
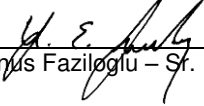




# Test Report



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

Report No	EP3128-1
Client	Ideal Industries, Inc. Tim Tunnell
Address	Becker Place Sycamore, IL 60178
Phone	815-895-1295
Items tested	SCLINE1000
FCC ID	2AAMXSCLINE1000
IC ID	11250A-SCLINE1000
FRN	0002862225
Equipment Type	Part 15.247 Digitally Modulated, Mobile
Equipment Code	DTS
Emission Designator	763KG1D
FCC/IC Rule Parts	47 CFR 15.247, RSS-247 Issue 1
Test Dates	October 26, 29 and November 2, 6 and 12, 2015
Results	As detailed within this report
Prepared by	 Jason Haley – Test Engineer
Authorized by	 Yunus Faziloglu – Sr. EMC Engineer
Issue Date	<u>2/9/2016</u>
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 30 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 12-07-15



**Summary**

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.247 and RSS-247. The product is the SCLINE1000. It is a transmitter that operates in the range 902-928MHz.

We found that the product met the above requirements without modifications. Nobody from Ideal Industries, Inc. was present during the testing. The test samples were received in good condition.

Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	February 9, 2016



## Test Methodology

All testing was performed according to the following rules/procedures/documents;  
CFR 47 Part 15.247, RSS-247 Issue 1, RSS-Gen Issue 4, FCC KDB 558074 D01 DTS  
Measurement Guidance v03r04 and ANSI C63.10-2013.

Radiated emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. AC line conducted emissions testing was performed with a 50 $\Omega$ /50 $\mu$ H LISN. The EUT operating voltage was 120/277VAC at 60Hz. RF measurements were performed at the antenna port.

The environmental conditions were as shown below.

Date	Temperature	Humidity
10/26/15	21.9°C	35% RH
10/29/15	23°C	55% RH
11/02/15	21°C	38% RH
11/04/15	22.2°C	54% RH
11/12/15	22.2°C	31% RH
11/13/15	21.9°C	40% RH

Following bandwidths were used during radiated spurious and line conducted emissions tests.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

**Product Tested - Configuration Documentation**

EUT Configuration											
<b>Work Order:</b>	P3128										
<b>Company:</b>	Ideal Industries, Inc.										
<b>Company Address:</b>	Becker Place Sycamore, IL 60178										
<b>Contact:</b>	Tim Tunnell										
	MN			PN			SN				
<b>EUT:</b>	SCLINE1000			SCLINE1000			Sample 1 (integrated antenna)				
	SCLINE1000			SCLINE1000			Sample 2 (modified with antenna port connector)				
<b>EUT Description:</b>	Smart Connector Lighting / Dimming Controller										
<b>EUT Tx Frequency:</b>	902.7 – 927.3 MHz										
Port Label	Port Type	# ports	# populated	cable type	shielded	ferrite s	length (m)	max length (m)	in/out	under test	comment
Power	Power AC	1	1	Power AC	No	No	0.3		in	yes	
<b>Software Operating Mode Description:</b>											
EUT shall continuously transmit on a single channel from 902 to 928 MHz range when AC power applied.											

## Statement of Conformity

The SCLINE1000 has been found to conform to the following parts of 47 CFR and RSS 247 as detailed below:

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 integrated wired to the PCB with a gain of 4.55 dBi
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.

## Modifications Required for Compliance

None

**Test Results**

**Bandwidth**

**LIMIT**

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

**MEASUREMENTS / RESULTS**

6dB BANDWIDTH				
Date: 02-Nov-15		Company: Ideal Industries, Inc.		Work Order: P3128
Engineer: Tuyen Truong		EUT Desc: SCLINE1000		EUT Operating Voltage/Frequency: 120Vac/60Hz
Temp: 21°C		Humidity: 38%		Pressure: 1008mbar
Frequency Range: 902.7 - 927.3 MHz				
Notes:				
Frequency (MHz)	Reading (KHz)	6dB BW		
		Limit (KHz)	Margin (KHz)	Result (Pass/Fail)
902.7	655.406	≥500	+155.406	Pass
915.0	655.425	≥500	+155.425	Pass
<b>927.3</b>	656.149	≥500	+156.149	Pass
Test Site: CEM11		Attenuation: 791		
Analyzer: 1510				

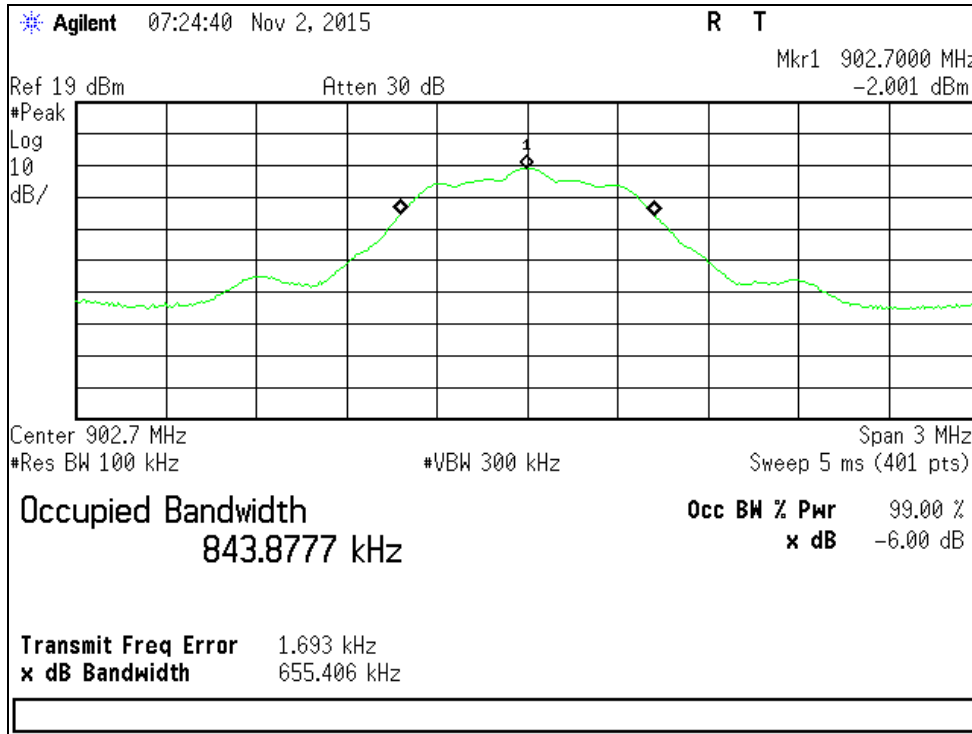
Rev. 10/19/2015

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	6/30/2016	6/30/2015
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	7/31/2016	7/31/2015
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code				Cat	Calibration Due	Calibrated on
CEM1 1	719150	A-0015				III	NA	N/A
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Weather Clock (Pressure Only) TH A#2078	BA928 HTC-1	Oregon Scientific HDE	C3166-1	831 2078	I II	3/19/2016 4/2/2016	3/19/2014 4/2/2015	

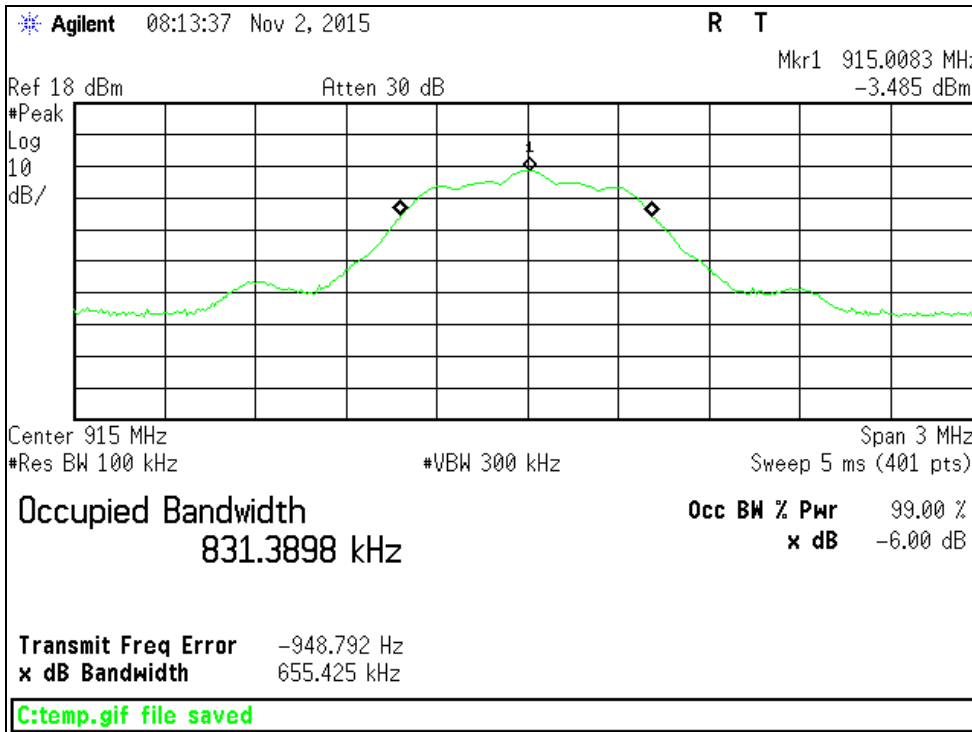
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOTS



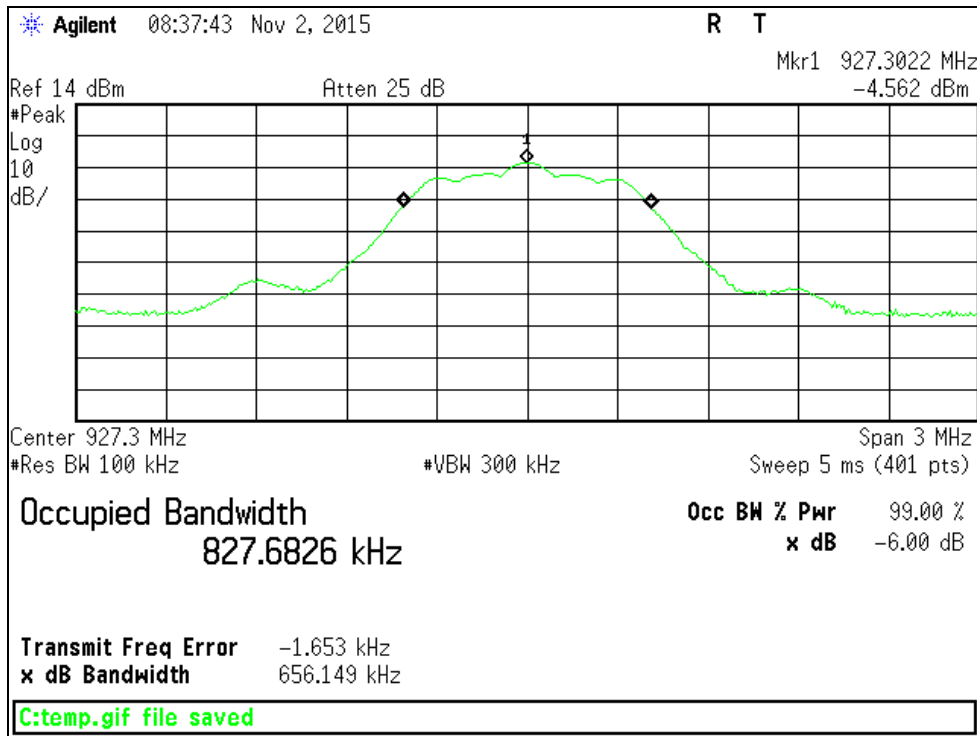
6dB Bandwidth Plot, Low Channel



6dB Bandwidth Plot, Middle Channel







6dB Bandwidth Plot, High Channel

# Fundamental Emission Output Power LIMIT

Conducted Output Power  
 1W = 30dBm  
 [15.247(b) (3)]

## MEASUREMENTS / RESULTS

Fundamental Emission Output Power						
Date: 02-Nov-15		Company: Ideal Industries, Inc.			Work Order: P3128	
Engineer: Tuyen Truong		EUT Desc: SCLINE1000		EUT Operating Voltage/Frequency: 120Vac/60Hz		
Temp: 21°C		Humidity: 38%		Pressure: 1008mbar		
Frequency Range: 902.7 - 927.3 MHz						
Notes:						
Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Adjusted Reading (dBm)	FCC 15.247		
				Limit (dBm)	Margin (dB)	Result (Pass/Fail)
902.7	-2.17	19.55	17.38	30.0	-12.62	Pass
915.0	-3.58	19.55	15.97	30.0	-14.03	Pass
927.3	-4.63	19.55	14.92	30.0	-15.08	Pass
<b>Table Result:</b> Pass by -12.62 dB				<b>Worst Freq:</b> 902.7 MHz		
Test Site: CEMI1		Attenuation: 791				
Analyzer: 1510						

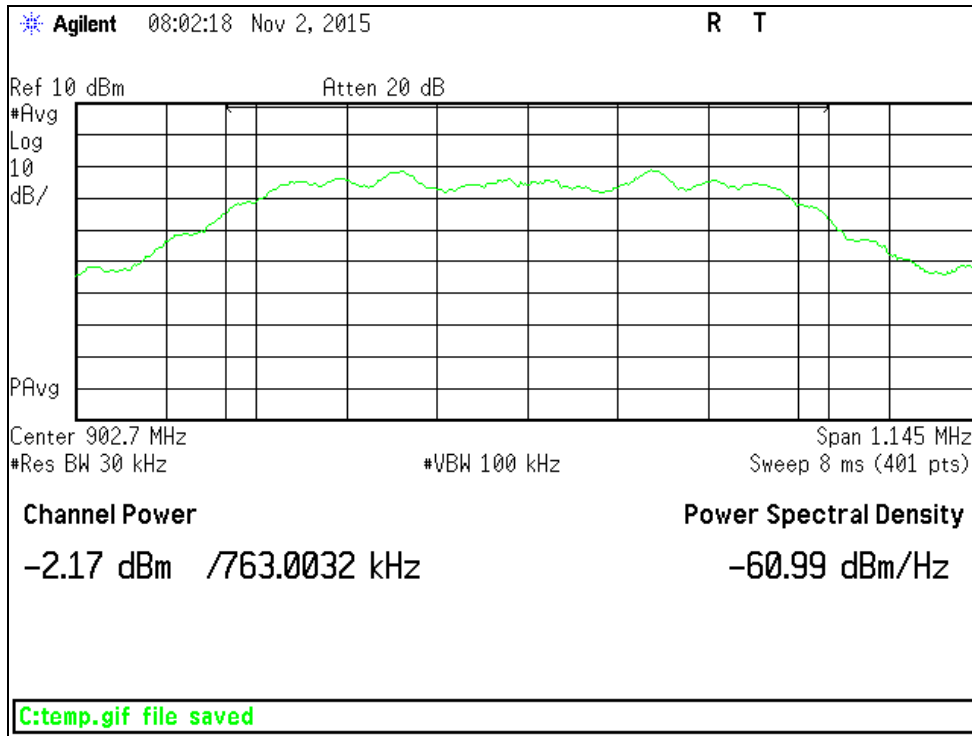
Rev. 10/19/2015

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	6/30/2016	6/30/2015	
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	7/31/2016	7/31/2015	
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on				
CEMI 1	719150	A-0015	III	NA	N/A				
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on		
Weather Clock (Pressure Only) TH A#2078	BA928 HTC-1	Oregon Scientific HDE	C3166-1	831 2078	I II	3/19/2016 4/2/2016	3/19/2014 4/2/2015		

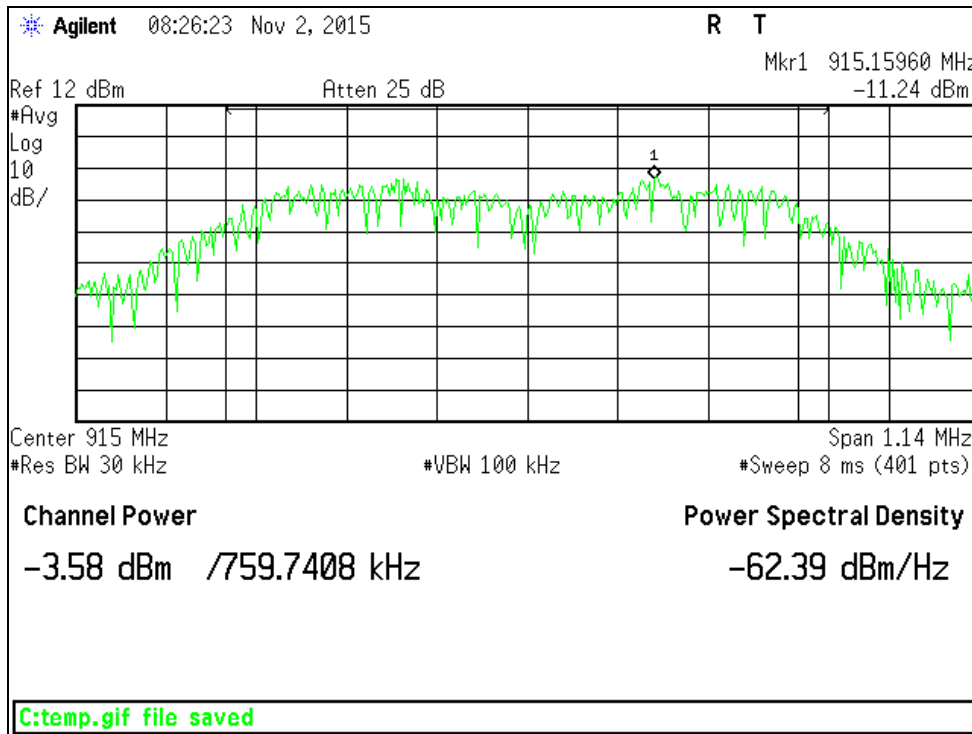
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



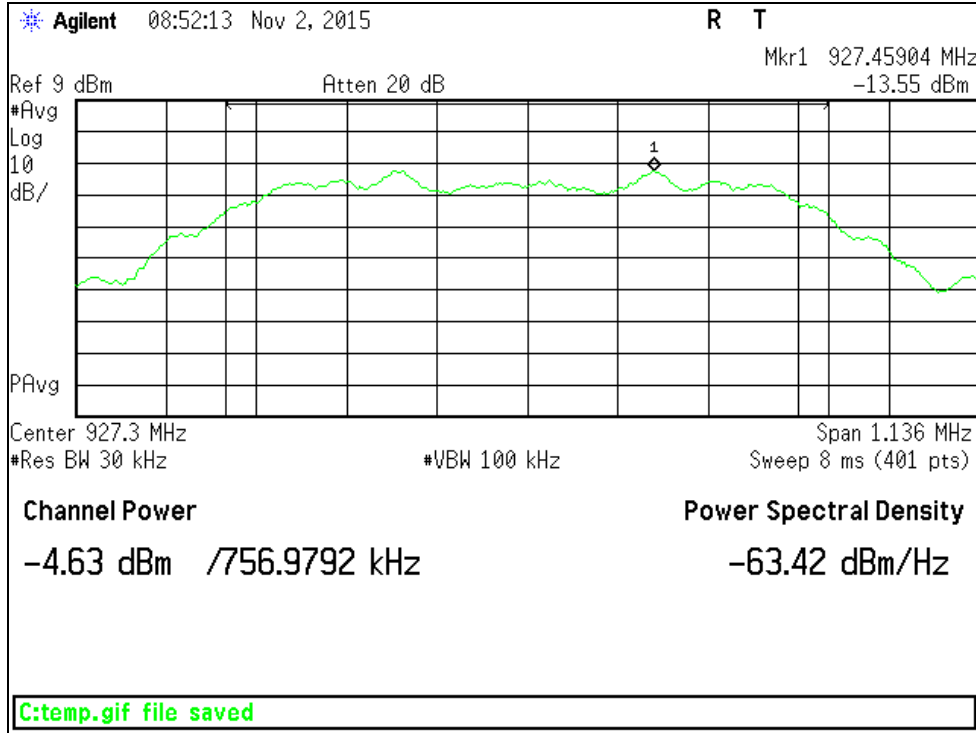
PLOTS



Peak Output Power, Low Channel



Peak Output Power, Middle Channel



Peak Output Power, High Channel

## Radiated Spurious Emissions

### LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).  
[15.247(d)]

### MEASUREMENTS / RESULTS

Radiated Emissions Table												
Date: 06-Nov-15			Company: Ideal Industries, Inc.				Work Order: P3128					
Engineer: Jason Haley			EUT Desc: SCLINE1000				EUT Operating Voltage/Frequency: 120V/60Hz					
Temp: 22.2°C			Humidity: 54%				Pressure: 1006mBar					
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: Low Channel 902.7MHz, EUT in the Z-axis (Worst case)							EUT Max Freq: 928 MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBuV/m)	FCC 15.209					
							Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)			
Vertical	42.02	35.1	25.3	12.4	0.4	22.6	40.0	-17.4	Pass			
Vertical	66.65	37.7	25.4	8.0	0.5	20.8	40.0	-19.2	Pass			
Horizontal	117.34	41.5	25.3	13.7	0.6	30.5	43.5	-13.0	Pass			
Horizontal	189.63	39.7	24.4	11.3	0.8	27.4	43.5	-16.1	Pass			
Horizontal	243.81	41.0	25.3	11.7	0.9	28.3	46.0	-17.7	Pass			
Horizontal	564.62	29.8	25.0	18.6	1.4	24.8	46.0	-21.2	Pass			
Vertical	589.13	26.3	24.9	18.6	1.3	21.3	46.0	-24.7	Pass			
Vertical	845.81	27.1	25.6	21.8	1.8	25.1	46.0	-20.9	Pass			
<b>Table Result:</b> Pass by -13.0 dB							<b>Worst Freq:</b> 117.34 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #2051				Cable 2: Asset #2053			Cable 3: ---		
Analyzer: Gold			Preamp: Blue-Blk				Antenna: Red-Brown			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.148							Copyright Curtis-Straus LLC 2000					
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												

Radiated Emissions Table												
Date: 06-Nov-15			Company: Ideal Industries, Inc.				Work Order: P3128					
Engineer: Jason Haley			EUT Desc: SCLINE1000				EUT Operating Voltage/Frequency: 120V/60Hz					
Temp: 22.2°C			Humidity: 54%				Pressure: 1006mBar					
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: Middle Channel 915MHz, EUT in the X-axis (worst case orientation)							EUT Max Freq: 928 MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBuV/m)	FCC 15.209					
							Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)			
Vertical	41.66	37.0	25.3	12.7	0.4	24.8	40.0	-15.2	Pass			
Vertical	65.41	36.7	25.4	7.9	0.5	19.7	40.0	-20.3	Pass			
Horizontal	114.61	40.6	25.3	13.4	0.6	29.3	43.5	-14.2	Pass			
Horizontal	185.55	37.6	24.3	11.0	0.8	25.1	43.5	-18.4	Pass			
Horizontal	188.09	37.5	24.4	11.2	0.8	25.1	43.5	-18.4	Pass			
Horizontal	248.73	37.5	25.2	11.7	0.9	24.9	46.0	-21.1	Pass			
Horizontal	344.71	37.5	25.2	14.1	1.1	27.5	46.0	-18.5	Pass			
Vertical	420.32	32.2	25.3	16.3	1.1	24.3	46.0	-21.7	Pass			
Horizontal	564.56	29.5	25.0	18.6	1.4	24.5	46.0	-21.5	Pass			
Vertical	589.07	26.3	24.9	18.6	1.3	21.3	46.0	-24.7	Pass			
<b>Table Result:</b> Pass by -14.2 dB							<b>Worst Freq:</b> 114.61 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #2051				Cable 2: Asset #2053			Cable 3: ---		
Analyzer: Gold			Preamp: Blue-Blk				Antenna: Red-Brown			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.148							Copyright Curtis-Straus LLC 2000					
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												



**Radiated Emissions Table**

<b>Date:</b> 06-Nov-15		<b>Company:</b> Ideal Industries, Inc.				<b>Work Order:</b> P3128					
<b>Engineer:</b> Jason Haley		<b>EUT Desc:</b> SCLINE1000				<b>EUT Operating Voltage/Frequency:</b> 120V/60Hz					
<b>Temp:</b> 22.2°C		<b>Humidity:</b> 54%		<b>Pressure:</b> 1006mBar							
<b>Frequency Range:</b> 30-1000MHz						<b>Measurement Distance:</b> 3 m					
<b>Notes:</b> High Channel 927.3MHz, EUT in the X-axis (worst case orientation)						<b>EUT Max Freq:</b> 928 MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	FCC 15.209				
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)		
vertical	34.97	30.5	25.3	17.7	0.3	23.2	40.0	-16.8	Pass		
vertical	42.85	35.3	25.3	11.9	0.4	22.3	40.0	-17.7	Pass		
vertical	54.22	37.0	25.4	7.3	0.5	19.4	40.0	-20.6	Pass		
horizontal	115.21	40.0	25.3	13.5	0.6	28.8	43.5	-14.7	Pass		
horizontal	187.86	34.7	24.4	11.2	0.8	22.3	43.5	-21.2	Pass		
horizontal	249.44	35.9	25.2	11.7	0.9	23.3	46.0	-22.7	Pass		
horizontal	347.91	35.3	25.1	14.2	1.1	25.5	46.0	-20.5	Pass		
vertical	352.94	31.7	25.0	14.4	1.0	22.1	46.0	-23.9	Pass		
horizontal	564.56	29.2	25.0	18.6	1.4	24.2	46.0	-21.8	Pass		
vertical	839.24	35.1	25.6	21.7	1.8	33.0	46.0	-13.0	Pass		
<b>Table Result:</b> Pass by -13.0 dB							<b>Worst Freq:</b> 839.24 MHz				
<b>Test Site:</b> EMI Chamber 1		<b>Cable 1:</b> Asset #2051			<b>Cable 2:</b> Asset #2053			<b>Cable 3:</b> ---			
<b>Analyzer:</b> Gold		<b>Preamp:</b> Blue-Blk			<b>Antenna:</b> Red-Brown			<b>Preselector:</b> ---			
CSsoft Radiated Emissions Calculator v 1.017.148						Copyright Curtis-Straus LLC 2000					
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor											

Rev.11/5/2015

<b>Spectrum Analyzers / Receivers / Preselectors</b> Gold	<b>Range</b> 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	<b>Asset</b> 1284	<b>Cat</b> I	<b>Calibration Due</b> 4/22/2016	<b>Calibrated on</b> 4/22/2015
<b>Radiated Emissions Sites</b> EMI Chamber 1	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-6	<b>VCCI Code</b> A-0015	<b>Range</b> 30-1000MHz	<b>Cat</b> II	<b>Calibration Due</b> 3/21/2017	<b>Calibrated on</b> 3/21/2015	
<b>Preamps / Couplers Attenuators / Filters</b> Blue-Black	<b>Range</b> 0.009-2000MHz	<b>MN</b> ZFL-1000-LN	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 800	<b>Cat</b> II	<b>Calibration Due</b> 12/26/2015	<b>Calibrated on</b> 12/26/2014
<b>Antennas</b> Red-Brown Bilog	<b>Range</b> 30-2000MHz	<b>MN</b> JB1	<b>Mfr</b> Sunol	<b>SN</b> A0032406	<b>Asset</b> 1218	<b>Cat</b> I	<b>Calibration Due</b> 12/4/2016	<b>Calibrated on</b> 12/4/2014
<b>Cables</b> Asset #2051	<b>Range</b> 9kHz - 18GHz		<b>Mfr</b> Florida RF			<b>Cat</b> II	<b>Calibration Due</b> 3/8/2016	<b>Calibrated on</b> 3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
<b>Meteorological Meters</b> Weather Clock (Pressure Only) TH A#2080		<b>MN</b> BA928 HTC-1	<b>Mfr</b> Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	<b>Cat</b> I II	<b>Calibration Due</b> 3/19/2016 4/2/2016	<b>Calibrated on</b> 3/19/2014 4/2/2015

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



Radiated Emissions Table														
Date: 12-Nov-15					Company: Ideal Industries, Inc.					Work Order: P3128				
Engineer: Chris LoPiccolo					EUT Desc: SCLINE1000					EUT Operating Voltage/Frequency: 120V/60Hz				
Temp: 22.2°C					Humidity: 31%					Pressure: 1006mBar				
Frequency Range: 1-6 GHz										Measurement Distance: 3 m				
Notes: EUT oriented x-axis (worst case) Lo channel (902.7 MHz)										EUT Max Freq: 928 MHz				
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
V	1015.0	35.46	22.1	20.8	24.8	2.3	41.8	28.4	74.0	-32.2	Pass	54.0	-25.6	Pass
V	1805.4	39.27	27.8	18.8	27.1	3.0	50.6	39.1	74.0	-23.4	Pass	54.0	-14.9	Pass
H	1805.4	35.74	26.3	18.8	27.1	3.0	47.0	37.6	74.0	-27.0	Pass	54.0	-16.4	Pass
V	2708.0	35.89	21.6	20.3	29.2	4.0	48.8	34.5	74.0	-25.2	Pass	54.0	-19.5	Pass
H	2708.0	36.83	22.5	20.3	29.2	4.0	49.7	35.4	74.0	-24.3	Pass	54.0	-18.6	Pass
H	3001.0	35.95	20.5	19.9	30.5	4.0	50.6	35.1	74.0	-23.4	Pass	54.0	-18.9	Pass
<b>Table Result:</b> Pass by -14.9 dB										<b>Worst Freq:</b> 1805.4 MHz				
Test Site: EMI Chamber 2					Cable 1: Asset #2052					Cable 2: Asset #1784				
Analyzer: Gold					Preamp: Asset #1517					Cable 3: ---				
CSsoft Radiated Emissions Calculator v 1.017.148					Antenna: Black Horn					Preselector: ---				
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														

Radiated Emissions Table														
Date: 12-Nov-15					Company: Ideal Industries, Inc.					Work Order: P3128				
Engineer: Chris LoPiccolo					EUT Desc: SCLINE1000					EUT Operating Voltage/Frequency: 120V/60Hz				
Temp: 22.2°C					Humidity: 31%					Pressure: 1006mBar				
Frequency Range: 1-6 GHz										Measurement Distance: 3 m				
Notes: EUT oriented x-axis (worst case) Mid Channel (915 MHz)										EUT Max Freq: 928 MHz				
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
H	1000.0	34.51	21.5	20.9	24.6	2.2	40.4	27.4	74.0	-33.6	Pass	54.0	-26.6	Pass
V	1830.0	36.06	26.4	18.8	27.2	3.0	47.5	37.8	74.0	-26.5	Pass	54.0	-16.2	Pass
H	1830.0	35.21	22.9	18.8	27.2	3.0	46.6	34.3	74.0	-27.4	Pass	54.0	-19.7	Pass
V	2745.0	36.04	22.1	20.2	29.1	4.1	49.0	35.1	74.0	-25.0	Pass	54.0	-18.9	Pass
H	2745.0	35.76	21.7	20.2	29.1	4.1	48.8	34.7	74.0	-25.2	Pass	54.0	-19.3	Pass
V	3001.0	35.07	19.9	19.9	30.5	4.0	49.7	34.5	74.0	-24.3	Pass	54.0	-19.5	Pass
<b>Table Result:</b> Pass by -16.2 dB										<b>Worst Freq:</b> 1830.0 MHz				
Test Site: EMI Chamber 2					Cable 1: Asset #2052					Cable 2: Asset #1784				
Analyzer: Gold					Preamp: Asset #1517					Cable 3: ---				
CSsoft Radiated Emissions Calculator v 1.017.148					Antenna: Black Horn					Preselector: ---				
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														

Radiated Emissions Table														
Date: 12-Nov-15					Company: Ideal Industries, Inc.					Work Order: P3128				
Engineer: Chris LoPiccolo					EUT Desc: SCLINE1000					EUT Operating Voltage/Frequency: 120V/60Hz				
Temp: 22.2°C					Humidity: 31%					Pressure: 1006mBar				
Frequency Range: 1-6 GHz										Measurement Distance: 3 m				
Notes: EUT oriented x-axis (worst case) Hi Channel (927.3 MHz)										EUT Max Freq: 928 MHz				
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
V	1855.0	35.15	23.9	18.8	27.3	3.1	46.8	35.5	74.0	-27.2	Pass	54.0	-18.5	Pass
H	1855.0	34.6	22.5	18.8	27.3	3.1	46.2	34.1	74.0	-27.8	Pass	54.0	-19.9	Pass
H	2454.0	36.04	21.7	20.1	28.7	3.8	48.4	34.1	74.0	-25.6	Pass	54.0	-19.9	Pass
V	2975.0	36.55	20.2	20.0	30.2	4.1	50.9	34.5	74.0	-23.1	Pass	54.0	-19.5	Pass
H	3235.0	35.93	19.4	19.7	31.2	4.3	51.7	35.2	74.0	-22.3	Pass	54.0	-18.8	Pass
V	3697.0	34.33	19.9	19.1	32.1	4.2	51.5	37.1	74.0	-22.5	Pass	54.0	-16.9	Pass
<b>Table Result:</b> Pass by -16.9 dB										<b>Worst Freq:</b> 3697.0 MHz				
Test Site: EMI Chamber 2					Cable 1: Asset #2052					Cable 2: Asset #1784				
Analyzer: Gold					Preamp: Asset #1517					Cable 3: ---				
CSsoft Radiated Emissions Calculator v 1.017.148					Antenna: Black Horn					Preselector: ---				
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														



Rev. 11/5/2015

<b>Spectrum Analyzers / Receivers /Preselectors</b> Gold	<b>Range</b> 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	<b>Asset</b> 1284	<b>Cat</b> I	<b>Calibration Due</b> 4/22/2016	<b>Calibrated on</b> 4/22/2015
<b>Radiated Emissions Sites</b> EMI Chamber 2	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-7	<b>VCCI Code</b> A-0015	<b>Range</b> 1-18GHz		<b>Cat</b> I	<b>Calibration Due</b> 4/29/2017	<b>Calibrated on</b> 4/29/2015
<b>Preamps /Couplers Attenuators / Filters</b> 1517 HF Preamp	<b>Range</b> 1-20GHz	<b>MN</b> CS	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 1517	<b>Cat</b> II	<b>Calibration Due</b> 8/6/2016	<b>Calibrated on</b> 8/6/2015
<b>Antennas</b> Black Horn	<b>Range</b> 1-18GHz	<b>MN</b> 3115	<b>Mfr</b> EMCO	<b>SN</b> 9703-5148	<b>Asset</b> 56	<b>Cat</b> I	<b>Calibration Due</b> 8/21/2016	<b>Calibrated on</b> 8/21/2014
<b>Meteorological Meters</b> Weather Clock (Pressure Only) TH A#2081		<b>MN</b> BA928 HTC-1	<b>Mfr</b> Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2081	<b>Cat</b> I II	<b>Calibration Due</b> 3/19/2016 4/2/2016	<b>Calibrated on</b> 3/19/2014 4/2/2015
<b>Cables</b> Asset #1784 Asset #2052	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			<b>Cat</b> II II	<b>Calibration Due</b> 3/20/2016 3/8/2016	<b>Calibrated on</b> 3/20/2015 3/8/2015

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

**Radiated Emissions Table**

<b>Date:</b> 06-Nov-15		<b>Company:</b> Ideal Industries, Inc.		<b>Work Order:</b> P3128											
<b>Engineer:</b> Jason Haley		<b>EUT Desc:</b> SCLINE1000		<b>EUT Operating Voltage/Frequency:</b> 120V/60Hz											
<b>Temp:</b> 22.2°C		<b>Humidity:</b> 54%		<b>Pressure:</b> 1006mBar											
<b>Frequency Range:</b> 6-10GHz				<b>Measurement Distance:</b> 1 m											
<b>Notes:</b> EUT in the X-axis (worst case orientation). All Noise Floor readings.															
<b>EUT Max Freq:</b>															
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average			
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
V Low Channel	6314.0	29.23	16.7	16.2	35.6	5.8	54.4	41.9	83.5	-29.1	Pass	63.5	-21.6	Pass	
H Mid Channel	6405.0	27.3	16.6	16.0	35.5	5.9	52.7	42.0	83.5	-30.8	Pass	63.5	-21.5	Pass	
Horz hi channel	6496.0	27.85	16.3	16.1	35.5	5.9	53.2	41.6	83.5	-30.3	Pass	63.5	-21.9	Pass	
H Low Channel	7216.0	28.9	17.5	15.9	37.6	5.8	56.4	45.0	83.5	-27.1	Pass	63.5	-18.5	Pass	
H Mid Channel	7320.0	27.6	17.2	15.9	37.9	5.8	55.4	45.0	83.5	-28.1	Pass	63.5	-18.5	Pass	
Vert Hi channel	7424.0	28.7	16.7	15.9	37.9	5.7	56.4	44.4	83.5	-27.1	Pass	63.5	-19.1	Pass	
H Low Channel	8118.0	28.65	16.3	15.9	37.7	5.8	56.3	43.9	83.5	-27.2	Pass	63.5	-19.6	Pass	
V Mid Channel	8235.0	27.16	16.5	16.0	37.8	5.8	54.8	44.1	83.5	-28.7	Pass	63.5	-19.4	Pass	
Horz hi channel	8352.0	28.56	16.2	16.0	37.9	5.9	56.4	44.0	83.5	-27.1	Pass	63.5	-19.5	Pass	
V Low Channel	9020.0	30.08	16.6	15.8	38.5	6.0	58.8	45.3	83.5	-24.7	Pass	63.5	-18.2	Pass	
H Mid Channel	9150.0	27.0	16.5	15.7	38.3	6.1	55.7	45.2	83.5	-27.8	Pass	63.5	-18.3	Pass	
Vert Hi channel	9280.0	28.79	15.9	15.6	38.3	6.1	57.6	44.7	83.5	-25.9	Pass	63.5	-18.8	Pass	
H Low Channel	9922.0	29.27	15.9	14.9	39.2	6.7	60.3	46.9	83.5	-23.2	Pass	63.5	-16.6	Pass	
<b>Table Result:</b> Pass by -16.6 dB								<b>Worst Freq:</b> 9922.0 MHz							
<b>Test Site:</b> EMI Chamber 1		<b>Cable 1:</b> Asset #2051		<b>Cable 2:</b> Asset #2053		<b>Cable 3:</b> ---									
<b>Analyzer:</b> Gold		<b>Preamp:</b> Brown		<b>Antenna:</b> Black Horn		<b>Preselector:</b> ---									
CSsoft Radiated Emissions Calculator v 1.017.148								Copyright Curtis-Straus LLC 2000							
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															

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<b>Spectrum Analyzers / Receivers /Preselectors</b> Gold	<b>Range</b> 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	<b>Asset</b> 1284	<b>Cat</b> I	<b>Calibration Due</b> 4/22/2016	<b>Calibrated on</b> 4/22/2015
<b>Radiated Emissions Sites</b> EMI Chamber 1	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-6	<b>VCCI Code</b> A-0015	<b>Range</b> 30-1000MHz		<b>Cat</b> II	<b>Calibration Due</b> 3/21/2017	<b>Calibrated on</b> 3/21/2015
<b>Preamps /Couplers Attenuators / Filters</b> Brown	<b>Range</b> 1-10GHz	<b>MN</b> CS	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 1523	<b>Cat</b> II	<b>Calibration Due</b> 4/9/2016	<b>Calibrated on</b> 10/8/2015
<b>Antennas</b> Black Horn	<b>Range</b> 1-18GHz	<b>MN</b> 3115	<b>Mfr</b> EMCO	<b>SN</b> 9703-5148	<b>Asset</b> 56	<b>Cat</b> I	<b>Calibration Due</b> 8/21/2016	<b>Calibrated on</b> 8/21/2014
<b>Cables</b> Asset #2051 Asset #2053	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			<b>Cat</b> II II	<b>Calibration Due</b> 3/8/2016 3/8/2016	<b>Calibrated on</b> 3/8/2015 3/8/2015
<b>Meteorological Meters</b> Weather Clock (Pressure Only) TH A#2080		<b>MN</b> BA928 HTC-1	<b>Mfr</b> Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	<b>Cat</b> I II	<b>Calibration Due</b> 3/19/2016 4/2/2016	<b>Calibrated on</b> 3/19/2014 4/2/2015

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





## Conducted Spurious Emissions

### LIMITS

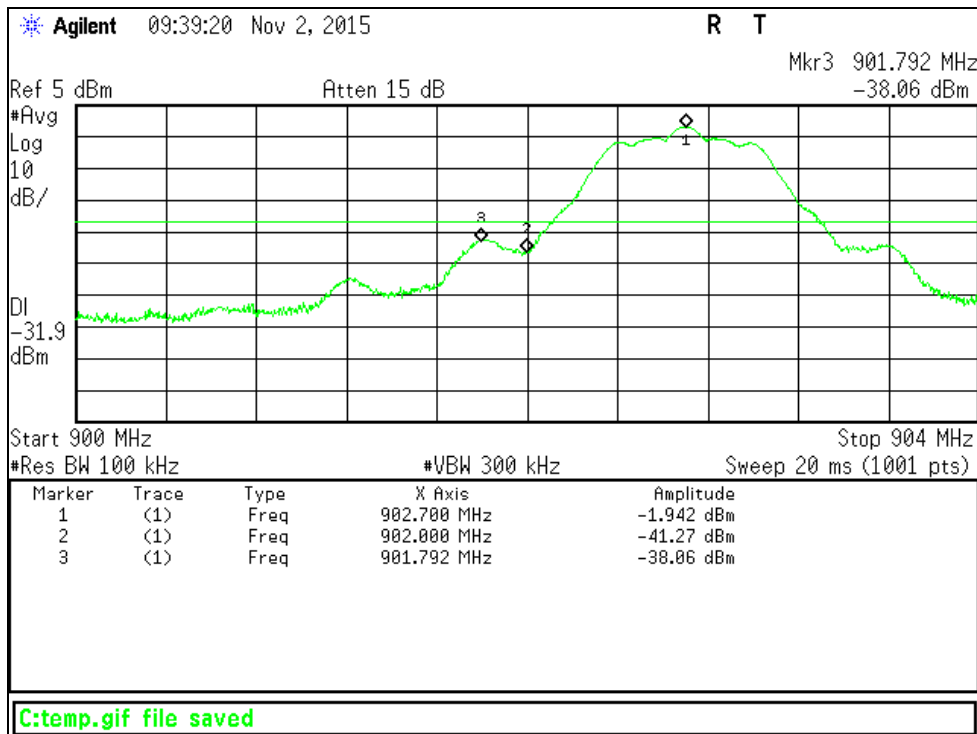
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of 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)]

### MEASUREMENTS / RESULTS

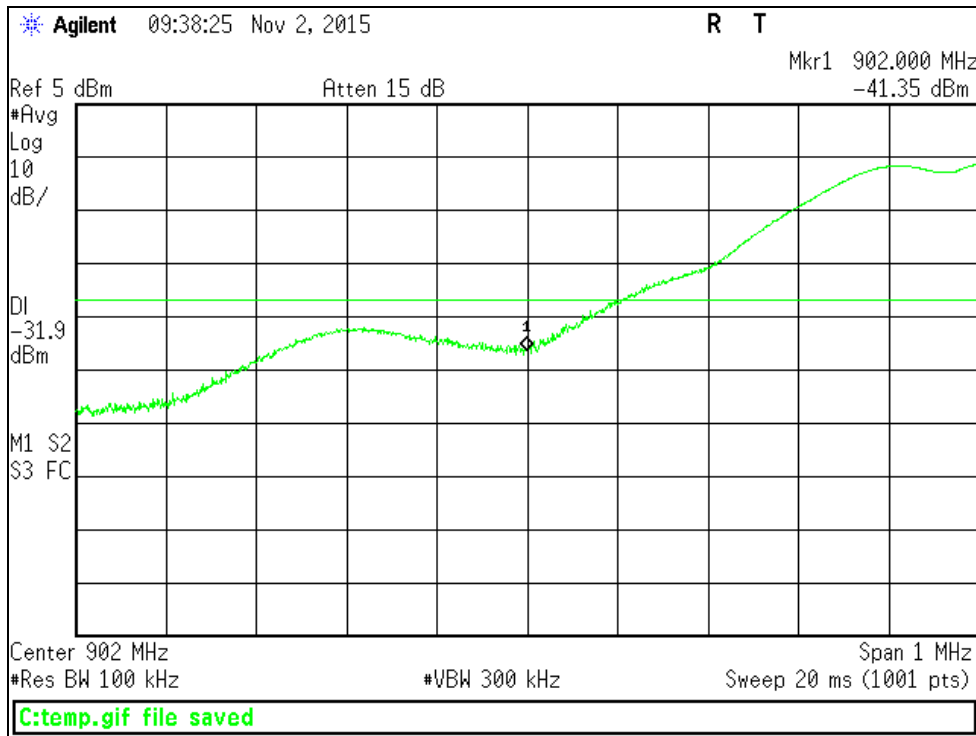
#### Band Edge Measurements

Conducted Band Edge			
Date: 02-Nov-15	Company: Ideal Industries, Inc.	Work Order: P3128	
Engineer: Tuyen Truong	EUT Desc: SCLINE1000	EUT Operating Voltage/Frequency: 120Vac/60Hz	
Temp: 21°C	Humidity: 38%	Pressure: 1008mbar	
Frequency Range: 902-928 MHz			
Test Site: CEM11	Attenuation: 791		
Analyzer: 1510			

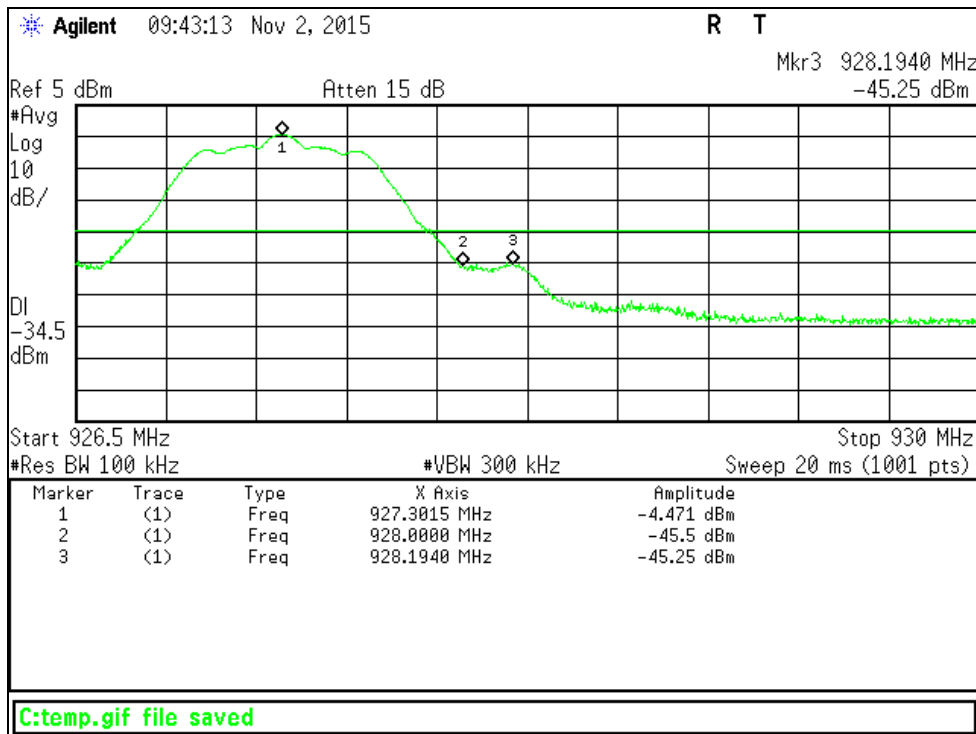
### PLOTS



Band Edge, Lower Channel Overview

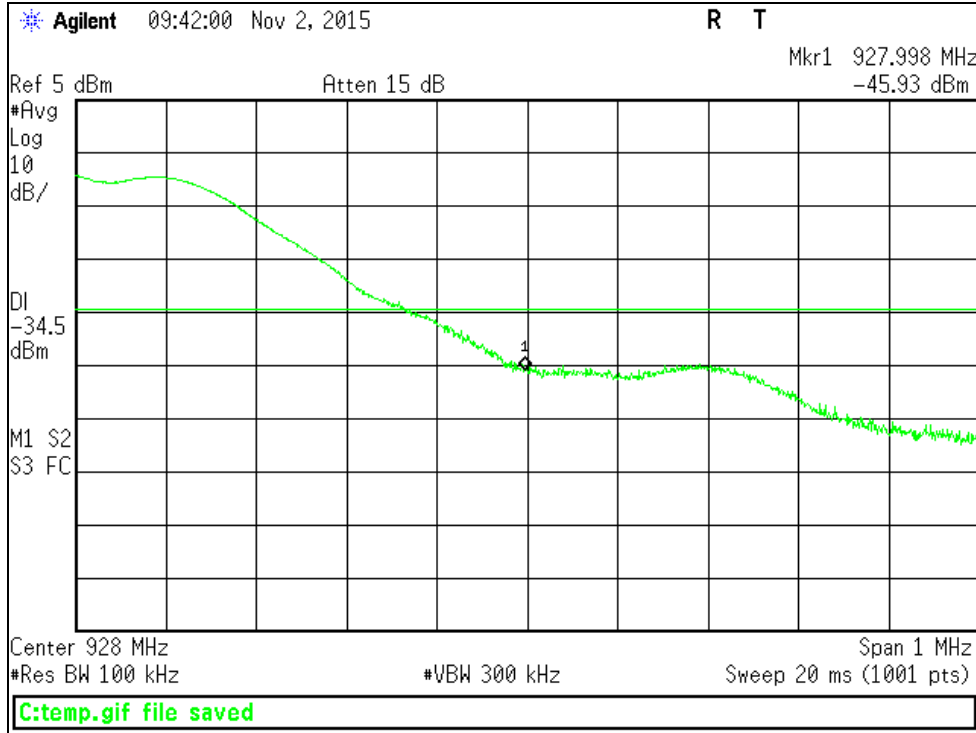


Band Edge, Lower Channel Zoomed in



Band Edge, Upper Channel Overview





Band Edge, Upper Channel Zoomed in

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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	6/30/2016	6/30/2015
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	7/31/2016	7/31/2015
Conducted Test Sites (Mains / Telco)		FCC Code	VCCI Code			Cat	Calibration Due	Calibrated on	
CEMI 1		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#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015	

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



### Conducted Spurious Emission

Conducted Spurious Emission at The Antenna Port		
<b>Date:</b> 29-Oct-15	<b>Company:</b> Ideal Industries, Inc.	<b>Work Order:</b> P3128
<b>Engineer:</b> Jason Haley	<b>EUT Desc:</b> SCLINE1000	<b>EUT Operating Voltage/Frequency:</b> 120Vac/60Hz
<b>Temp:</b> 22°C	<b>Humidity:</b> 56%	<b>Pressure:</b> 991mBar
<b>Frequency Range:</b> 9 KHz to 10000 MHz		
<b>Test Site:</b> CEM11	<b>Cable:</b> 1522	
<b>Analyzer:</b> Brown		

9kHz-10GHz frequency range was investigated for all 3 channels (low, middle and high) at the EUT antenna port. Except for the fundamental, all emissions were at instrument noise floor. Highest noise floor level was less than -35dBm for the entire frequency range, which is more than 30dB below the fundamental.

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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	6/30/2016	6/30/2015	
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on				
CEMI 1	719150	A-0015	III	NA	N/A				
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on				
Asset #1522	9kHz - 18GHz	Florida RF	II	2/15/2016	2/15/2015				
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on		
Weather Clock (Pressure Only)	BA928	egon Scienti	C3166-1	831	I	3/19/2016	3/19/2014		
TH A#2078	HTC-1	HDE		2078	II	4/2/2016	4/2/2015		

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

Power Spectral Density						
Date: 02-Nov-15		Company: Ideal Industries, Inc.		Work Order: P3128		
Engineer: Tuyen Truong		EUT Desc: SCLINE1000		EUT Operating Voltage/Frequency: 120Vac/60Hz		
Temp: 21°C		Humidity: 38%		Pressure: 1008mbar		
Frequency Range: 902.7 - 927.3 MHz						
Notes:						
Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Adjusted Reading (dBm)	FCC 15.247		
				Limit (dBm)	Margin (dB)	Result (Pass/Fail)
902.7	-15.56	19.55	3.99	8.0	-4.01	Pass
915.0	-16.53	19.55	3.02	8.0	-4.98	Pass
927.3	-18.23	19.55	1.32	8.0	-6.68	Pass
<b>Table Result:</b> Pass by -4.01 dB				<b>Worst Freq:</b> 902.7 MHz		
Test Site: CEM1		Attenuation: 791				
Analyzer: 1510						

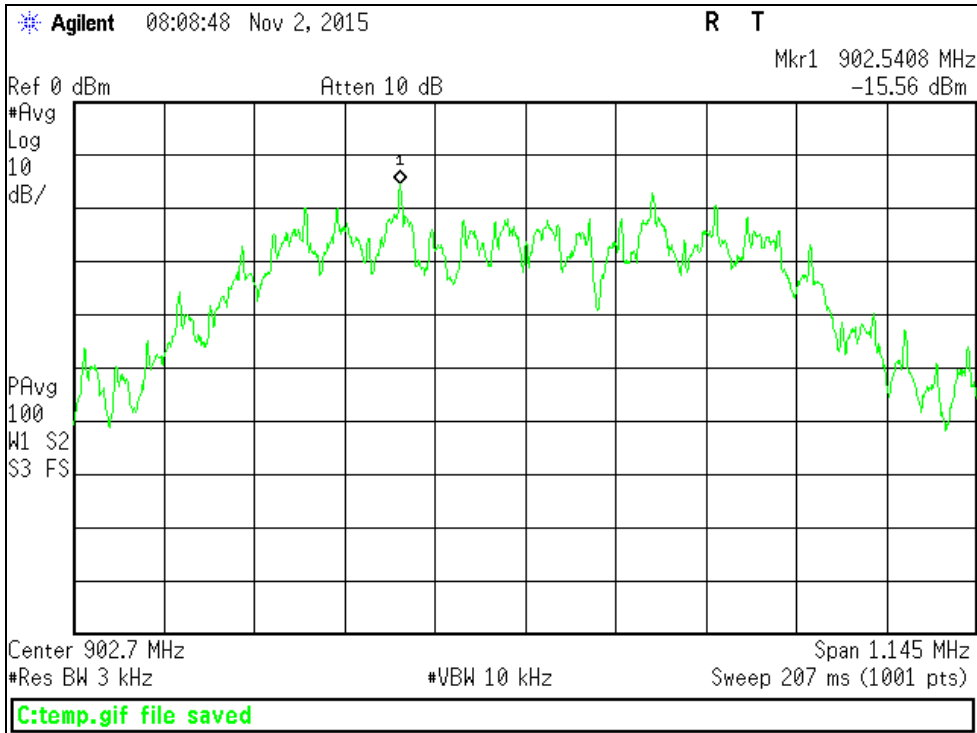
Rev. 10/19/2015

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	6/30/2016	6/30/2015	
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	7/31/2016	7/31/2015	
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on				
CEMI 1	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#2078	HTC-1	HDE		2078	II	4/2/2016	4/2/2015		

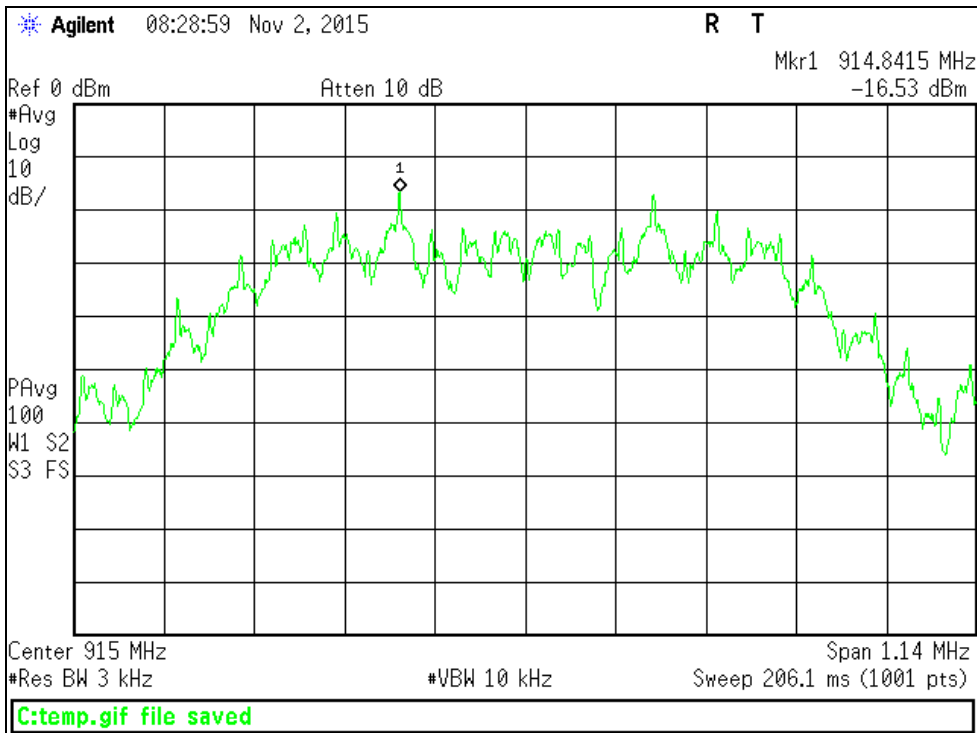
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOTS

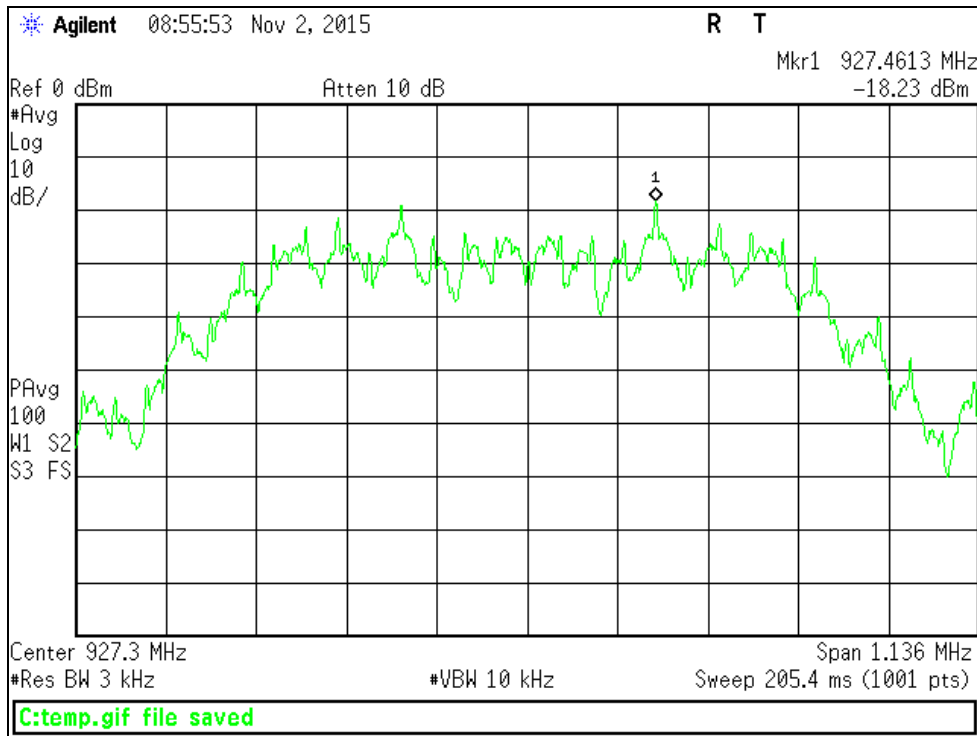


Power Spectral Density, Low Channel



Power Spectral Density, Middle Channel





Power Spectral Density, High Channel



# AC Line Conducted Emissions LIMITS

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

\*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

## MEASUREMENTS / RESULTS

AC Conducted Emissions Data Table														
Date: 26-Oct-15 Engineer: Tuyen Truong Temp: 21.9 °C				Company: Ideal Industries, Inc. EUT Desc: SCLINE1000 Humidity: 35%				Work Order: P3128 Pressure: 1021 mBar						
Notes:														
Frequency Range: 0.15 - 30 MHz EUT Input Voltage/Frequency: 120 Vac / 60Hz														
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	FCC 15.207			FCC 15.207		
	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)			QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.37	18.9	15.4	18.9	15.4	0.0	0.0	-0.1	-20.3	58.4	-19.1	Pass	48.4	-9.2	Pass
0.77	16.8	13.5	16.8	13.5	0.0	0.0	-0.1	-20.3	56.0	-18.7	Pass	46.0	-8.8	Pass
1.14	19.4	15.5	14.1	15.5	-0.1	-0.1	-0.1	-20.3	56.0	-16.2	Pass	46.0	-10.0	Pass
7.50	12.7	13.0	12.7	13.0	-0.1	-0.1	-0.2	-20.3	60.0	-26.4	Pass	50.0	-16.4	Pass
18.61	16.5	16.0	16.5	16.0	-0.2	-0.2	-0.3	-20.3	60.0	-22.8	Pass	50.0	-12.7	Pass
21.44	12.9	11.7	12.9	11.7	-0.2	-0.2	-0.3	-20.3	60.0	-26.4	Pass	50.0	-16.4	Pass
<b>Result: Pass</b>				<b>Worst Margin: -8.8 dB</b>				<b>Frequency: 0.766 MHz</b>						
Measurement Device: LISN Asset 2092				Cable: CEM1-01				Spectrum Analyzer: Rental SA #5						
				Attenuator: 20dB Atten-4				Site: CEMI 6						

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Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
SA #2 (1860)	9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	7/30/2016	7/30/2015	
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
LISN Asset 2092	9kHz-30MHz	NNLK 8121	Schwarzbeck	NNLK 8121-662	2092	I	6/30/2016	6/30/2015	
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on				
CEMI 6	719150	A-0015	III	NA	N/A				
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on				
CEMI-01	9kHz - 2GHz	C-S	II	9/11/2016	9/11/2015				
Attenuators	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
20dB Attenuator-04	9kHz-2GHz	N/A		N/A		II	7/2/2016	7/2/2015	
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on		
Weather Clock (Pressure Only) TH A#2078	BA928 HTC-1	Oregon Scientific HDE	C3166-1	831 2078	I II	3/19/2016 4/2/2016	3/19/2014 4/2/2015		

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





AC Conducted Emissions Data Table														
Date: 26-Oct-15 Engineer: Tuyen Truong Temp: 21.9 °C				Company: Ideal Industries, Inc EUT Desc: SCLINE1000 Humidity: 35%				Work Order: P3128 Pressure: 1021 mBar						
Notes:														
Frequency Range: 0.15 - 30 MHz							EUT Input Voltage/Frequency: 277 Vac / 60Hz							
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	FCC 15.207			FCC 15.207		
	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)			QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.40	23.9	17.4	16.5	17.3	0.0	0.0	-0.1	-20.3	57.8	-13.5	Pass	47.8	-10.9	Pass
0.78	14.1	8.9	14.1	8.9	0.0	0.0	-0.1	-20.3	56.0	-21.4	Pass	46.0	-11.4	Pass
1.15	17.9	13.5	10.6	13.4	-0.1	-0.1	-0.1	-20.3	56.0	-17.7	Pass	46.0	-14.9	Pass
5.24	14.2	15.2	14.2	15.2	-0.1	-0.1	-0.2	-20.3	60.0	-24.3	Pass	50.0	-14.3	Pass
17.45	16.1	15.4	16.1	15.4	-0.2	-0.2	-0.2	-20.3	60.0	-23.2	Pass	50.0	-13.2	Pass
21.30	13.8	12.1	13.8	12.1	-0.2	-0.2	-0.3	-20.3	60.0	-25.5	Pass	50.0	-15.5	Pass
<b>Result: Pass</b>				<b>Worst Margin: -10.9 dB</b>				<b>Frequency: 0.402 MHz</b>						
Measurement Device: LISN Asset 2092				Cable: CEMI-01				Spectrum Analyzer: Rental SA #5						
				Attenuator: 20dB Atten-4				Site: CEMI 6						

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Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA #2 (1860)	9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	7/30/2016	7/30/2015
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
LISN Asset 2092	9kHz-30MHz	NNLK 8121	Schwarzbeck	NNLK 8121-662	2092	I	6/30/2016	6/30/2015
Conducted Test Sites (Mains / Telco)	FCC Code		VCCI Code			Cat	Calibration Due	Calibrated on
CEMI 6	719150		A-0015			III	NA	N/A
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
CEMI-01	9kHz - 2GHz		C-S			II	9/11/2016	9/11/2015
Attenuators	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
20dB Attenuator-04	9kHz-2GHz			N/A		II	7/2/2016	7/2/2015
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#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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



## Occupied Bandwidth

### REQUIREMENT

When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 4.6.1]

### MEASUREMENTS / RESULTS

99% OCCUPIED BANDWIDTH			
Date: 02-Nov-15	Company: Ideal Industries, Inc.	Work Order: P3128	
Engineer: Tuyen Truong	EUT Desc: SCLINE1000	EUT Operating Voltage/Frequency: 120Vac/60Hz	
Temp: 21°C	Humidity: 38%	Pressure: 1008mbar	
Frequency Range: 902.7 - 927.3 MHz			
Notes:			
Frequency (MHz)	Occupied Bandwidth Reading (KHz)		
902.7	763.0032		
915.0	759.7408		
927.3	756.9792		
Test Site: CEMI1	Attenuation: 791		
Analyzer: 1510			

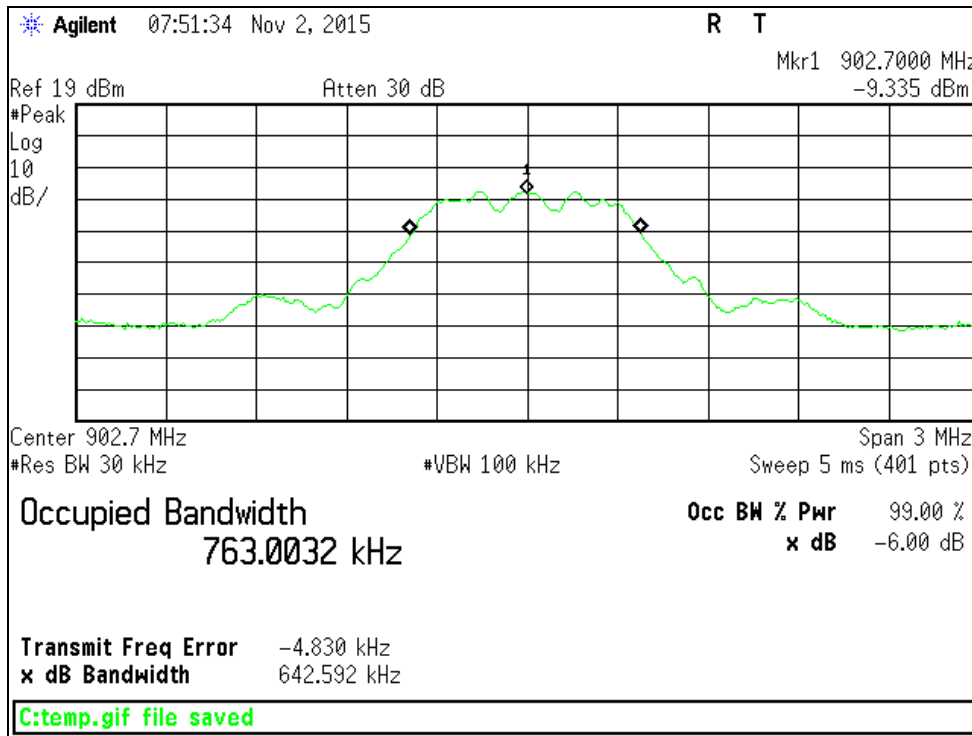
Rev. 10/19/2015

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	6/30/2016	6/30/2015
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	7/31/2016	7/31/2015
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code		Asset	Cat	Calibration Due	Calibrated on	
CEMI 1	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#2078	HTC-1	HDE		2078	II	4/2/2016	4/2/2015	

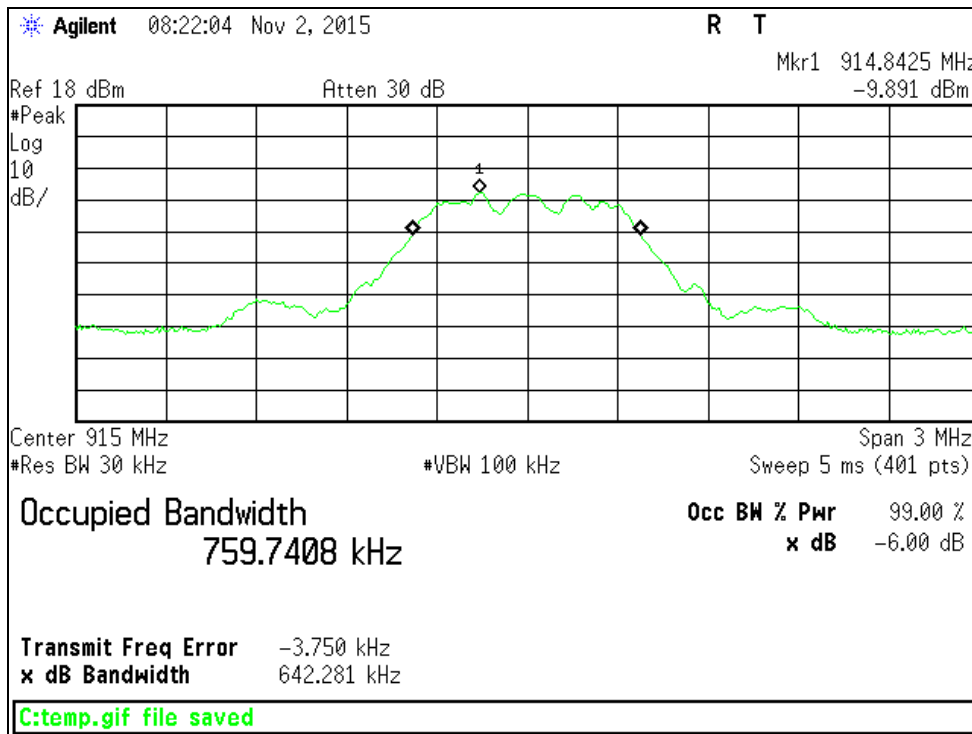
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOTS

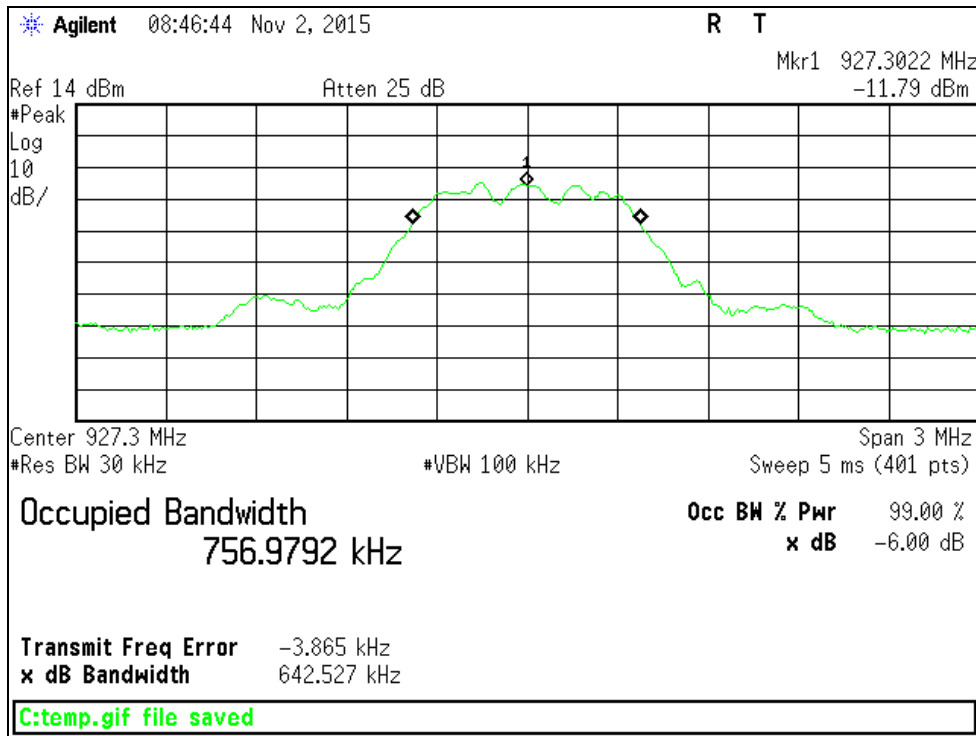


Occupied Bandwidth, Low Channel



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)		
NIST	5.6dB	N/A
CISPR	4.6dB	5.2dB (Ucisprr)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
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 where such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.
13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.



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15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

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

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

The complete list of the Approved Subcontractors Curtis-Straus may use to delegate the performance of work can be provided upon request.  
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