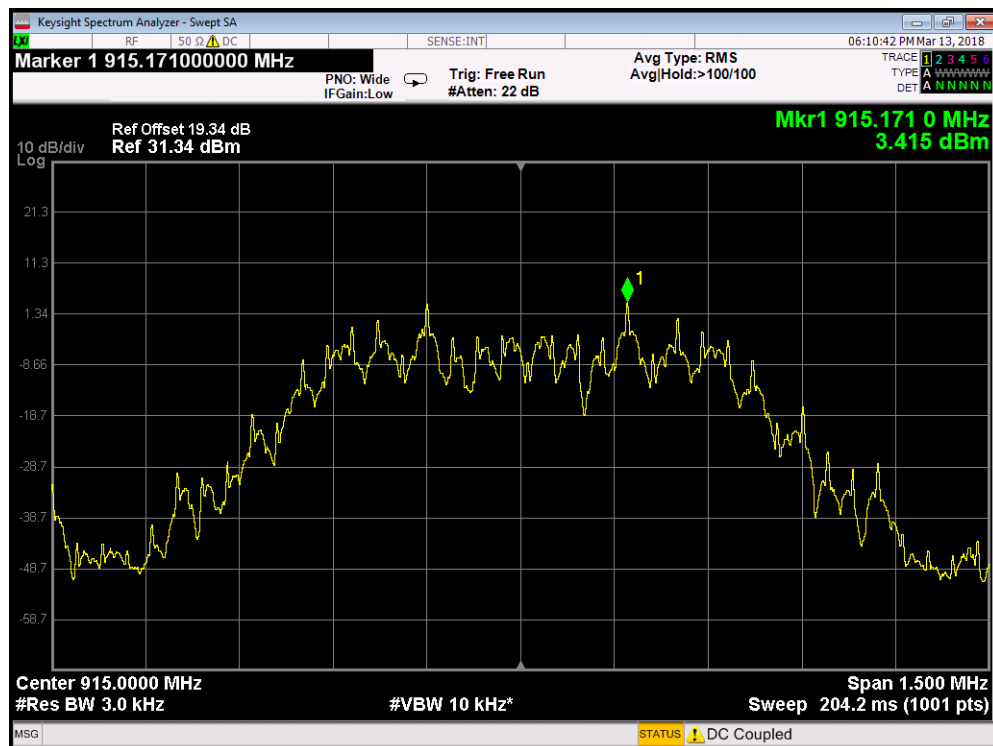
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



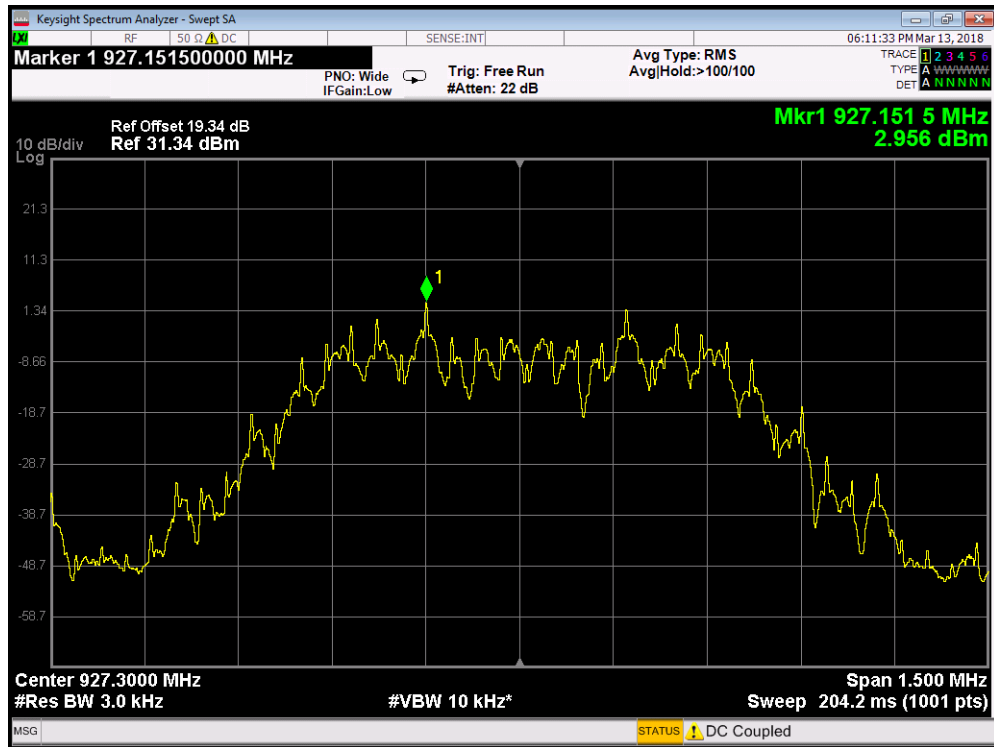
PLOTS



PSD – Low Channel



PSD – Mid Channel



PSD – High Channel

**AC Line Conducted Emissions
LIMITS**

Frequency of emission (MHz)	Quasi-peak limit (dB μ V)	Average limit (dB μ V)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1

Quasi-peak Detector Data

Notes:

EUT Line tested: 120VVAC/60Hz; Neutral Phase

EUT Mode of Operation: Channel 928MHz

Work Order # - S0557

EUT Power Input - 120VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 20.9°C; 33%RH; 1002mBar

Test Engineer - Aristotelis Casternopoulos
0

Data Taken at 01:40:05 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB)	Adjusted QP Amplitude (dBμV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBμV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)
0.627	33.061	20.6	53.6	56	-2.4	PASS	
0.985	34.258	20.6	54.9	56	-1.1	PASS	-1.1
1.075	31.62	20.5	52.1	56	-3.9	PASS	
1.254	31.087	20.6	51.7	56	-4.3	PASS	
1.343	34.221	20.5	54.7	56	-1.3	PASS	
2.508	31.469	20.6	52.1	56	-3.9	PASS	

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1, CISPR Average Detector

Final Average Detector Data

Notes:

EUT Line tested: 120VVAC/60Hz; Neutral Phase

EUT Mode of Operation: Channel 928MHz

Work Order # - S0557

EUT Power Input - 120VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 20.9°C; 33%RH; 1002mBar

Test Engineer - Aristotelis Casternopoulos
0

Data Taken at 01:40:05 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw Avg Reading (dBμV)	Correction Factor (dB)	Adjusted Avg Amplitude (dBμV)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBμV)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
0.537	6.1	20.5	26.6	46	-19.4	PASS	
0.626	5.9	20.6	26.4	46	-19.6	PASS	
0.984	6.3	20.6	26.9	46	-19.1	PASS	-19.1
1.342	6.2	20.5	26.8	46	-19.2	PASS	
1.698	4.9	20.6	25.6	46	-20.4	PASS	
1.787	5.4	20.6	25.9	46	-20.1	PASS	

120V 60Hz Neutral

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1

Peak Detector Data

Notes:

EUT Line tested: 120VAC/60Hz; L1 Phase

EUT Mode of Operation: Channel 928MHz

Work Order # - S0557

EUT Power Input - 120VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 20.9°C; 33%RH; 1002mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 02:05:46 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw Pk Reading (dBμV)	Correction Factor (dB)	Adjusted Pk Amplitude (dBμV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBμV)	Margin to the QP Limit (dB)	Pk to QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)
0.627	32	20.6	52.5	56	-3.5	PASS	
0.984	32.8	20.6	53.4	56	-2.6	PASS	-2.6
1.875	32.4	20.6	53	56	-3	PASS	
2.053	31.9	20.6	52.5	56	-3.5	PASS	
2.503	32	20.6	52.6	56	-3.4	PASS	
3.034	31.8	20.6	52.4	56	-3.6	PASS	

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1, CISPR Average Detector

Final Average Detector Data

Notes:

EUT Line tested: 120VAC/60Hz; L1 Phase

EUT Mode of Operation: Channel 928MHz

Work Order # - S0557

EUT Power Input - 120VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 20.9°C; 33%RH; 1002mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 02:05:46 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw Avg Reading (dBμV)	Correction Factor (dB)	Adjusted Avg Amplitude (dBμV)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBμV)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
0.982	6.2	20.6	26.8	46	-19.2	PASS	-19.2
1.338	5.8	20.5	26.3	46	-19.7	PASS	
1.427	5.2	20.7	25.9	46	-20.1	PASS	
1.697	4.9	20.6	25.5	46	-20.5	PASS	
1.785	5.5	20.5	26	46	-20	PASS	
2.141	4.7	20.6	25.3	46	-20.7	PASS	

120V 60Hz Phase 1

Curtis Straus - a Bureau Veritas Company
 Conducted Emissions per CISPR 16-2-1
 Quasi-peak Detector Data
 Notes:
 EUT Line tested: 277VAC/60Hz; Neutral Phase
 EUT Mode of Operation: Channel 928MHz

Work Order # - S0557
 EUT Power Input - 277VAC/ 60Hz
 Test Site - CEMI-5
 Conditions: - 20.9°C; 33%RH; 1002mBar
 Test Engineer - Aristotelis Casternopoulos
 0

Data Taken at 03:48:23 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB)	Adjusted QP Amplitude (dBμV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBμV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)
0.438	35.442	20.6	56	57.1	-1.1	PASS	-1.1
0.527	33.336	20.5	53.9	56	-2.1	PASS	
0.613	32.88	20.6	53.4	56	-2.6	PASS	
1.927	31.317	20.7	52	56	-4	PASS	
3.063	32.563	20.6	53.2	56	-2.8	PASS	
3.151	31.407	20.7	52.1	56	-3.9	PASS	

Curtis Straus - a Bureau Veritas Company
 Conducted Emissions per CISPR 16-2-1, CISPR Average Detector
 Final Average Detector Data
 Notes:
 EUT Line tested: 277VAC/60Hz; Neutral Phase
 EUT Mode of Operation: Channel 928MHz

Work Order # - S0557
 EUT Power Input - 277VAC/ 60Hz
 Test Site - CEMI-5
 Conditions: - 20.9°C; 33%RH; 1002mBar
 Test Engineer - Aristotelis Casternopoulos
 0

Data Taken at 03:48:23 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw Avg Reading (dBμV)	Correction Factor (dB)	Adjusted Avg Amplitude (dBμV)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBμV)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
0.438	5.6	20.6	26.1	47.1	-21	PASS	
0.525	4.2	20.5	24.8	46	-21.2	PASS	
1.135	4.6	20.5	25.2	46	-20.8	PASS	
1.222	5.3	20.6	25.9	46	-20.1	PASS	-20.1
1.309	5.2	20.5	25.7	46	-20.3	PASS	
1.397	4.6	20.6	25.2	46	-20.8	PASS	

277V 60Hz Neutral

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1

Quasi-peak Detector Data

Notes:

EUT Line tested: 277VAC/60Hz; L1 Phase

EUT Mode of Operation: Channel 928MHz

Work Order # - S0557

EUT Power Input - 277VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 20.9°C; 33%RH; 1002mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 04:03:25 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB)	Adjusted QP Amplitude (dBμV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBμV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)
1.132	31.852	20.5	52.4	56	-3.6	PASS	-3.6
1.481	30.318	20.6	50.9	56	-5.1	PASS	
2.003	30.531	20.7	51.2	56	-4.8	PASS	
2.09	31.353	20.6	51.9	56	-4.1	PASS	
2.875	28.842	20.7	49.5	56	-6.5	PASS	
3.136	29.475	20.7	50.2	56	-5.8	PASS	

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1, CISPR Average Detector

Final Average Detector Data

Notes:

EUT Line tested: 277VAC/60Hz; L1 Phase

EUT Mode of Operation: Channel 928MHz

Work Order # - S0557

EUT Power Input - 277VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 20.9°C; 33%RH; 1002mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 04:12:52 PM, Thursday, March 01, 2018

Frequency (MHz)	Raw Avg Reading (dBμV)	Correction Factor (dB)	Adjusted Avg Amplitude (dBμV)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBμV)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
1.133	5.8	20.5	26.3	46	-19.7	PASS	
1.22	6.4	20.6	27.1	46	-18.9	PASS	
1.306	6.3	20.5	26.9	46	-19.1	PASS	
1.394	5.8	20.6	26.4	46	-19.6	PASS	
1.481	11.6	20.6	32.2	46	-13.8	PASS	-13.8
2.089	5.3	20.6	25.9	46	-20.1	PASS	

277V 60Hz Phase 1

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Conducted Emissions per CISPR 16-2-1

Quasi-peak Detector Data

Notes:

EUT Line tested: 347VAC/60Hz; Neutral Phase

EUT Mode of Operation: Channel 928MHz,

Work Order # - S0557

EUT Power Input - 347VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 19.1°C; 32%RH; 989mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 11:16:21 AM, Friday, March 02, 2018

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB)	Adjusted QP Amplitude (dBμV)	QP Lim: Mains_FCC&CISP R_QP_Class_B (dBμV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)
0.603	34.857	20.6	55.4	56	-0.6	PASS	-0.6
0.775	31.952	20.5	52.5	56	-3.5	PASS	
1.377	33.968	20.5	54.5	56	-1.5	PASS	
1.636	34.209	20.7	54.9	56	-1.1	PASS	
1.722	33.028	20.6	53.6	56	-2.4	PASS	
2.671	32.511	20.7	53.2	56	-2.8	PASS	

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1, CISPR Average Detector

Final Average Detector Data

Notes:

EUT Line tested: 347VAC/60Hz; Neutral Phase

EUT Mode of Operation: Channel 928MHz,

Work Order # - S0557

EUT Power Input - 347VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 19.1°C; 32%RH; 989mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 11:26:26 AM, Friday, March 02, 2018

Frequency (MHz)	Raw Avg Reading (dBμV)	Correction Factor (dB)	Adjusted Avg Amplitude (dBμV)	Av Lim: Mains_FCC&CISP R_Avg_Class_B (dBμV)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
0.43	5.4	20.6	26	47.2	-21.3	PASS	
0.516	4.7	20.6	25.3	46	-20.7	PASS	
0.602	5.1	20.6	25.7	46	-20.3	PASS	-20.3
1.464	4.8	20.6	25.4	46	-20.6	PASS	
1.547	4.6	20.6	25.2	46	-20.8	PASS	
1.634	4.5	20.6	25.1	46	-20.9	PASS	

347V 60Hz Neutral

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Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1

Quasi-peak Detector Data

Notes:

EUT Line tested: 347VAC/60Hz; L1 Phase

EUT Mode of Operation: Channel 928MHz,

Work Order # - S0557

EUT Power Input - 347VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 19.1°C; 32%RH; 989mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 11:05:59 AM, Friday, March 02, 2018

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB)	Adjusted QP Amplitude (dBμV)	QP Lim: Mains_FCC&CISP R_QP_Class_B (dBμV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)
0.519	31.952	20.6	52.5	56	-3.5	PASS	
0.778	29.329	20.6	49.9	56	-6.1	PASS	
1.383	32.512	20.6	53.1	56	-2.9	PASS	
1.556	33.036	20.6	53.6	56	-2.4	PASS	-2.4
2.766	30.559	20.7	51.3	56	-4.7	PASS	
3.545	28.818	20.7	49.5	56	-6.5	PASS	

Curtis Straus - a Bureau Veritas Company

Conducted Emissions per CISPR 16-2-1, CISPR Average Detector

Final Average Detector Data

Notes:

EUT Line tested: 347VAC/60Hz; L1 Phase

EUT Mode of Operation: Channel 928MHz,

Work Order # - S0557

EUT Power Input - 347VAC/ 60Hz

Test Site - CEMI-5

Conditions: - 19.1°C; 32%RH; 989mBar

Test Engineer - Aristotelis Casternopoulos

0

Data Taken at 11:05:59 AM, Friday, March 02, 2018

Frequency (MHz)	Raw Avg Reading (dBμV)	Correction Factor (dB)	Adjusted Avg Amplitude (dBμV)	Av Lim: Mains_FCC&CISP R_Avg_Class_B (dBμV)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
0.605	5.9	20.6	26.5	46	-19.5	PASS	
1.296	5.1	20.5	25.6	46	-20.4	PASS	
1.381	5.9	20.5	26.4	46	-19.6	PASS	
1.466	6.1	20.6	26.7	46	-19.3	PASS	
1.554	6.3	20.6	26.9	46	-19.1	PASS	-19.1
1.639	5.8	20.7	26.5	46	-19.5	PASS	

347V 60Hz Phase 1

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Rev. 2/20/2018

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118472)	9KHz-26.5GHz	N9010A-526;K	AT	MY51170010	1118472	I	7/25/2018	7/25/2017
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
LISN Asset 1791	9KHz-30MHz	NNLK 8121	Schwarzbeck	NNLK 8121-603	1791	I	6/28/2018	6/28/2017
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code				Cat	Calibration Due	Calibrated on
CEMI 5	719150	A-0015				III	NA	N/A
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2082		HTC-1	HIDE		2082	II	3/23/2018	3/23/2017
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
CEMI-14	9kHz - 2GHz		C-S			II	10/2/2018	10/2/2017
20dB Attenuator-60	9kHz-2GHz			N/A		II	9/23/2018	9/23/2017

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

TEU

Occupied Bandwidth

REQUIREMENT

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

[RSS-GEN 6.6]

MEASUREMENTS / RESULTS

Occupied Bandwidth Table			
Date: 12-Mar-18		Company: Ideal Industries, Inc.	Work Order: S0557
Engineer: Chris Bramley		EUT Desc: Smart Connector - SCDMET1002	EUT Operating Voltage/Frequency: 120V/60Hz
Temp: 21.3°C		Humidity: 32%	Pressure: 1007mBar
Frequency Range: Fundamental			
Measurement Type: Conducted			
Notes:			
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)	
Low	902.7	760.30	
Middle	915.0	759.47	
High	927.3	757.84	

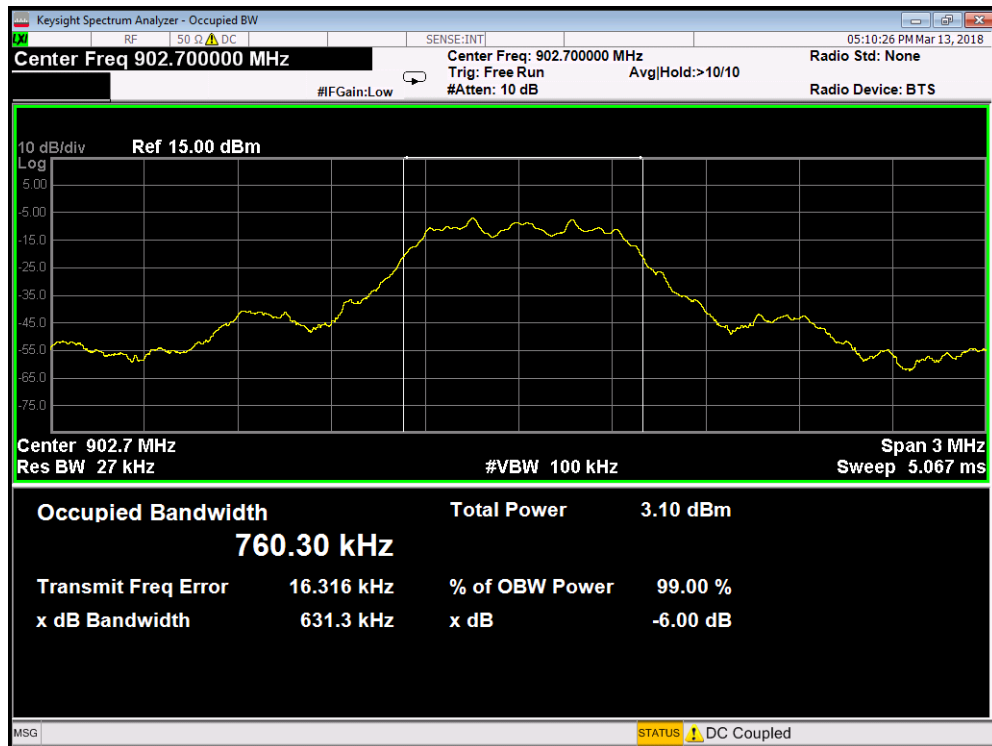
Rev. 3/7/2018

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118473)	9KHz-26.5GHz	N9010A-526;N	AT	MY51170076	1118473	I	5/19/2018	5/19/2017
Preamps/Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	8/19/2018	8/19/2017
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2078		HTC-1	HDE		2078	II	3/23/2018	3/23/2017

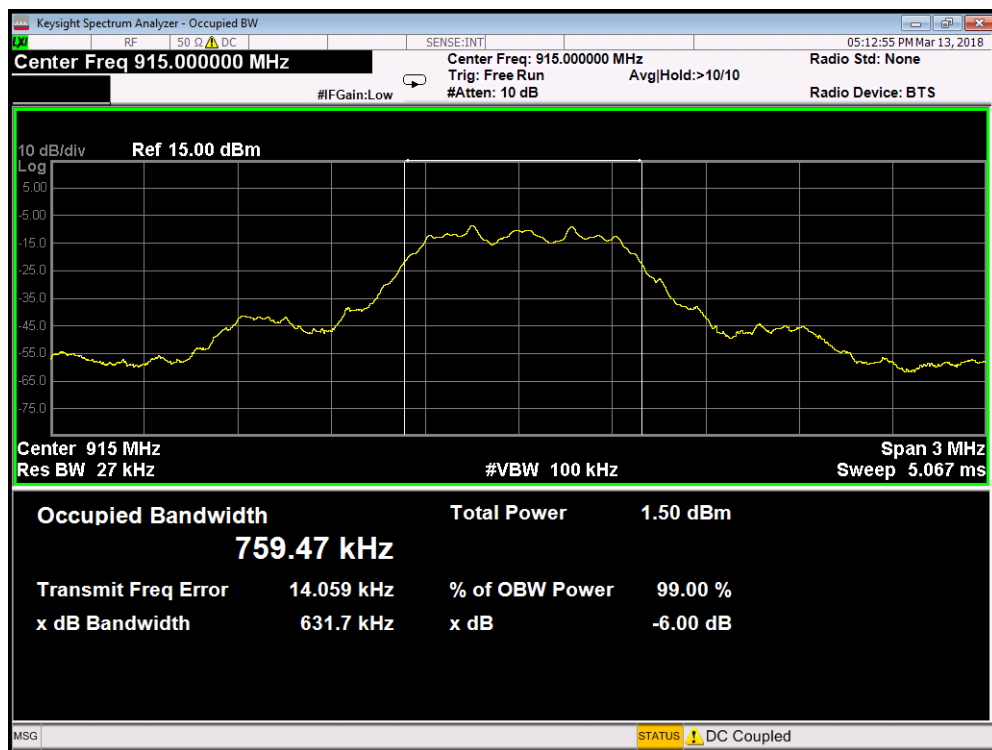
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



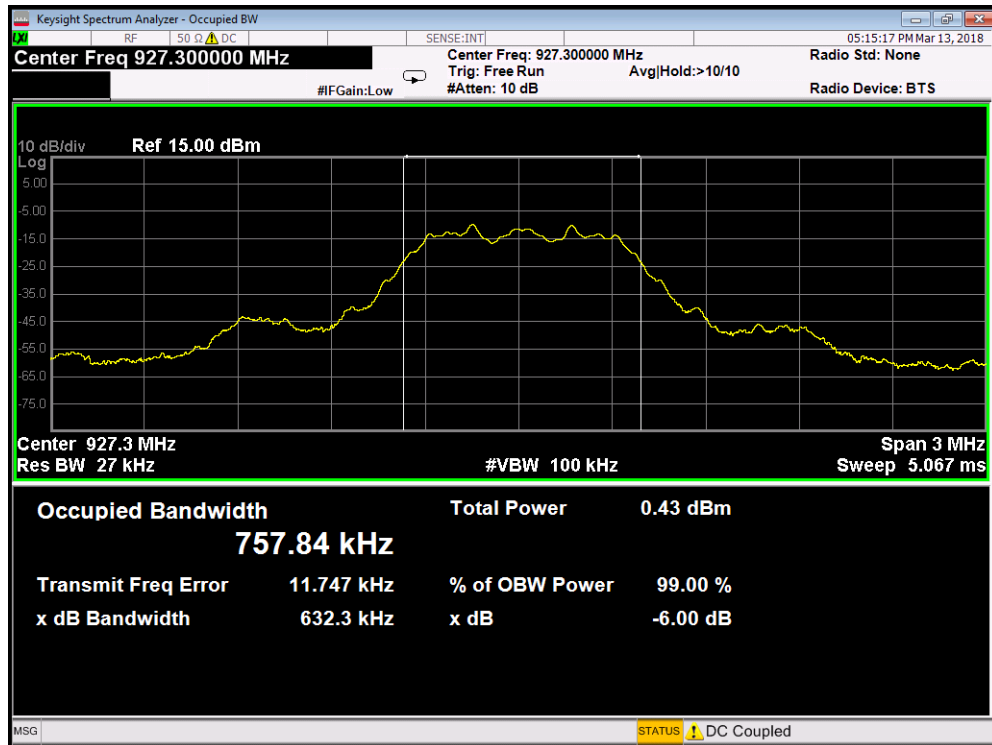
Plot(s)



Occupied Bandwidth – Low Channel



Occupied Bandwidth – Middle Channel



Occupied Bandwidth – High Channel

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)	5.6dB	N/A
NIST	4.6dB	5.2dB (Ucisp)
CISPR		
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	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisp)
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%	5%
	0.3dB	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 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



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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.