





Test Report



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

Report No	EQ0716-1 Issue 2
Client	Ideal Industries, Inc.
Address	Becker Place Sycamore, IL 60178
Phone	(815) 899 - 7774
Items tested	VSW1301
FCC ID	2AAMXVSW1301
IC ID	11250A-VSW1301
FRN	0002862225
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	831KG1D
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2
Test Dates	March 22 and 29, 2016 and April 1 & July 31, 2017
Results	As detailed within this report
Prepared by	 Zack Johnson - Test Engineer
Authorized by	 Jason Haley - Sr. Engineer
Issue Date	9/1/2017
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 24 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:

CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 1

Model: VSW1301

Frequency Range: 902.7MHz – 927.3MHz

Antenna: PCB trace with 2.38dBi gain

We found that the product met the above requirements without modification. Test sample was 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 1, ISED Canada RSS-Gen Issue 4, FCC KDB 558074 D01 DTS Measurement Guidance v03r05 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. The device antenna cannot be maximized separately.

RF measurements were performed on 3 channels as follows:

Low channel = 902.7MHz

Mid channel = 915MHz

High channel = 927.3MHz

EUT operating voltage is 3.3VDC from batteries. Fresh batteries were used during all testing.

The environmental conditions are shown on the associated data sheets.

Following bandwidths were used during radiated spurious emissions testing.

Frequency Range	Resolution Bandwidth	Video Bandwidth
30-1000MHz	120kHz	1MHz
1-10GHz	1MHz	3MHz



Product Tested - Configuration Documentation

EUT Configuration			
Work Order:	Q0716		
Company:	Ideal Industries		
Company Address:	Becker Place		
	Sycamore, IL 60178		
Contact:	Tim Tunnel		
	MN	PN	SN
EUT:	VSW1301	--	Test Sample 1
EUT Description:	Vacancy/Occupancy Motion Sensor		
EUT Tx Frequency:	902.7MHz - 927.3 MHz		
Software Operating Mode Description:			
EUT was set to transmit continuously with modulation at 902.7 MHz, 915 MHz and 927.3 MHz frequencies. Pressing the ON button changes 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 of this device is a PCB trace with 2.38dBi 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	N/A. EUT is battery powered only.
			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

6dB Bandwidth Radiated Emissions Table				
Date: 29-Mar-16		Company: Ideal Industries, Inc.		Work Order: Q0716
Engineer: Jason Haley		EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sens		EUT Operating Voltage/Frequency: Battery
Temp: 22°C		Humidity: 26%		Pressure: 995mBar
Frequency Range: 902-928MHz			Measurement Distance: 3 m	
Notes: RBW=100kHz, VBW=300kHz, Span=3MHz, Sweep=AUTO, Attn=AUTO, Detector=Peak				EUT Max Freq: 927.3
Antenna Polarization (H/V)	Frequency (MHz)	DTS	Limit	Test
		Bandwidth (kHz)	(kHz min)	Result (pass/fail)
Vert, X-axis	902.7	666.8	500.0	Pass
Horz, X-axis	902.7	667.9	500.0	Pass
Vert, Y-axis	902.7	667.7	500.0	Pass
Horz, Y-axis	902.7	668.7	500.0	Pass
Vert, Z-axis	902.7	668.4	500.0	Pass
Horz, Z-axis	902.7	668.7	500.0	Pass
Vert, X-axis	915.0	661.8	500.0	Pass
Horz, X-axis	915.0	664.6	500.0	Pass
Vert, Y-axis	915.0	664.2	500.0	Pass
Horz, Y-axis	915.0	664.6	500.0	Pass
Vert, Z-axis	915.0	663.6	500.0	Pass
Horz, Z-axis	915.0	665.4	500.0	Pass
Vert, X-axis	927.3	659.7	500.0	Pass
Horz, X-axis	927.3	662.0	500.0	Pass
Vert, Y-axis	927.3	659.5	500.0	Pass
Horz, Y-axis	927.3	661.8	500.0	Pass
Vert, Z-axis	927.3	660.8	500.0	Pass
Horz, Z-axis	927.3	661.2	500.0	Pass

Table Result: Pass

Test Site: EMI Chamber 2	Cable 1: Asset #2052	Cable 2: Asset #1785	Cable 3: ---
Analyzer: Gold	Preamp: Blue-BLK	Antenna: Red-Black	Preselector: ---
CSsoft Radiated Emissions Calculator v 1.017.158			
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor			
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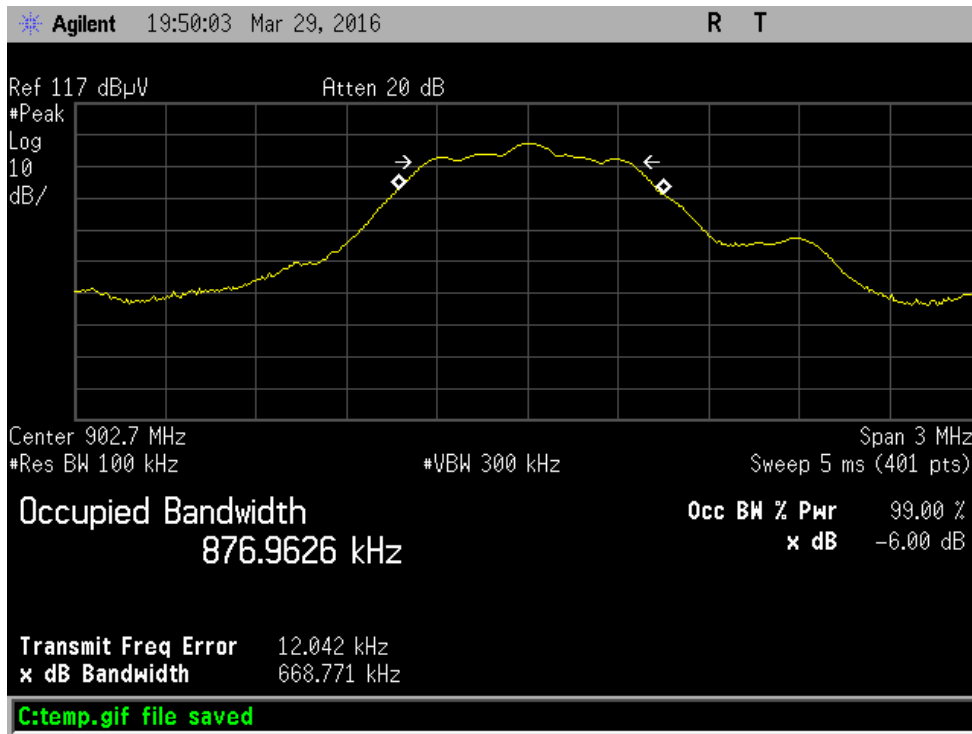
Rev. 3/28/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081		HTC-1	HDE	2081	II		4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1785	9kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016

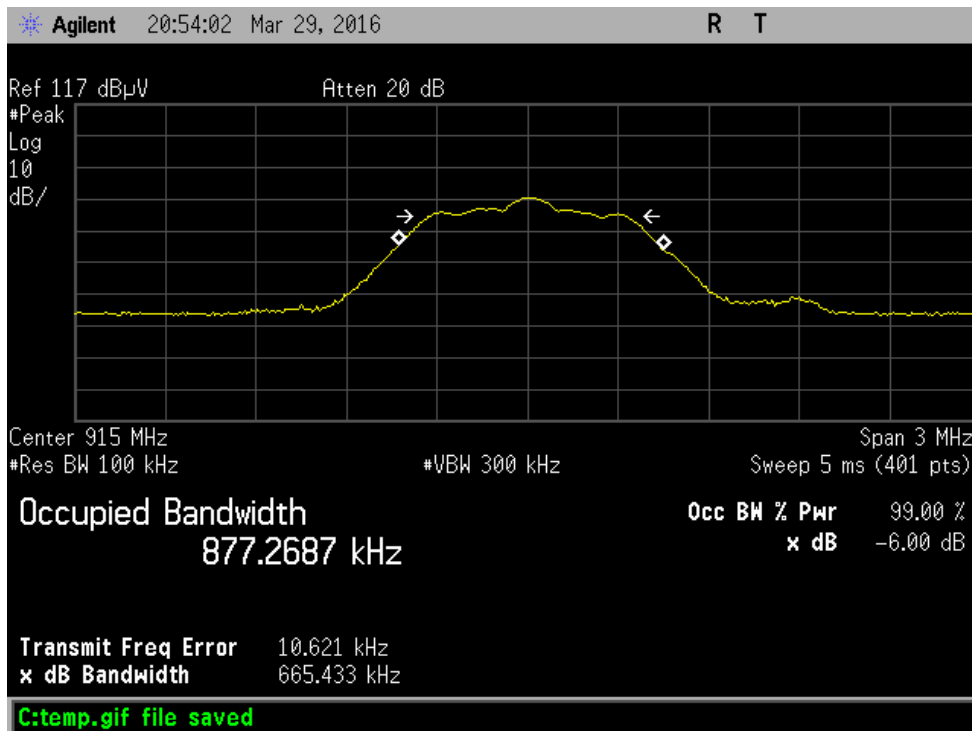
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



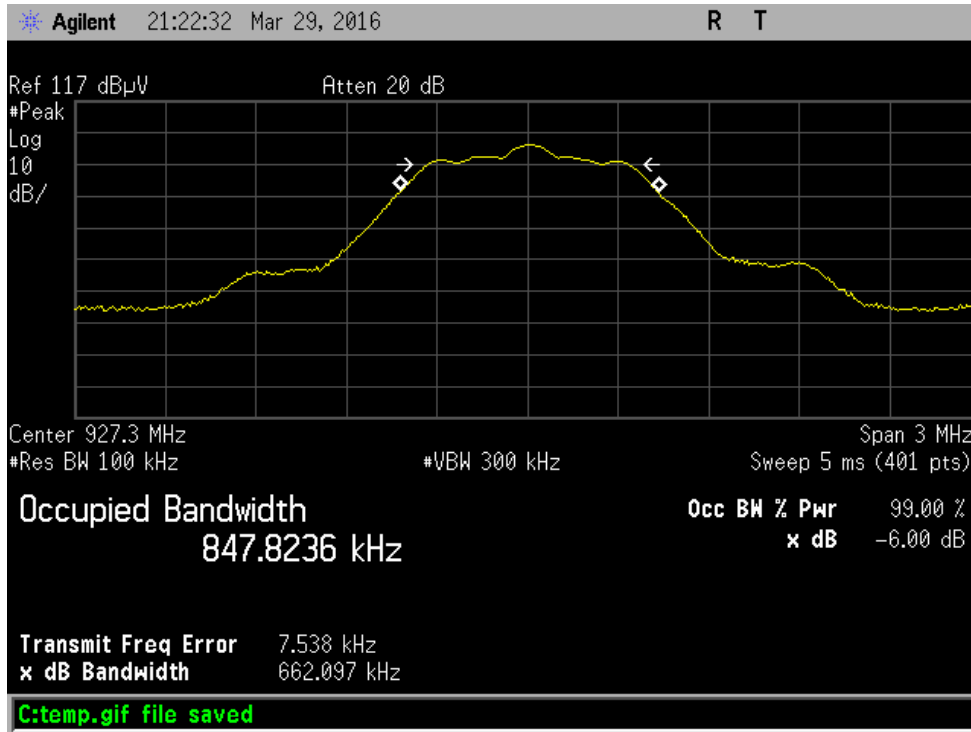
PLOT



Low Channel Bandwidth



Middle Channel Bandwidth



High Channel Bandwidth

Peak Power LIMIT

Radiated Output Power
1W (ERP) = 30dBm = 125.2dBµV/m @ 3m
[15.247(b) (3)]

MEASUREMENTS / RESULTS

Peak Output Power - Radiated												
Date: 31-Jul-17			Company: Ideal Industries, Inc.				Work Order: Q0716					
Engineer: Ahmed Ahmed			EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sensor				EUT Operating Voltage/Frequency: Battery					
Temp: 23°C			Humidity: 35%				Pressure: 1002mBar					
Frequency Range: 902-928MHz						Measurement Distance: 3 m						
Notes: POP, RBW=1MHz, VBW=3MHz, Span=3MHz, Sweep=AUTO, Attn=AUTO, Detector=Peak						EUT Max Freq: 927.3						
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	Adjusted ERP Reading (dBm)	Antenna Gain (dBi)	Final Conducted Reading (dBm)	FCC 15.247		
										Limit (dBm)	Margin (dB)	Result (Pass/Fail)
V, X axis	902.714	97.2	26.1	22.6	2.1	95.8	0.6	2.4	-1.8	30.0	-31.8	Pass
H, X axis	902.69	109.0	26.1	22.6	2.1	107.6	12.4	2.4	10.0	30.0	-20.0	Pass
V, Y axis	902.688	104.2	26.1	22.6	2.1	102.8	7.6	2.4	5.2	30.0	-24.8	Pass
H, Y axis	902.682	94.2	26.1	22.6	2.1	92.8	-2.4	2.4	-4.8	30.0	-34.8	Pass
V, Z axis	902.7	98.6	26.1	22.6	2.1	97.2	2.0	2.4	-0.4	30.0	-30.4	Pass
H, Z axis	902.685	108.7	26.1	22.6	2.1	107.3	12.1	2.4	9.7	30.0	-20.3	Pass
V, X axis	915.016	97.7	26.1	22.6	2.1	96.3	1.1	2.4	-1.3	30.0	-31.3	Pass
H, X axis	914.989	108.6	26.1	22.6	2.1	107.2	12.0	2.4	9.6	30.0	-20.4	Pass
V, Y axis	914.98	106.6	26.1	22.6	2.1	105.2	10.0	2.4	7.6	30.0	-22.4	Pass
H, Y axis	915.006	94.0	26.1	22.6	2.1	92.6	-2.6	2.4	-5.0	30.0	-35.0	Pass
V, Z axis	914.959	97.0	26.1	22.6	2.1	95.6	0.4	2.4	-2.0	30.0	-32.0	Pass
H, Z axis	914.974	108.1	26.1	22.6	2.1	106.7	11.5	2.4	9.1	30.0	-20.9	Pass
V, X axis	927.324	97.0	26.1	22.4	2.0	95.3	0.1	2.4	-2.3	30.0	-32.3	Pass
H, X axis	927.3	107.5	26.1	22.4	2.0	105.8	10.6	2.4	8.2	30.0	-21.8	Pass
H, Y axis	915.006	94.0	26.1	22.6	2.1	92.6	-2.6	2.4	-5.0	30.0	-35.0	Pass
V, Y axis	927.294	105.9	26.1	22.4	2.0	104.2	9.0	2.4	6.6	30.0	-23.4	Pass
V, Z axis	927.303	98.4	26.1	22.4	2.0	96.7	1.5	2.4	-0.9	30.0	-30.9	Pass
H, Z axis	927.291	107.4	26.1	22.4	2.0	105.7	10.5	2.4	8.1	30.0	-21.9	Pass
Table Result: Pass by -20.0 dB										Worst Freq: 902.69 MHz		
Test Site: EMI Chamber 1			Cable 1: Asset #2051				Cable 2: Asset #2054					
Analyzer: 2093 MXE			Preamp: Green				Antenna: Red White					
CSsoft Radiated Emissions Calculator v 1.017.158 Copyright Curtis-Straus LLC 2000												
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												

Rev. 8/9/2017

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	9/9/2017	8/9/2016
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
Preamps / Couplers / Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Green	0.009-2000MHz	ZFL-1000-LN	CS	N/A	802	II	9/19/2017	9/19/2016
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Meteorological Meters	Range	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	SN	Asset	Cat	Calibration Due	Calibrated on	
Asset #2051	9kHz - 18GHz	Florida RF			II	3/5/2018	3/5/2017	
Asset #2054	9kHz - 18GHz	Florida RF			II	10/30/2017	10/30/2016	

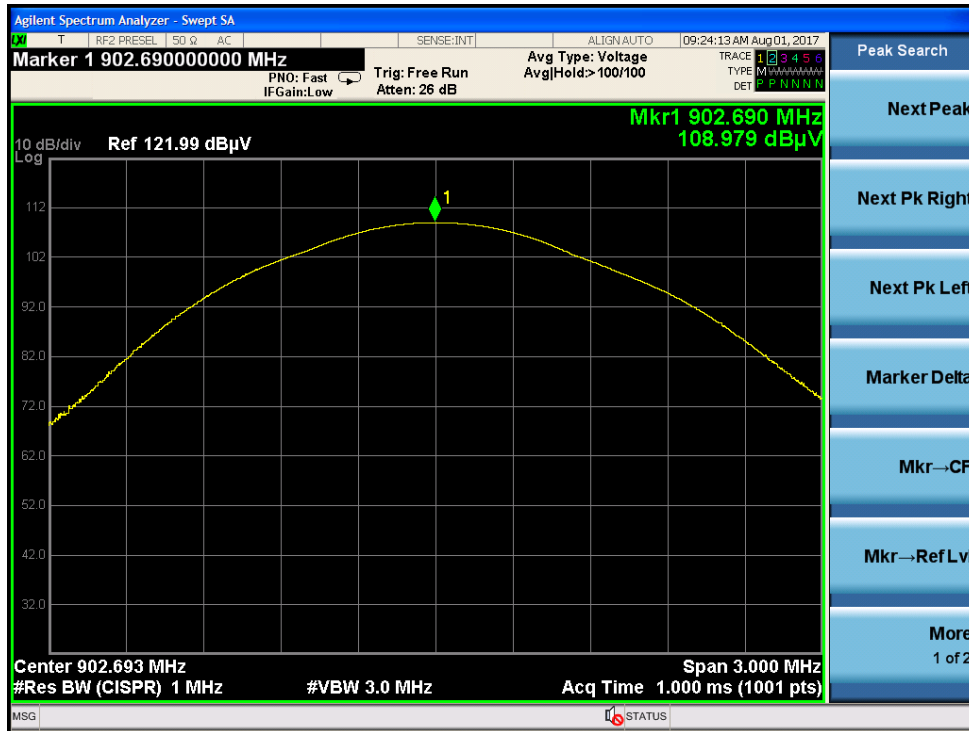
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



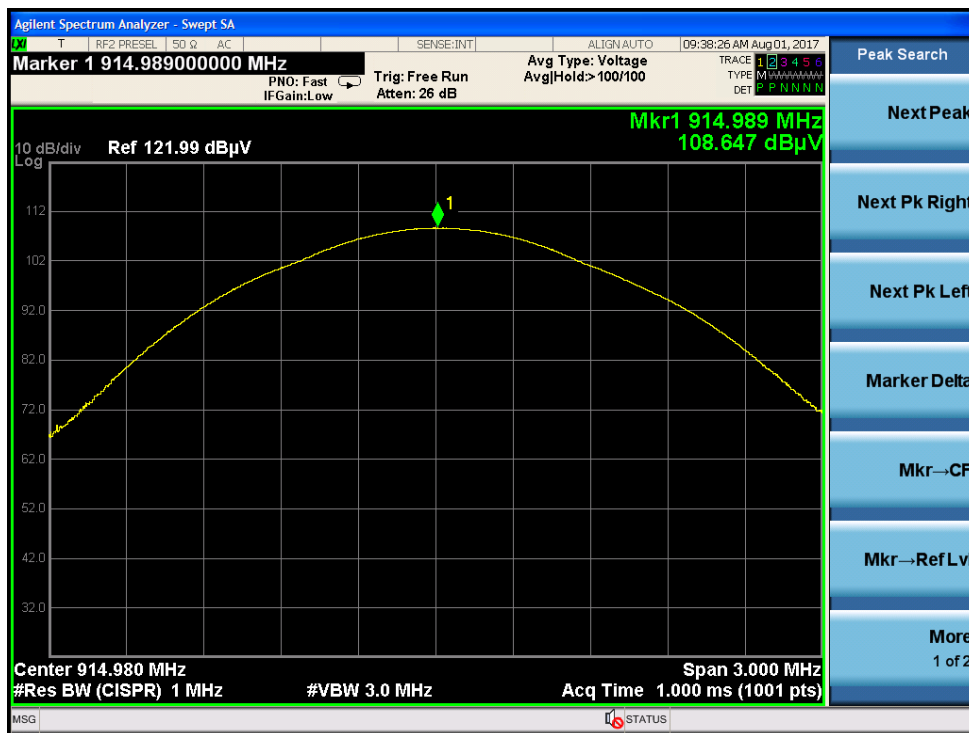
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PLOTS

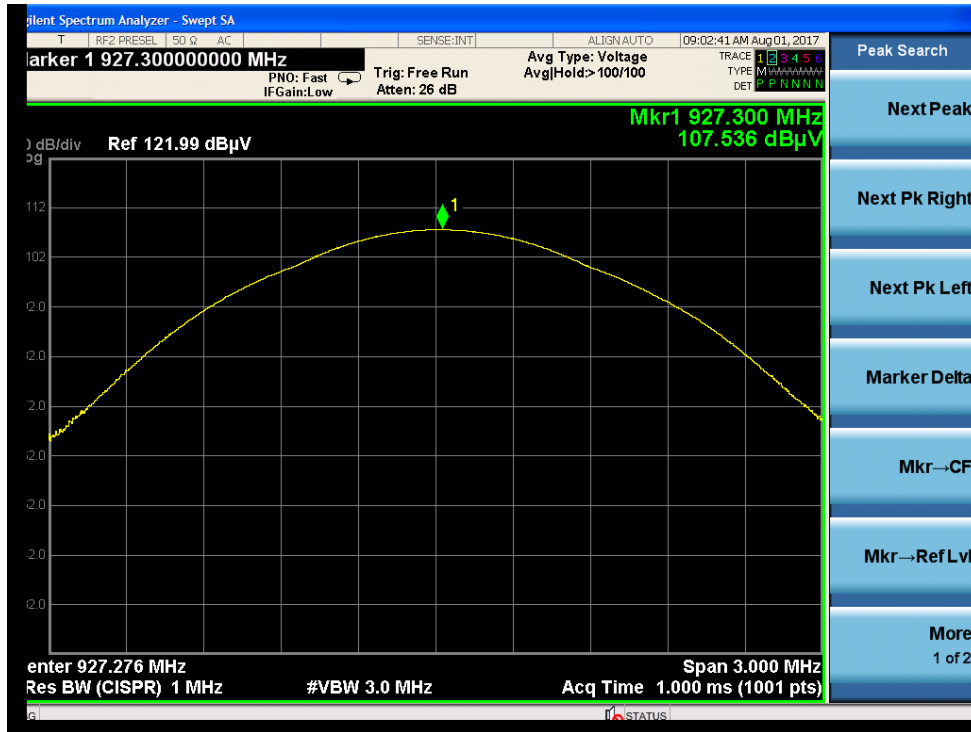


Low Channel Worst Case Peak Output Power



Middle Channel Worst Case Peak Output Power





High Channel Worst Case Peak Output Power



Band Edge Measurements

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

Band Edge - Radiated										
Date: 29-Mar-16		Company: Ideal Industries, Inc.				Work Order: Q0716				
Engineer: Jason Haley		EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sensor				EUT Operating Voltage/Frequency: Battery				
Temp: 22°C		Humidity: 26%		Pressure: 995mBar						
Frequency Range: 902-928MHz					Measurement Distance: 3 m					
Notes: Limit -30dBc below corresponding fundamental (low channel at 902.7MHz and high channel at 927.3MHz)										
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	Fundamental Level (dBµV/m)	FCC Class B		
								Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Horz, X-axis	902.0	69.5	25.0	22.6	2.0	69.1	104.0	74.0	-4.9	Pass
Horz, X-axis	928.0	66.6	24.9	22.7	2.1	66.5	104.1	74.1	-7.6	Pass
Table Result: Pass by -4.9 dB								Worst Freq: 902.0 MHz		
Test Site: EMI Chamber 2		Cable 1: Asset #2052		Cable 2: Asset #1785		Cable 3: --				
Analyzer: Gold		Preamp: Blue-Blk		Antenna: Red-Black		Preselector: --				
CSsoft Radiated Emissions Calculator v 1.017.158 Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor Rev. 3/28/2016 Copyright Curtis-Straus LLC 2000										

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
TH A#2081	HTC-1	HDE	2081	II	4/2/2016	4/2/2015		
Barometric A#2160	5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016	
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on			
Asset #1785	9kHz - 18GHz	Florida RF	II	1/5/2017	1/5/2016			
Asset #2052	9kHz - 18GHz	Florida RF	II	3/2/2017	3/2/2016			

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



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: 22-Mar-16			Company: Ideal Industries				Work Order: Q0716					
Engineer: Nirak So			EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sensor				EUT Operating Voltage/Frequency: Battery					
Temp: 22.7°C			Humidity: 27%				Pressure: 1003mBar					
Frequency Range: 30MHz - 1GHz							Measurement Distance: 3 m					
Notes: Worst Orientation: Y							EUT Max Freq: 927.3MHz					
Low (902.7MHz), Mid (915.0MHz), High (927.3MHz)												
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			FCC 15.247		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
High (927.3MHz)												
v	54.25	29.3	22.4	7.3	0.5	14.7				40.0	-25.3	Pass
v	90.6	37.0	22.5	7.9	0.7	23.1				43.5	-20.4	Pass
v	129.6	17.5	22.5	14.1	0.9	10.0				43.5	-33.5	Pass
v	466.5	27.3	22.5	17.3	1.5	23.6				46.0	-22.4	Pass
h	466.2	28.2	22.5	17.2	1.5	24.4				46.0	-21.6	Pass
Mid (915.0MHz)												
v	396.17	30.4	22.5	15.4	1.6	24.9				46.0	-21.1	Pass
v	466.5	27.7	22.5	17.3	1.5	24.0				46.0	-22.0	Pass
v	73.65	32.9	22.4	8.2	0.6	19.3				40.0	-20.7	Pass
v	51.85	29.5	22.4	7.8	0.5	15.4				40.0	-24.6	Pass
h	185.2	30.8	22.5	11.0	1.1	20.4				43.5	-23.1	Pass
h	253.0	27.3	22.6	11.6	1.2	17.5				46.0	-28.5	Pass
h	466.5	27.9	22.5	17.3	1.5	24.2				46.0	-21.8	Pass
Low (902.7MHz)												
h	185.2	32.4	22.5	11.0	1.1	22.0				43.5	-21.5	Pass
h	59.1	28.8	22.4	7.4	0.6	14.4				40.0	-25.6	Pass
h	105.175	28.1	22.5	11.5	0.8	17.9				43.5	-25.6	Pass
h	466.5	28.1	22.5	17.3	1.5	24.4				46.0	-21.6	Pass
v	129.425	34.9	22.5	14.1	0.9	27.4				43.5	-16.1	Pass
v	49.4	29.9	22.4	8.4	0.5	16.4				40.0	-23.6	Pass
v	93.05	29.9	22.5	8.5	0.7	16.6				43.5	-26.9	Pass
v	160.0	28.3	22.4	12.3	1.0	19.2				43.5	-24.3	Pass
Table Result: Pass by -16.1 dB							Worst Freq: 129.425 MHz					
Test Site: EMI Chamber 2			Cable 1: Asset #1785				Cable 2: Asset #2052			Cable 3: ---		
Analyzer: Rental SA#2			Preamp: Blue				Antenna: Red-Brown			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.158 Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												
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Rev. 3/8/2016

Spectrum Analyzers / Receivers /Preselectors SA #2 (1860)	Range 9kHz-26.5 GHz	MN E7405A	Mfr Agilent	SN MY45104916	Asset 1860	Cat I	Calibration Due 12/23/2016	Calibrated on 12/23/2015
Radiated Emissions Sites EMI Chamber 2	FCC Code 719150	IC Code 2762A-7	VCCI Code A-0015	Range 30-1000MHz	Cat II	Calibration Due 3/22/2017	Calibrated on 3/22/2015	
Preamps /Couplers Attenuators / Filters Blue	Range 0.009-2000MHz	MN ZFL-1000-LN	Mfr CS	SN N/A	Asset 759	Cat II	Calibration Due 5/17/2016	Calibrated on 5/17/2015
Antennas Red-Brown Bilog	Range 30-2000MHz	MN JB1	Mfr Sunol	SN A0032406	Asset 1218	Cat I	Calibration Due 12/4/2016	Calibrated on 12/4/2014
Meteorological Meters TH A#2081 Barometric A#2160	MN HTC-1 5396-0321	Mfr HDE Monarch Instruments	SN 4000060	Asset 2081 2160	Cat II I	Calibration Due 4/2/2016 3/7/2017	Calibrated on 4/2/2015 3/7/2016	
Cables Asset #1785 Asset #2052	Range 9kHz - 18GHz 9kHz - 18GHz	Mfr Florida RF Florida RF	Cat II II	Calibration Due 1/5/2017 3/2/2017	Calibrated on 1/5/2016 3/2/2016			

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

Radiated Emissions Table															
Date: 22-Mar-16				Company: Ideal Industries				Work Order: Q0716							
Engineer: YF				EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sensor				EUT Operating Voltage/Frequency: Battery							
Temp: 22.7°C				Humidity: 27%				Pressure: 1003mBar							
Frequency Range: 1GHz - 6GHz								Measurement Distance: 3 m							
Notes: Worst Orientation: Y Low (902.7MHz), Mid (915.0MHz), High (927.3MHz)								EUT Max Freq: 927.3MHz							
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBuV)	Average Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBuV/m)	Adjusted Avg Reading (dBuV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average			
									Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	
Low Channel															
H	1805.4	35.2	23.6	18.8	27.1	3.1	46.6	35.0	74.0	-27.4	Pass	54.0	-19.0	Pass	
V	1805.4	34.9	23.3	18.8	27.1	3.1	46.3	34.7	74.0	-27.7	Pass	54.0	-19.3	Pass	
H	2708.1	34.4	22.0	20.3	29.2	3.9	47.2	34.8	74.0	-26.8	Pass	54.0	-19.2	Pass	
V	2708.1	34.2	21.1	20.3	29.2	3.9	47.0	33.9	74.0	-27.0	Pass	54.0	-20.1	Pass	
H	3610.8	39.8	33.9	19.1	31.5	4.1	56.3	50.4	74.0	-17.7	Pass	54.0	-3.6	Pass	
V	3610.8	36.6	28.0	19.1	31.5	4.1	53.1	44.5	74.0	-20.9	Pass	54.0	-9.5	Pass	
Mid Channel															
H	1830.0	34.9	23.7	18.8	27.2	3.1	46.4	35.2	74.0	-27.6	Pass	54.0	-18.8	Pass	
V	1830.0	34.8	22.2	18.8	27.2	3.1	46.3	33.7	74.0	-27.7	Pass	54.0	-20.3	Pass	
H	2745.0	34.5	21.8	20.2	29.1	3.7	47.1	34.4	74.0	-26.9	Pass	54.0	-19.6	Pass	
V	2745.0	34.4	21.0	20.2	29.1	3.7	47.0	33.6	74.0	-27.0	Pass	54.0	-20.4	Pass	
H	3660.0	39.8	35.5	19.1	31.8	3.9	56.4	52.1	74.0	-17.6	Pass	54.0	-1.9	Pass	
V	3660.0	35.8	27.8	19.1	31.8	3.9	52.4	44.4	74.0	-21.6	Pass	54.0	-9.6	Pass	
High Channel															
H	1854.6	36.1	24.1	18.8	27.3	3.2	47.8	35.8	74.0	-26.2	Pass	54.0	-18.2	Pass	
V	1854.6	34.4	22.6	18.8	27.3	3.2	46.1	34.3	74.0	-27.9	Pass	54.0	-19.7	Pass	
H	2781.9	34.4	22.3	20.1	29.1	3.6	47.0	34.9	74.0	-27.0	Pass	54.0	-19.1	Pass	
V	2781.9	33.7	21.2	20.1	29.1	3.6	46.3	33.8	74.0	-27.7	Pass	54.0	-20.2	Pass	
H	3709.2	39.8	35.2	19.1	32.1	3.9	56.7	52.1	74.0	-17.3	Pass	54.0	-1.9	Pass	
V	3709.2	36.7	29.5	19.1	32.1	3.9	53.6	46.4	74.0	-20.4	Pass	54.0	-7.6	Pass	
Table Result: Pass by -1.9 dB Worst Freq: 3660.0 MHz															
Test Site: EMI Chamber 2				Cable 1: Asset #1785				Cable 2: Asset #2052				Cable 3: ---			
Analyzer: Rental SA#1				Preamp: Asset #1517				Antenna: Black Horn				Preselector: ---			
CSsoft Radiated Emissions Calculator v 1.017.158															
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															



Radiated Emissions Table														
Date: 22-Mar-16				Company: Ideal Industries				Work Order: Q0716						
Engineer: Nirak So				EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sensor				EUT Operating Voltage/Frequency: Battery						
Temp: 22.7°C				Humidity: 27%				Pressure: 1003mBar						
Frequency Range: 6GHz to 10GHz								Measurement Distance: 1 m						
Notes: Low (902.7MHz), Mid (915.0MHz), High (927.3MHz)												EUT Max Freq: 927.3MHz		
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 15.247 High Frequency - Peak			FCC 15.247 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
No emissions found														
Table Result: Pass by dB										Worst Freq: MHz				
Test Site: EMI Chamber 2				Cable 1: Asset #1785				Cable 2: Asset #2052				Cable 3: ---		
Analyzer: Rental SA#2				Preamp: Asset #1517				Antenna: Black Horn				Preselector: ---		
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														

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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	12/23/2016	12/23/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/17/2016	5/17/2015
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	12/4/2016	12/4/2014
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on			
Asset #1785	9kHz - 18GHz	Florida RF	II	1/5/2017	1/5/2016			
Asset #2052	9kHz - 18GHz	Florida RF	II	3/2/2017	3/2/2016			

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 3kHz band during any time interval of continuous transmission.
[15.247(e)]

MEASUREMENTS / RESULTS

Peak Power Spectral Density - Radiated												
Date: 29-Mar-16			Company: Ideal Industries, Inc.				Work Order: Q0716					
Engineer: Jason Haley			EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sensor				EUT Operating Voltage/Frequency: Battery					
Temp: 22°C			Humidity: 26%		Pressure: 995mBar							
Frequency Range: 902-928MHz						Measurement Distance: 3 m						
Notes: PSD, RBW=30kHz, VBW=100kHz, Span=1.5 x DTS BW, Sweep=AUTO, Attn=AUTO, Detector=Peak						EUT Max Freq: 927.3						
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	Adjusted Reading (dBm)	Antenna Gain (dBi)	Final Conducted Reading (dBm)	FCC 15.247		
										Limit (dBm)	Margin (dB)	Result (Pass/Fail)
Vert, X-axis	902.7	82.4	25.0	22.6	2.0	82.0	-13.2	2.4	-15.6	8.0	-23.6	Pass
Horz, X-axis	902.7	97.6	25.0	22.6	2.0	97.2	2.0	2.4	-0.4	8.0	-8.4	Pass
Vert, Y-axis	902.7	88.0	25.0	22.6	2.0	87.6	-7.6	2.4	-10.0	8.0	-18.0	Pass
Horz, Y-axis	902.7	97.9	25.0	22.6	2.0	97.5	2.3	2.4	-0.1	8.0	-8.1	Pass
Vert, Z-axis	902.7	96.0	25.0	22.6	2.0	95.6	0.4	2.4	-2.0	8.0	-10.0	Pass
Horz, Z-axis	902.7	81.1	25.0	22.6	2.0	80.7	-14.5	2.4	-16.9	8.0	-24.9	Pass
Vert, X-axis	915.0	87.1	25.0	22.7	2.0	86.8	-8.4	2.4	-10.8	8.0	-18.8	Pass
Horz, X-axis	915.0	97.8	25.0	22.7	2.0	97.5	2.3	2.4	-0.1	8.0	-8.1	Pass
Vert, Y-axis	915.0	82.3	25.0	22.7	2.0	82.0	-13.2	2.4	-15.6	8.0	-23.6	Pass
Horz, Y-axis	915.0	96.5	25.0	22.7	2.0	96.2	1.0	2.4	-1.4	8.0	-9.4	Pass
Vert, Z-axis	915.0	94.5	25.0	22.7	2.0	94.2	-1.0	2.4	-3.4	8.0	-11.4	Pass
Horz, Z-axis	915.0	81.2	25.0	22.7	2.0	80.9	-14.3	2.4	-16.7	8.0	-24.7	Pass
Vert, X-axis	927.3	84.9	24.9	22.7	2.1	84.8	-10.4	2.4	-12.8	8.0	-20.8	Pass
Horz, X-axis	927.3	97.1	24.9	22.7	2.1	97.0	1.8	2.4	-0.6	8.0	-8.6	Pass
Vert, Y-axis	927.3	86.2	24.9	22.7	2.1	86.1	-9.1	2.4	-11.5	8.0	-19.5	Pass
Horz, Y-axis	927.3	96.5	24.9	22.7	2.1	96.4	1.2	2.4	-1.2	8.0	-9.2	Pass
Vert, Z-axis	927.3	94.6	24.9	22.7	2.1	94.5	-0.7	2.4	-3.1	8.0	-11.1	Pass
Horz, Z-axis	927.3	82.4	24.9	22.7	2.1	82.3	-12.9	2.4	-15.3	8.0	-23.3	Pass

Table Result: Pass by -8.2 dB **Worst Freq:** 902.7 MHz

Test Site: EMI Chamber 2 Cable 1: Asset #2052 Cable 2: Asset #1785 Cable 3: ---
 Analyzer: Gold Preamp: Blue-Blk Antenna: Red-Black Preselector: ---
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 Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

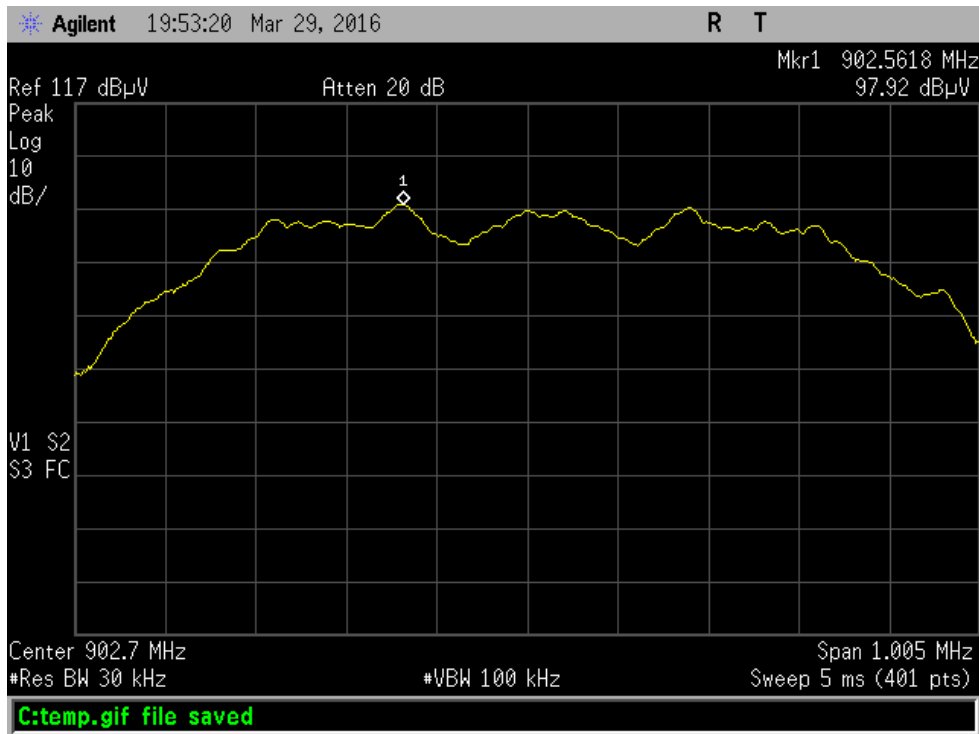
Rev. 3/28/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015	
Preamps / Couplers / Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
TH A#2081	HTC-1	HDE	2081	II	4/2/2016	4/2/2015		
Barometric A#2160	5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016	
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on			
Asset #1785	9kHz - 18GHz	Florida RF	II	1/5/2017	1/5/2016			
Asset #2052	9kHz - 18GHz	Florida RF	II	3/2/2017	3/2/2016			

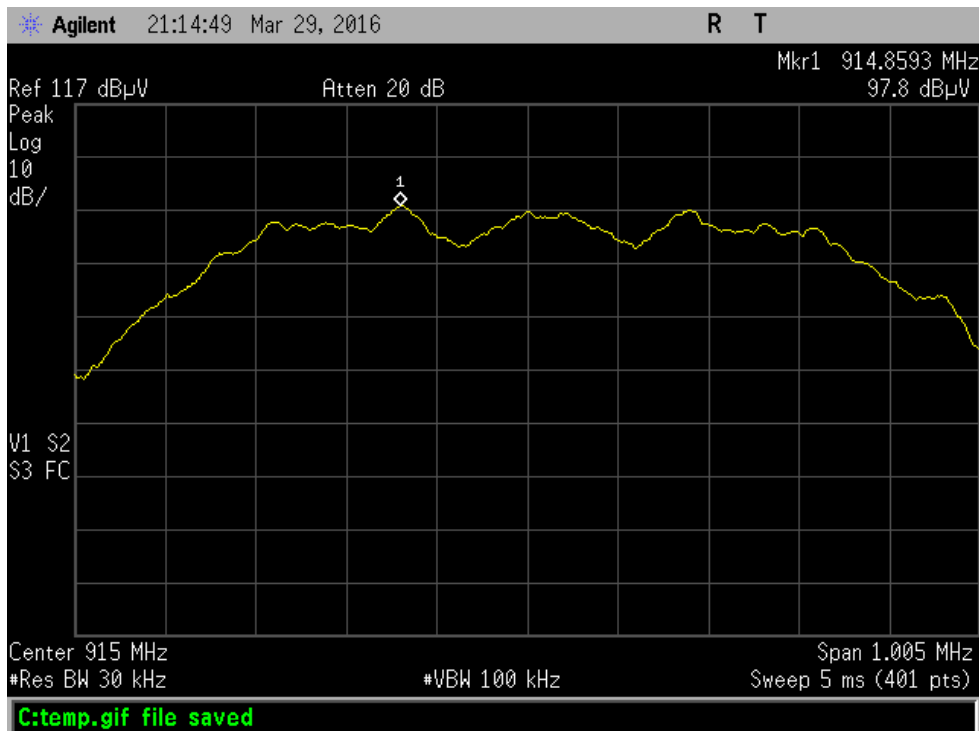
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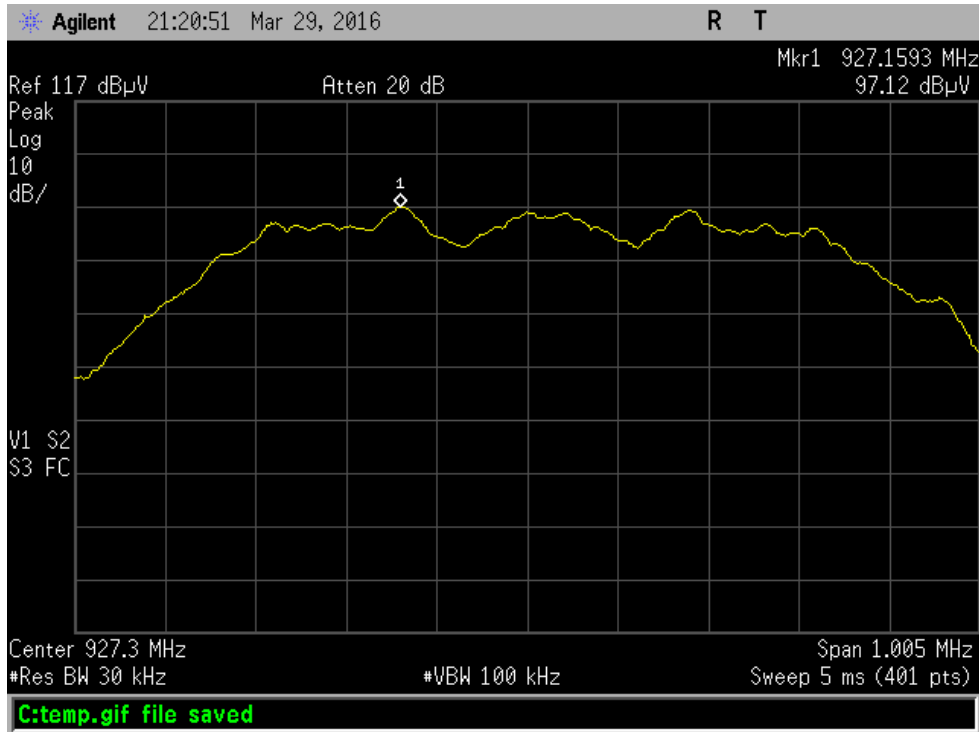


Low Channel PSD



Middle Channel PSD





High Channel PSD

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 Section 6.6]

MEASUREMENTS / RESULTS

99% Occupied Bandwidth - Radiated			
Date: 29-Mar-16	Company: Ideal Industries, Inc.	Work Order: Q0716	
Engineer: Jason Haley	EUT Desc: Extended Temperature Wall Mount Occupancy/Vacancy Sens	EUT Operating Voltage/Frequency: Battery	
Temp: 22°C	Humidity: 26%	Pressure: 995mBar	
Frequency Range: 902-928MHz		Measurement Distance: 3 m	
Notes: RBW=30kHz, VBW=100kHz, Span=3MHz, Sweep=AUTO, Attn=AUTO, Detector=Peak		EUT Max Freq: 927.3	
Antenna Polarization (H/V)	Frequency (MHz)	Occupied Bandwidth (kHz)	
Vert, X-axis	902.7	802.3	
Horz, X-axis	902.7	805.2	
Vert, Y-axis	902.7	810.7	
Horz, Y-axis	902.7	806.7	
Vert, Z-axis	902.7	805.5	
Horz, Z-axis	902.7	830.8	
Vert, X-axis	915.0	787.7	
Horz, X-axis	915.0	785.1	
Vert, Y-axis	915.0	800.1	
Horz, Y-axis	915.0	784.5	
Vert, Z-axis	915.0	784.1	
Horz, Z-axis	915.0	803.5	
Vert, X-axis	927.3	779.4	
Horz, X-axis	927.3	772.1	
Vert, Y-axis	927.3	778.9	
Horz, Y-axis	927.3	772.9	
Vert, Z-axis	927.3	771.7	
Horz, Z-axis	927.3	787.3	
Table Result: Complete			
Test Site: EMI Chamber 2	Cable 1: Asset #2052	Cable 2: Asset #1785	Cable 3: ---
Analyzer: Gold	Preamp: Blue-Blk	Antenna: Red-Black	Preselector: ---
CSsoft Radiated Emissions Calculator v 1.017.158		Copyright Curtis-Straus LLC 2000	
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor			

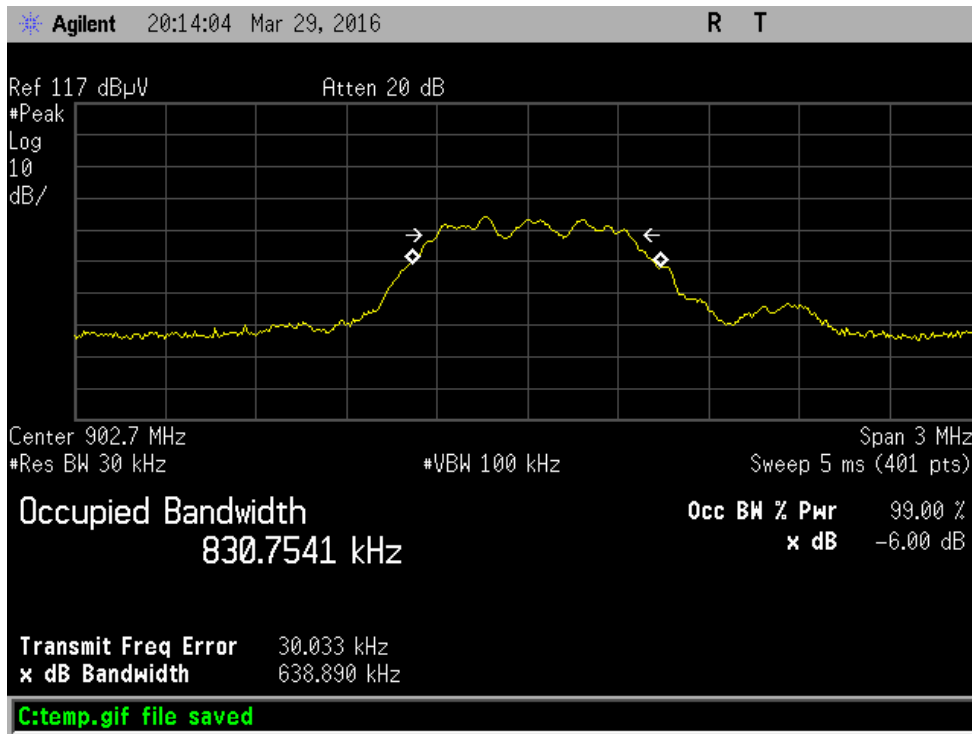
Rev. 3/28/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
TH A#2081	HTC-1	HDE	2081	II	4/2/2016	4/2/2015		
Barometric A#2160	5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016	
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on			
Asset #1785	9kHz - 18GHz	Florida RF	II	1/5/2017	1/5/2016			
Asset #2052	9kHz - 18GHz	Florida RF	II	3/2/2017	3/2/2016			

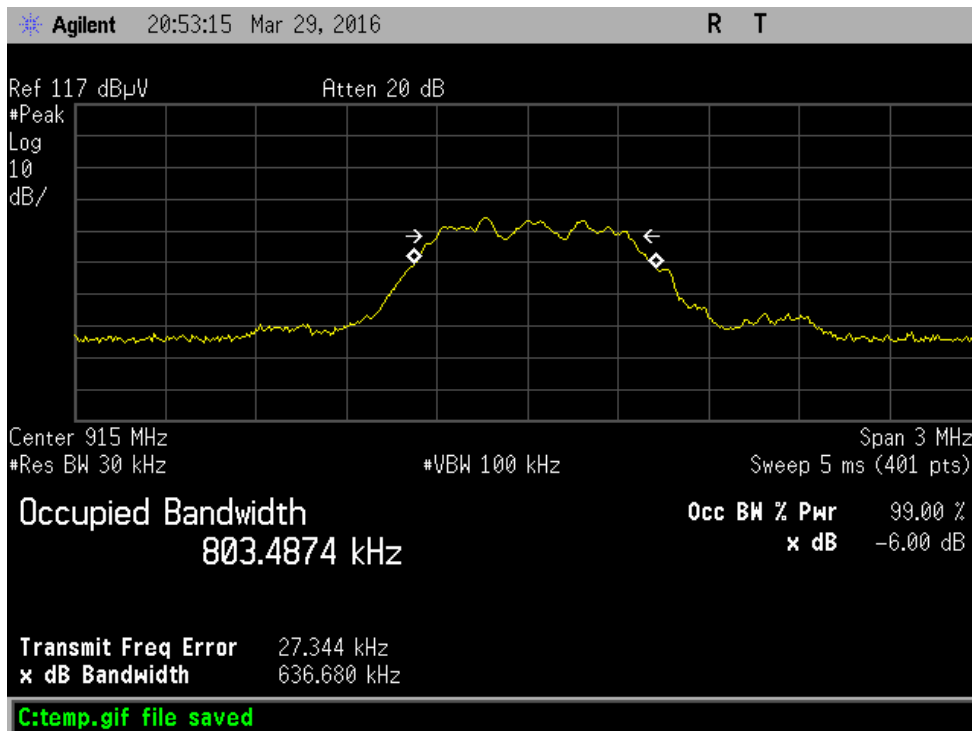
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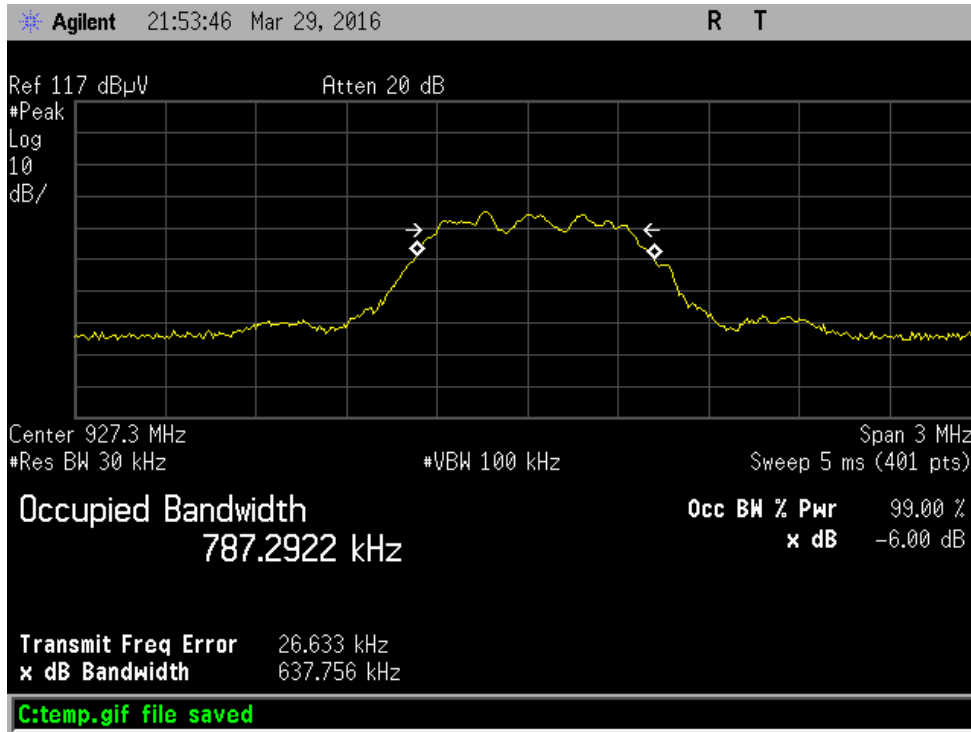
PLOTS



Low Channel OBW



Middle Channel OBW



High Channel OBW

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
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisprr)
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%
Adjacent channel power	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 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.



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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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