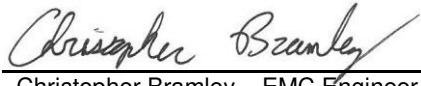
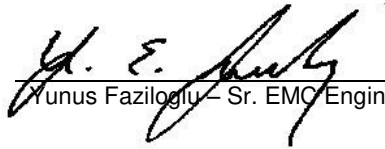




Test Report

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

Report No	EQ1779-1
Client	Ideal Industries, Inc.
Address	Becker Place Sycamore, IL 60178
Phone	(815) 895 - 1295
Items tested	ESCGRID1000
FCC ID	2AAMXESCGRID1000
IC ID	11250A-ESCGRID1000
FRN	0002862225
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	795KG1D
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 1
Test Dates	June 20, 23, 30, and July 1, 2016
Results	As detailed within this report
Prepared by	 Christopher Bramley – EMC Engineer
Authorized by	 Yunus Faziloglu – Sr. EMC Engineer
Issue Date	3/20/2017
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 28 of this report.

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



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



Summary

This test report supports an application for certification of a transmitter operating pursuant to:
CFR Title 47 FCC Part 15.247, ISSED Canada RSS-247 Issue 1

The product is the ESCGRID1000. It is a digitally modulated transmitter that operates in the
902.7-927.3MHz frequency range. Product has an internal PCB trace antenna with 3dBi gain.

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

Issue No.	Reason for change	Date Issued
1	Original Release	March 20, 2017

page 3 of 29



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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 its axes as well as varying the test antenna's height and polarity. AC line conducted emissions testing was performed with a 50 Ω /50 μ H LISN. AC side of the support AC/DC brick to the EUT was tested.

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

Low channel = 902.7MHz

Mid channel = 915MHz

High channel = 927.3MHz

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

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

Product Tested - Configuration Documentation

EUT Configuration										
Work Order:	Q1779									
Company:	Ideal Industries, Inc.									
Company Address:	Becker Place									
	Sycamore, IL 60178									
Contact:	Tim Tunnell									
	MN			PN			SN			
EUT:	ESCGRID1000									
EUT Description:	Smart Connector									
EUT TX Frequency:	902.7-927.3 MHz									
Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	in/out	under test	comment
24VDC power	DC Power	1	1	Power	No	No	0	In	yes	Direct contact with power rail
Load	DC Power	1	1	Power	No	No	1	Out	yes	
Software Operating Mode Description:										
The EUT is clipped on to the power rail that carries 24VDC. EUT provides a DC load output.										
For testing the EUT was configured to change between 3 channels by power cycling.										
Low channel: 902.7MHz, Mid Channel: 915MHz, High Channel: 927.3MHz. Direct sequence spread spectrum.										

BUREAU
VERITAS

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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	Product has an internal PCB trace antenna with 3dBi gain.
8.10			15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209 or RSS-Gen as applicable
8.8			15.207	EUT meets the AC Line conducted emissions requirements of this section.
			15.247	The unit complies with the requirements of 15.247
		RSS 247		The unit complies with the requirements of RSS-247
6.6				Occupied Bandwidth measurements were made.

Test Results**Bandwidth****LIMIT**

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

MEASUREMENTS / RESULTS

6dB Bandwidth			
Date: 20-Jun-16		Company: Ideal Industries, Inc.	Work Order: Q1779
Engineer: Yunus Faziloglu		EUT Desc: ESCGRID1000	EUT Operating Voltage/Frequency: 24VDC
Temp: 24.5°C		Humidity: 44%	Pressure: 1008mBar
Frequency Range: 902.7MHz - 927.3MHz			
Notes: Per FCC 558074 D01 DTS Meas Guidance v03r05 Section 8.2			
Frequency (MHz)	Measured DTS Bandwidth (kHz)	Minimum Limit (kHz)	Result
902.7	653.4	500.0	Pass
915.0	653.6	500.0	Pass
927.3	656.1	500.0	Pass

Rev. 6/8/2016

Spectrum Analyzers / Receivers / Preselectors

MXE EMI Receiver

Range
20Hz-26.5GHz**MN**
N9038A**Mfr**
Agilent**SN**
MY51210181**Asset**
2093**Cat**
I**Calibration Due**
7/21/2016**Calibrated on**
7/21/2015**Preamps / Couplers Attenuators / Filters**

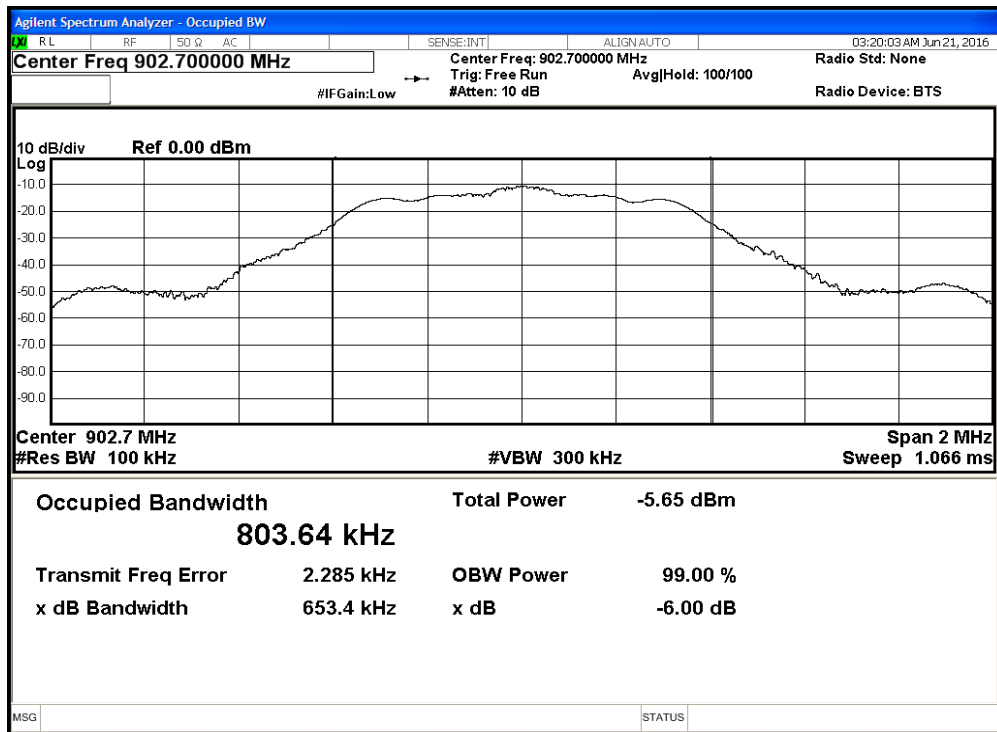
API - 30dB 20W Attenuator

Range
9KHz-40GHz**MN**
89-30-11**Mfr**
API Weinschel**SN**
703**Asset**
2121**Cat**
I**Calibration Due**
2/10/2017**Calibrated on**
2/10/2016**Meteorological Meters**Weather Clock (Pressure Only)
TH A#2082**MN**
BA928
HTC-1**Mfr**
Oregon Scientific
HDE**SN**
C3166-1**Asset**
831
2082**Cat**
I
II**Calibration Due**
4/28/2017
4/5/2017**Calibrated on**
4/28/2016
4/5/2016

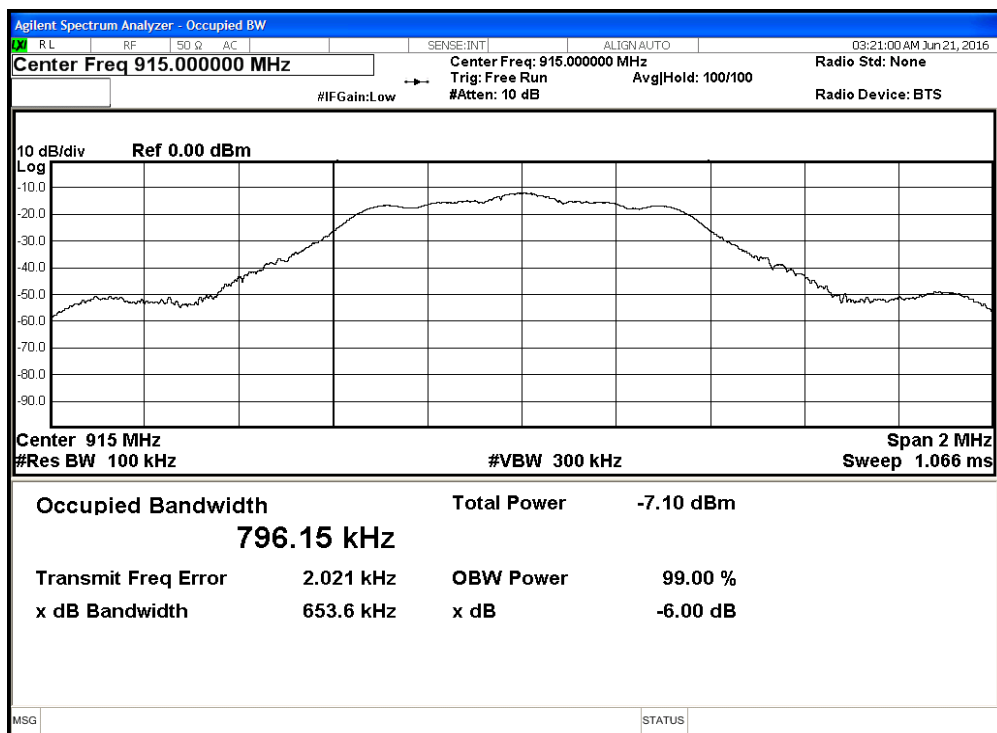
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



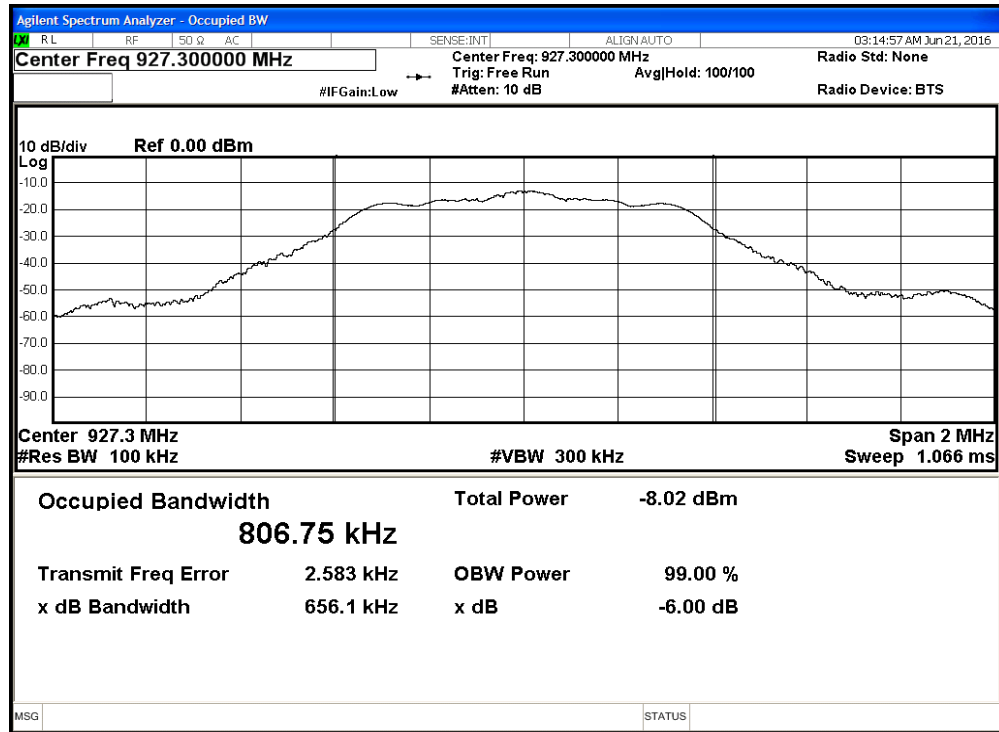
PLOT(s)



Low Channel – 6dB Bandwidth



Mid Channel – 6dB Bandwidth



High Channel – 6 dB Bandwidth

Fundamental Emission Output Power**LIMIT**

Conducted Output Power

1 Watt

[15.247(b) (3)]

MEASUREMENTS / RESULTS

Maximum Conducted Output Power						
Date: 20-Jun-16		Company: Ideal Industries, Inc.			Work Order: Q1779	
Engineer: Yunus Faziloglu		EUT Desc: ESCGRID1000		EUT Operating Voltage/Frequency: 24VDC		
Temp: 24.5°C		Humidity: 44%		Pressure: 1008mBar		
Frequency Range: 902.7MHz - 927.3MHz						
Notes: Per FCC 558074 D01 DTS Meas Guidance v03r05 Section 9.2.2.2 Method AVGSA-1						
Frequency (MHz)	Reading (dBm)	Attenuator Loss (dB)	Power (dBm)	Limit (dBm)	Margin (dB)	Result
902.7	-10.74	29.44	18.70	30.00	-11.3	Pass
915.0	-12.10	29.44	17.34	30.00	-12.66	Pass
927.3	-13.05	29.44	16.39	30.00	-13.61	Pass
Power(dBm) = Reading(dBm) + Attenuator Loss(dB)						

Power(dBm) = Reading(dBm) + Attenuator Loss(dB)

Rev. 6/8/2016

Spectrum Analyzers / Receivers / Preselectors

MXE EMI Receiver

Range
20Hz-26.5GHzMN
N9038AMfr
AgilentSN
MY51210181Asset
2093Cat
ICalibration Due
7/21/2016Calibrated on
7/21/2015**Preamps / Couplers Attenuators / Filters**

API - 30dB 20W Attenuator

Range
9KHz-40GHzMN
89-30-11Mfr
API WeinschelSN
703Asset
2121Cat
ICalibration Due
2/10/2017Calibrated on
2/10/2016**Meteorological Meters**Weather Clock (Pressure Only)
TH A#2082MN
BA928
HTC-1Mfr
Oregon Scientific
HDESN
C3166-1Asset
831
2082Cat
I
IICalibration Due
4/28/2017
4/5/2017Calibrated on
4/28/2016
4/5/2016

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

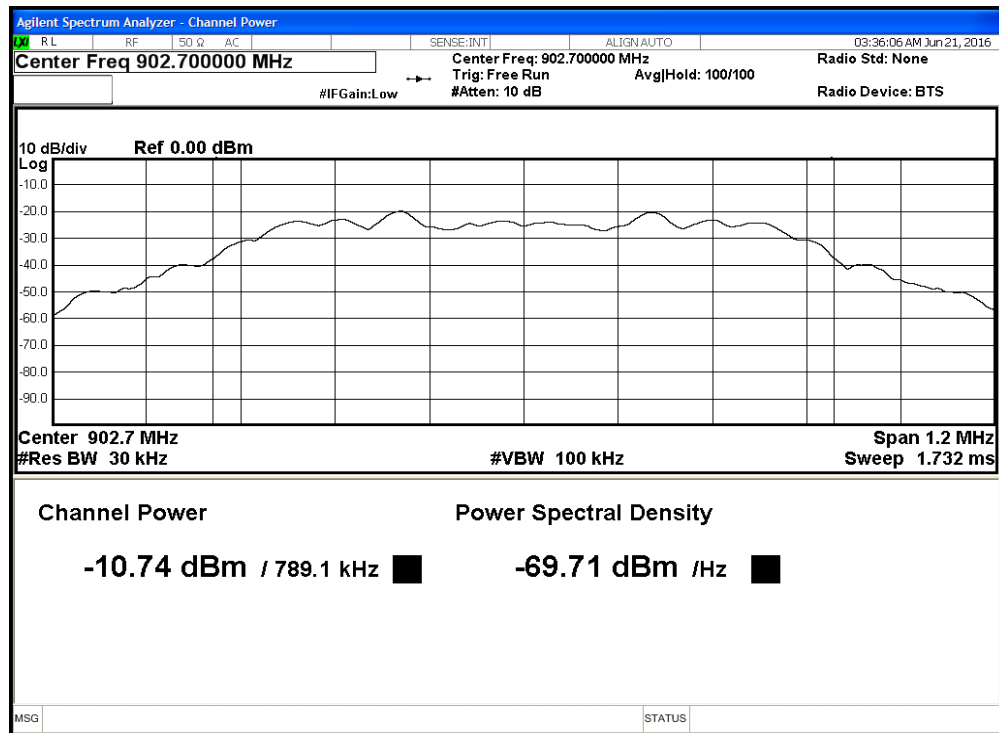


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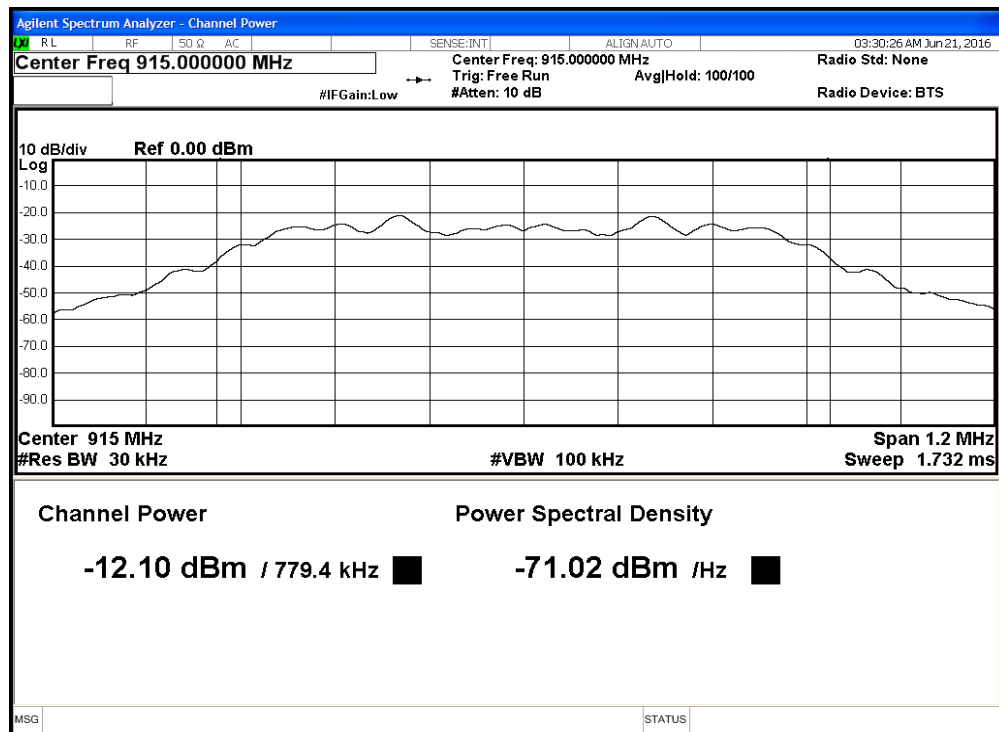
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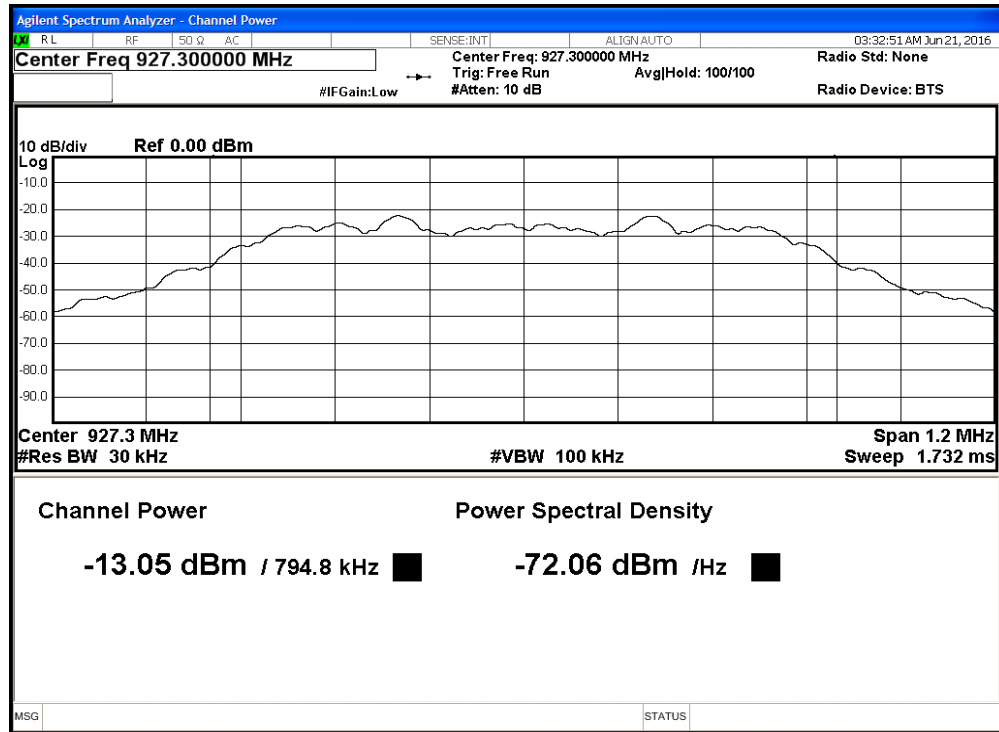
PLOTS



Low Channel – Channel Power



Mid Channel – Channel Power



High Channel – Channel Power

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: 30-Jun-16			Company: Ideal Industries, Inc.				Work Order: Q1779					
Engineer: Nirak So			EUT Desc: ESCGRID1000				EUT Operating Voltage/Frequency: 24VDC					
Temp: 25°C			Humidity: 40%				Pressure: 1007mBar					
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: Low channel and middle channel							EUT Tx Freq: 902.7-927.3MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)				FCC 15.209		
										Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
Low Channel 902.7MHz												
V	546.0	36.6	25.6	18.2	1.8	31.0				46.0	-15.0	Pass
V	439.0	32.4	25.7	16.7	1.5	24.9				46.0	-21.1	Pass
V	78.5	46.7	25.5	7.9	0.6	29.7				40.0	-10.3	Pass
V	163.375	42.8	25.5	12.1	1.0	30.4				43.5	-13.1	Pass
V	287.0	44.9	25.7	13.4	1.3	33.9				46.0	-12.1	Pass
V	30.5	33.5	25.5	21.0	0.4	29.4				40.0	-10.6	Pass
H	110.0	46.9	25.6	12.6	0.8	34.7				43.5	-8.8	Pass
Mid Channel 915MHz												
H	546.7	39.2	25.6	18.2	1.8	33.6				46.0	-12.4	Pass
H	284.0	46.5	25.7	13.4	1.3	35.5				46.0	-10.5	Pass
H	110.0	45.0	25.6	12.6	0.8	32.8				43.5	-10.7	Pass
V	78.5	43.6	25.5	7.9	0.6	26.6				40.0	-13.4	Pass
V	146.4	38.1	25.6	12.6	1.0	26.1				43.5	-17.4	Pass
V	545.0	37.5	25.6	18.2	1.8	31.9				46.0	-14.1	Pass
V	30.0	31.5	25.5	21.4	0.4	27.8				40.0	-12.2	Pass
Table Result: Pass by -8.8 dB Worst Freq: 110.0 MHz												
Test Site: EMI Chamber 1			Cable 1: Asset #2051				Cable 2: Asset #1784					
Analyzer: Gold			Preamp: Green				Antenna: Red-Brown					
CSsoft Radiated Emissions Calculator v 1.017.164												
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												
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Rev. 6/29/2016

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 1	719150	2762A-6	A-0015	30-1000MHz		II	3/21/2017	3/21/2015
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	9/17/2016	9/17/2015
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
Meteorological Meters		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#2080		HTC-1	HDE		2080	II	4/5/2017	4/5/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1784	9kHz - 18GHz		Florida RF			II	3/7/2017	3/7/2016
Asset #2051	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.



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Radiated Emissions Table

Date: 23-Jun-16			Company: Powercast Corporation					Work Order: Q1779				
Engineer: Jason Haley			EUT Desc: ESCGRID1000					EUT Operating Voltage/Frequency: 24VDC				
Temp: 22C			Humidity: 37%		Pressure: 1005mbar							
Frequency Range: 30-1000MHz							Measurement Distance: 3m					
Notes: High Channel (927.3MHz)							EUT Max Freq: 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 Class B		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	74.33	48.2	25.3	9.1	0.6	32.6	---	---	---	40.0	-7.4	Pass
V	112.4	43.3	25.2	13.2	0.8	32.1	---	---	---	43.5	-11.4	Pass
H	112.5	46.3	25.2	13.2	0.8	35.1	---	---	---	43.5	-8.4	Pass
Table Result: Pass by -7.4 dB Worst Freq: 74.33 MHz												
Test Site: EMI Chamber 2			Cable 1: Asset #1507				Cable 2: Asset #2052			Cable 3: ---		
Analyzer: Rental SA#5			Preamp: Blue-Blk				Antenna: Red-Black			Preselector: ---		
CSsoft Radiated Emissions Calculator				v 1.017.164								
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												
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Rev. 9/25/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	8/9/2017	8/9/2016
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
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
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
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1507	9kHz - 18GHz		Florida RF			II	2/14/2017	2/14/2016
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 Emissions Table

Date: 23-Jun-16			Company: Ideal Industries, Inc.						Work Order: Q1779					
Engineer: Jason Haley			EUT Desc: ESCGRID1000						EUT Operating Voltage/Frequency: 24VDC					
Temp: 22°C			Humidity: 37%						Pressure: 1005mBar					
Frequency Range: 1-6GHz									Measurement Distance: 3m					
Notes: 1854.6MHz, 1805.4MHz and 1830MHz frequencies are not in a restricted band, therefore limit was set to 30dB down from the corresponding fundamental field strength level.									EUT Tx Freq: 902.7-927.3MHz					
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 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
Vertical	1854.6	64.8	59.3	18.8	27.4	3.2	76.6	71.1	101.6	-25.0	Pass	81.6	-10.5	Pass
Vertical	2781.9	35.9	24.4	20.1	28.9	3.7	48.4	36.9	74.0	-25.6	Pass	54.0	-17.1	Pass
V, Noise Floor	3709.2	33.9	21.9	19.1	32.1	4.2	51.1	39.1	74.0	-22.9	Pass	54.0	-14.9	Pass
V, Noise Floor	4636.5	34.1	21.3	17.9	32.6	5.2	54.0	41.2	74.0	-20.0	Pass	54.0	-12.8	Pass
V, Noise Floor	5563.8	34.0	21.4	17.6	33.9	5.5	55.8	43.2	74.0	-18.2	Pass	54.0	-10.8	Pass
Horizontal	1854.6	65.6	60.2	18.8	27.4	3.2	77.4	72.0	101.6	-24.2	Pass	81.6	-9.6	Pass
Horizontal	2781.9	39.5	29.3	20.1	28.9	3.7	52.0	41.8	74.0	-22.0	Pass	54.0	-12.2	Pass
H, Noise Floor	3709.2	34.8	21.9	19.1	32.1	4.2	52.0	39.1	74.0	-22.0	Pass	54.0	-14.9	Pass
H, Noise Floor	4636.5	34.5	21.4	17.9	32.6	5.2	54.4	41.3	74.0	-19.6	Pass	54.0	-12.7	Pass
H, Noise Floor	5563.8	34.4	21.5	17.6	33.9	5.5	56.2	43.3	74.0	-17.8	Pass	54.0	-10.7	Pass
Horizontal	1805.4	50.7	46.1	18.8	27.2	3.2	62.3	57.7	103.9	-41.6	Pass	83.9	-26.2	Pass
H, Noise Floor	2708.1	35.2	21.8	20.3	28.8	3.6	47.3	33.9	74.0	-26.7	Pass	54.0	-20.1	Pass
H, Noise Floor	3610.8	34.7	22.1	19.1	31.5	4.5	51.6	39.0	74.0	-22.4	Pass	54.0	-15.0	Pass
H, Noise Floor	4513.5	32.5	21.2	17.9	32.4	5.0	52.0	40.7	74.0	-22.0	Pass	54.0	-13.3	Pass
H, Noise Floor	5416.2	32.2	20.8	17.6	33.9	5.5	54.0	42.6	74.0	-20.0	Pass	54.0	-11.4	Pass
Vertical	1805.4	47.1	40.2	18.8	27.2	3.2	58.7	51.8	103.9	-45.2	Pass	83.9	-32.1	Pass
V, Noise Floor	2708.1	34.2	21.8	20.3	28.8	3.6	46.3	33.9	74.0	-27.7	Pass	54.0	-20.1	Pass
V, Noise Floor	3610.8	34.0	22.0	19.1	31.5	4.5	50.9	38.9	74.0	-23.1	Pass	54.0	-15.1	Pass
V, Noise Floor	4513.5	33.1	21.2	17.9	32.4	5.0	52.6	40.7	74.0	-21.4	Pass	54.0	-13.3	Pass
V, Noise Floor	5416.2	32.9	20.9	17.6	33.9	5.5	54.7	42.7	74.0	-19.3	Pass	54.0	-11.3	Pass
Vertical	1830.0	51.0	45.2	18.8	27.3	3.2	62.7	56.9	103.9	-41.2	Pass	83.9	-27.0	Pass
V, Noise Floor	2745.0	34.8	21.6	20.2	28.8	3.7	47.1	33.9	74.0	-26.9	Pass	54.0	-20.1	Pass
V, Noise Floor	3660.0	33.9	22.0	19.1	31.9	4.3	51.0	39.1	74.0	-23.0	Pass	54.0	-14.9	Pass
V, Noise Floor	4575.0	33.9	21.2	17.9	32.5	5.1	53.6	40.9	74.0	-20.4	Pass	54.0	-13.1	Pass
V, Noise Floor	5490.0	33.5	21.3	17.6	33.9	5.5	55.3	43.1	74.0	-18.7	Pass	54.0	-10.9	Pass
Table Result: Pass									by 9.6 dB			Worst Freq: 1854.6 MHz		
Test Site: EMI Chamber 2			Cable 1: Asset #1507						Cable 2: Asset #2052					
Analyzer: Rental SA#5			Preamp: Asset #1517						Antenna: Orange Horn					
CSsoft Radiated Emissions Calculator v 1.017.164														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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BUREAU
VERITAS

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Radiated Emissions Table

Date: 23-Jun-16		Company: Ideal Industries, Inc.				Work Order: Q1779								
Engineer: Jason Haley		EUT Desc: ESCGRID1000				EUT Operating Voltage/Frequency: 24Vdc								
Temp: 22°C		Humidity: 37%				Pressure: 1005mBar								
Frequency Range: 6-10GHz						Measurement Distance: 1m								
Notes:						EUT Tx Freq: 902.7-927.3MHz								
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 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
V, Noise floor	6405.0	32.4	20.8	17.3	34.9	6.1	56.1	44.5	83.5	-27.4	Pass	63.5	-19.0	Pass
V, Noise floor	7320.0	32.0	20.7	17.0	37.6	6.7	59.3	48.0	83.5	-24.2	Pass	63.5	-15.5	Pass
V, Noise floor	8235.0	33.1	21.1	17.4	37.5	6.7	59.9	47.9	83.5	-23.6	Pass	63.5	-15.6	Pass
V, Noise floor	9150.0	34.2	21.6	17.2	37.8	7.1	61.9	49.3	83.5	-21.6	Pass	63.5	-14.2	Pass
H, noise floor	6405.0	32.6	20.8	17.3	34.9	6.1	56.3	44.5	83.5	-27.2	Pass	63.5	-19.0	Pass
H, noise floor	7320.0	33.5	20.8	17.0	37.6	6.7	60.8	48.1	83.5	-22.7	Pass	63.5	-15.4	Pass
H, noise floor	8235.0	33.0	21.0	17.4	37.5	6.7	59.8	47.8	83.5	-23.7	Pass	63.5	-15.7	Pass
H, noise floor	9150.0	33.1	21.7	17.2	37.8	7.1	60.8	49.4	83.5	-22.7	Pass	63.5	-14.1	Pass
H, noise floor	6318.9	31.8	20.8	17.2	35.0	6.0	55.6	44.6	83.5	-27.9	Pass	63.5	-18.9	Pass
H, noise floor	7221.6	33.2	21.7	16.6	37.1	6.6	60.3	48.8	83.5	-23.2	Pass	63.5	-14.7	Pass
H, noise floor	8124.3	31.9	21.1	16.9	37.4	6.7	59.1	48.3	83.5	-24.4	Pass	63.5	-15.2	Pass
H, noise floor	9027.0	32.9	21.2	17.2	37.9	7.1	60.7	49.0	83.5	-22.8	Pass	63.5	-14.5	Pass
V, Noise floor	6318.9	31.8	20.8	17.2	35.0	6.0	55.6	44.6	83.5	-27.9	Pass	63.5	-18.9	Pass
Vertical	7221.6	34.6	25.0	16.6	37.1	6.6	61.7	52.1	83.5	-21.8	Pass	63.5	-11.4	Pass
V, Noise floor	8124.3	33.4	21.2	16.9	37.4	6.7	60.6	48.4	83.5	-22.9	Pass	63.5	-15.1	Pass
V, Noise floor	9027.0	32.4	21.2	17.2	37.9	7.1	60.2	49.0	83.5	-23.3	Pass	63.5	-14.5	Pass
V, Noise floor	6491.1	31.7	21.0	17.4	34.9	6.2	55.4	44.7	83.5	-28.1	Pass	63.5	-18.8	Pass
Vertical	7418.4	36.2	28.8	17.2	37.5	6.7	63.2	55.8	83.5	-20.3	Pass	63.5	-7.7	Pass
V, Noise floor	8345.7	32.1	20.9	17.5	37.7	6.7	59.0	47.8	83.5	-24.5	Pass	63.5	-15.7	Pass
V, Noise floor	9273.0	33.3	21.1	17.3	37.9	7.1	61.0	48.8	83.5	-22.5	Pass	63.5	-14.7	Pass
H, noise floor	6491.1	32.3	20.9	17.4	34.9	6.2	56.0	44.6	83.5	-27.5	Pass	63.5	-18.9	Pass
H, noise floor	7418.4	33.1	21.0	17.2	37.5	6.7	60.1	48.0	83.5	-23.4	Pass	63.5	-15.5	Pass
H, noise floor	8345.7	31.4	20.9	17.5	37.7	6.7	58.3	47.8	83.5	-25.2	Pass	63.5	-15.7	Pass
H, noise floor	9273.0	32.6	21.1	17.3	37.9	7.1	60.3	48.8	83.5	-23.2	Pass	63.5	-14.7	Pass
Table Result:		Pass		by		-7.7 dB		Worst Freq:		7418.4 MHz				
Test Site: EMI Chamber 2		Cable 1: Asset #1507		Cable 2: Asset #2052										
Analyzer: Rental SA#5		Preamp: Asset #1517		Antenna: Orange Horn										
CSsoft Radiated Emissions Calculator v 1.017.164														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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Rev. 9/25/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	8/9/2017	8/9/2016
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
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/14/2017	8/14/2016
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Orange Horn	1-18GHz	3115	EMCO	0004-6123	390	I	10/13/2016	10/13/2014
Meteorological Meters		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#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1507	9kHz - 18GHz		Florida RF			II	2/14/2017	2/14/2016
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.



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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 ...

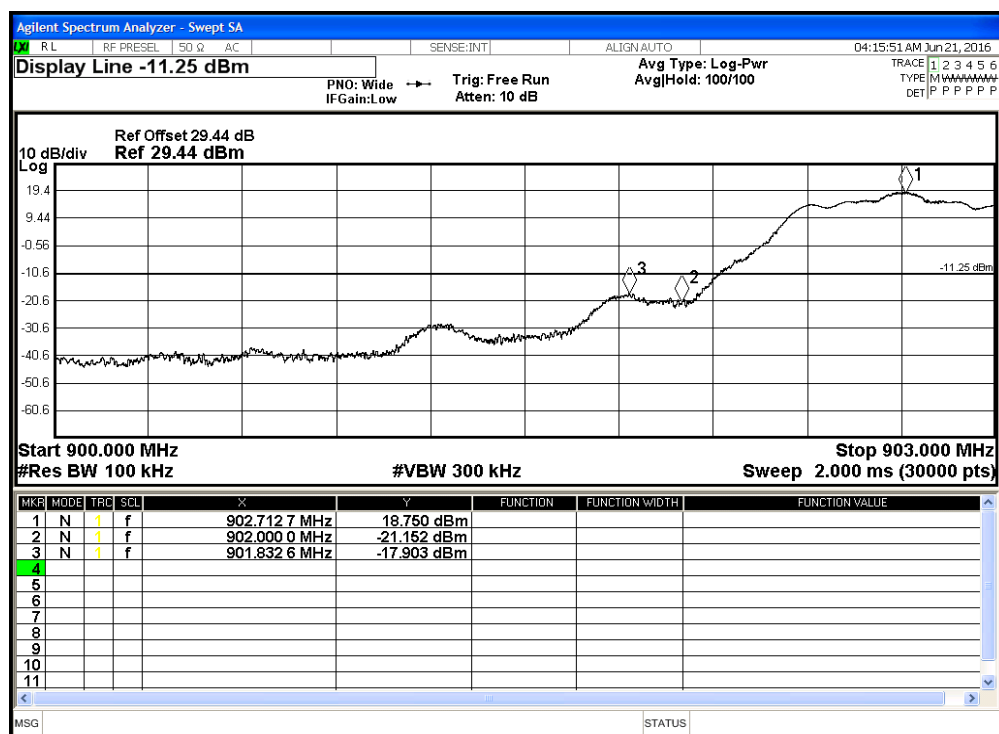
[15.247(d)]

MEASUREMENTS / RESULTS

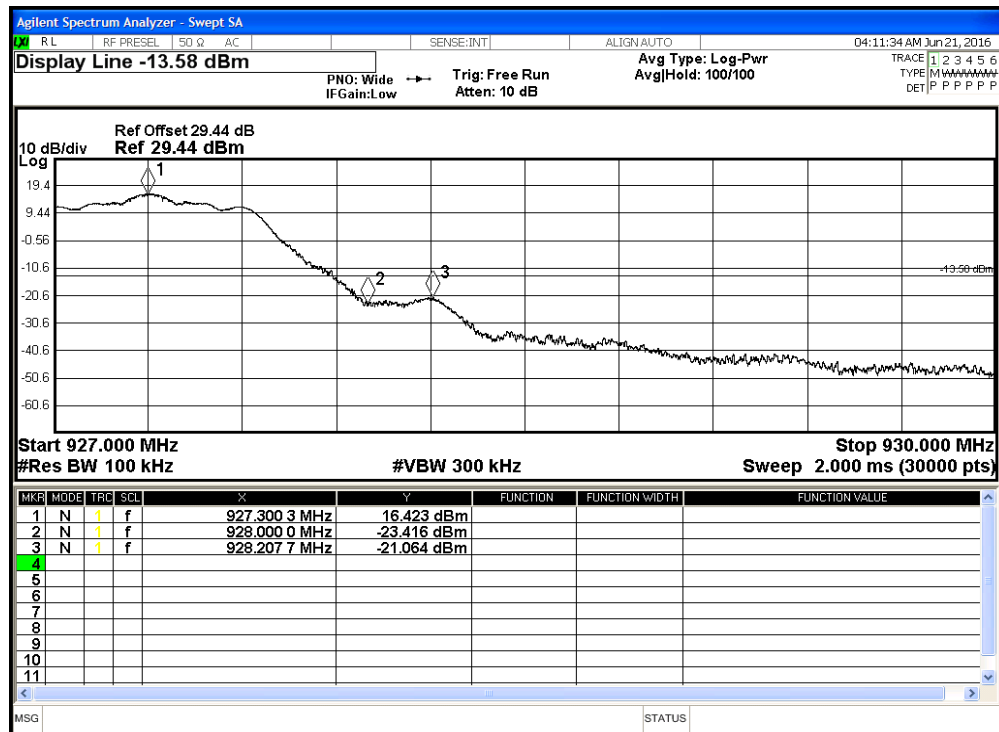
Engineer	Yunus Faziloglu
Date	June 20, 2016
Site	Wireless Test Room
Environmental Conditions	24.5°C, 44%, 1008mBar

Conducted Band Edge

Plot(s)



Lowest Channel Bandedge



Highest Channel Bandedge

Rev. 6/8/2016

Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver		20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	7/21/2016	7/21/2015
Preamps/Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
API - 30dB 20W Attenuator		9KHz-40GHz	89-30-11	PI Weinsche	703	2121	I	2/10/2017	2/10/2016
Meteorological Meters			MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)			BA928	egon Scienti	C3166-1	831	I	4/28/2017	4/28/2016
TH A#2082			HTC-1	HDE		2082	II	4/5/2017	4/5/2016

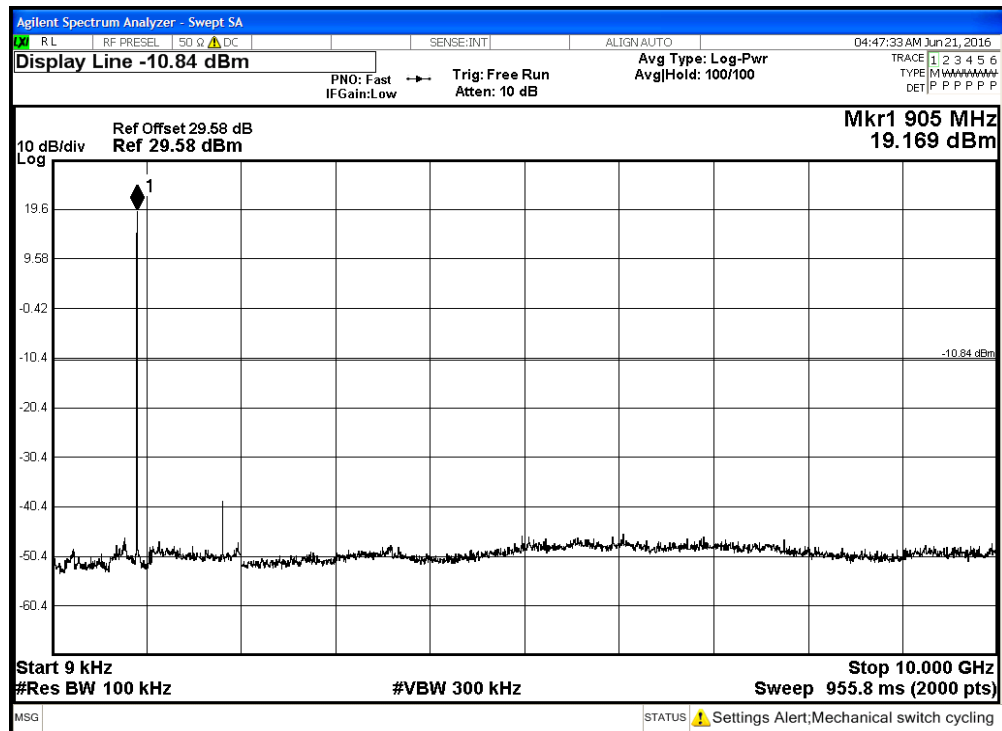
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



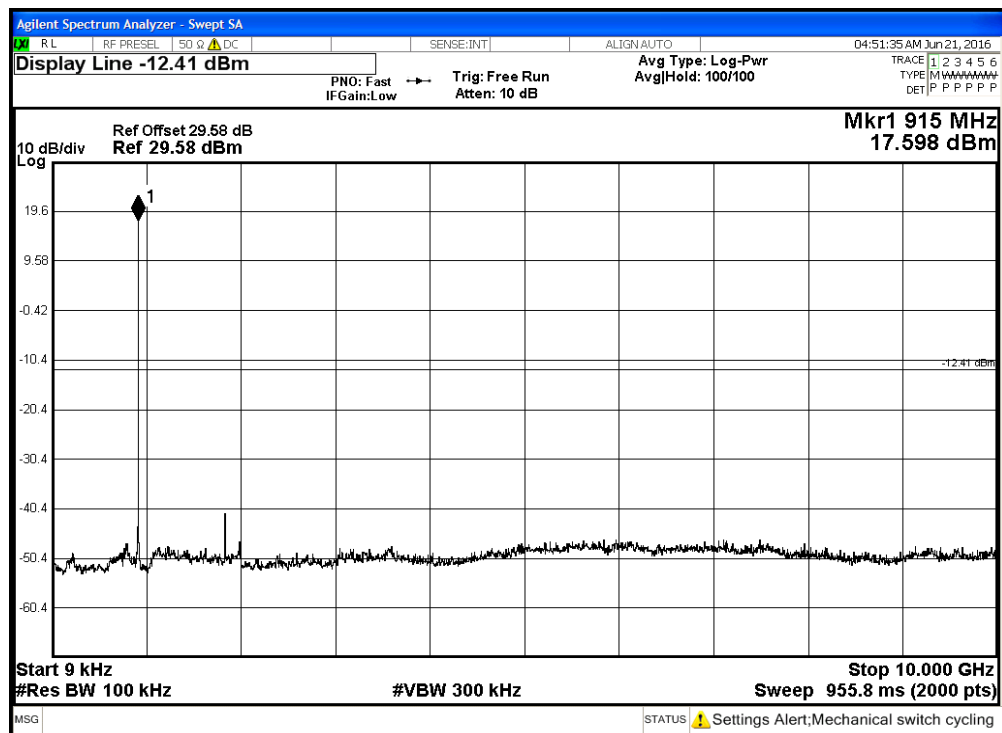
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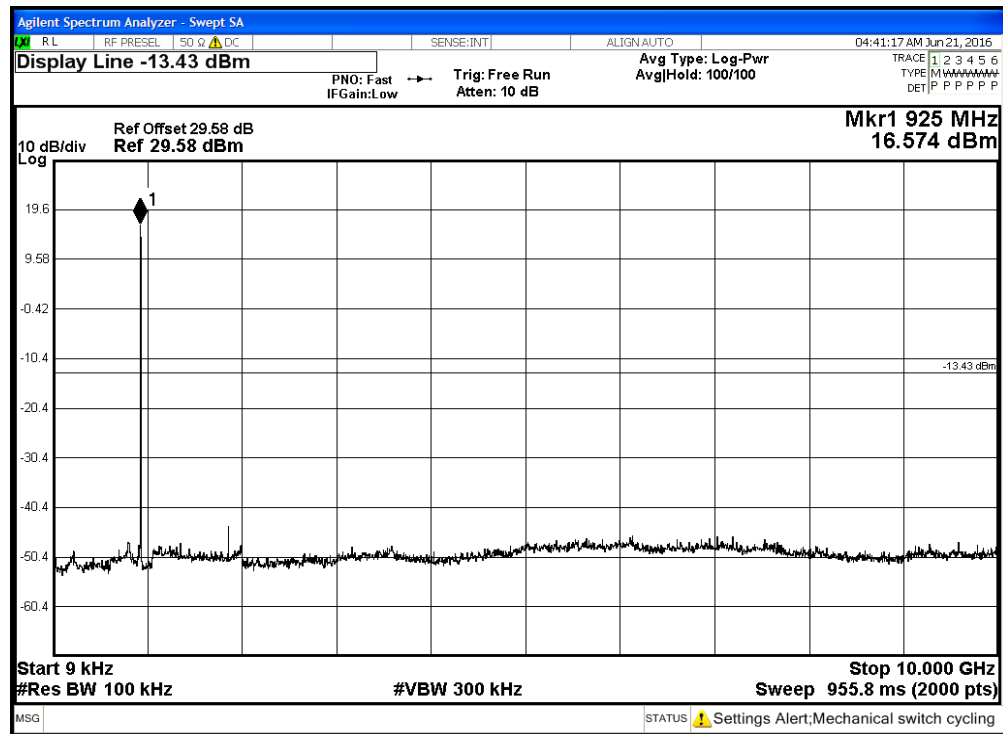
Conducted Spurious Emission



Conducted Spurious – Low



Conducted Spurious – Mid



Conducted Spurious - High

Conducted spurious emissions within 9kHz-10GHz frequency range were measured at the antenna port on 3 channels. No emissions observed within 30dB of the fundamental.

Rev. 6/8/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	7/21/2016	7/21/2015
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	PI Weinsche	703	2121	I	2/10/2017	2/10/2016
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	egon Scienti	C3166-1	831	I	4/28/2017	4/28/2016
TH A#2082		HTC-1	HDE		2082	II	4/5/2017	4/5/2016

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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 (Conducted)						
Date: 20-Jun-16		Company: Ideal Industries, Inc.			Work Order: Q1779	
Engineer: Yunus Faziloglu		EUT Desc: ESCGRID1000			EUT Operating Voltage/Frequency: 24VDC	
Temp: 24.5°C		Humidity: 44%		Pressure: 1008mBar		
Frequency Range: 902.7MHz - 927.3MHz						
Notes: Per FCC 558074 D01 DTS Meas Guidance v03r05 Section 10.3 Method AVGPSPD-1						
Frequency (MHz)	Reading (dBm)	Attenuator Loss (dB)	PSD (dBm)	Limit (dBm)	Margin (dB)	Result
902.7	-22.499	29.44	6.941	8.00	-1.059	Pass
915.0	-23.503	29.44	5.937	8.00	-2.063	Pass
927.3	-24.224	29.44	5.216	8.00	-2.784	Pass
PSD(dBm) = Reading(dBm) + Attenuator Loss(dB)						

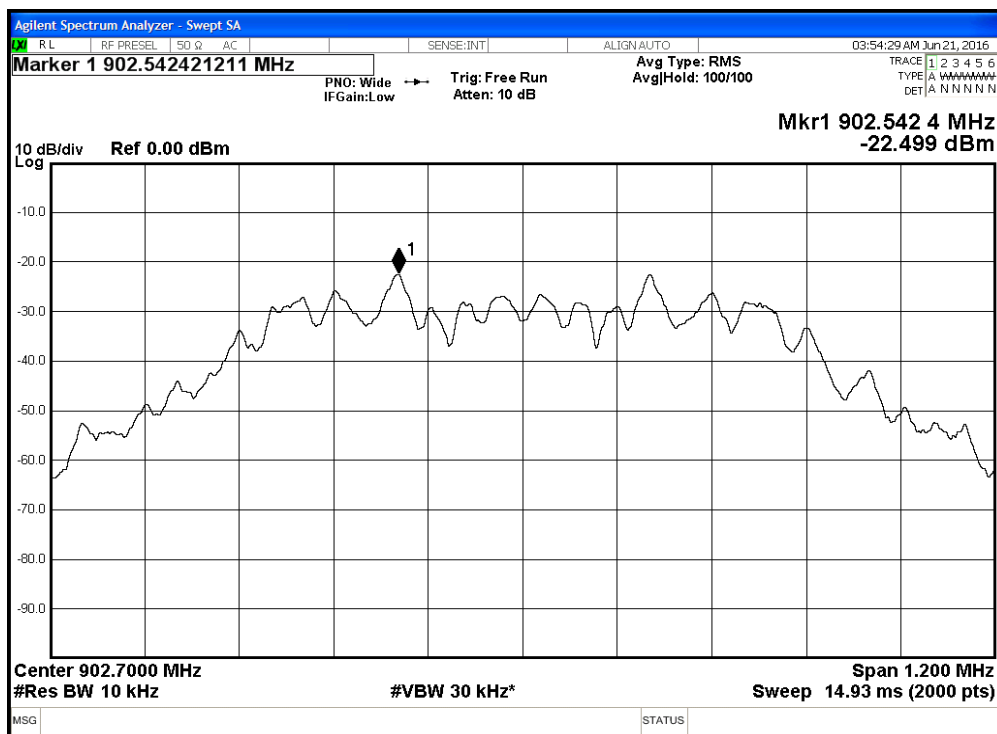
Rev. 6/8/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	7/21/2016	7/21/2015
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	I	2/10/2017	2/10/2016
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2017	4/28/2016
TH A#2082		HTC-1	HDE		2082	II	4/5/2017	4/5/2016

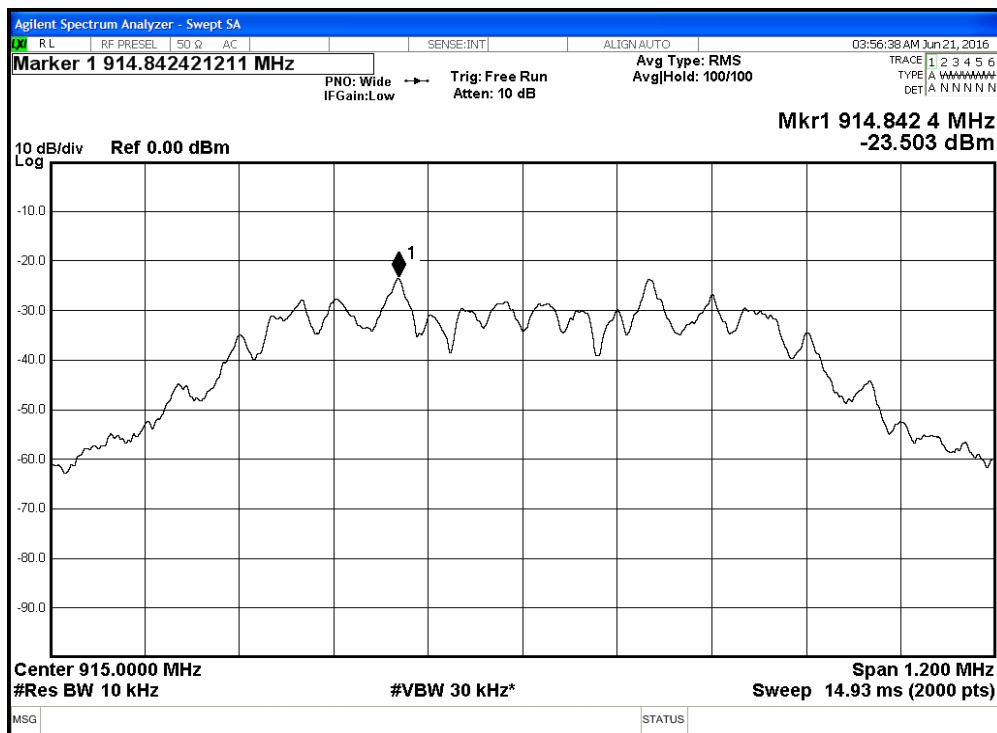
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



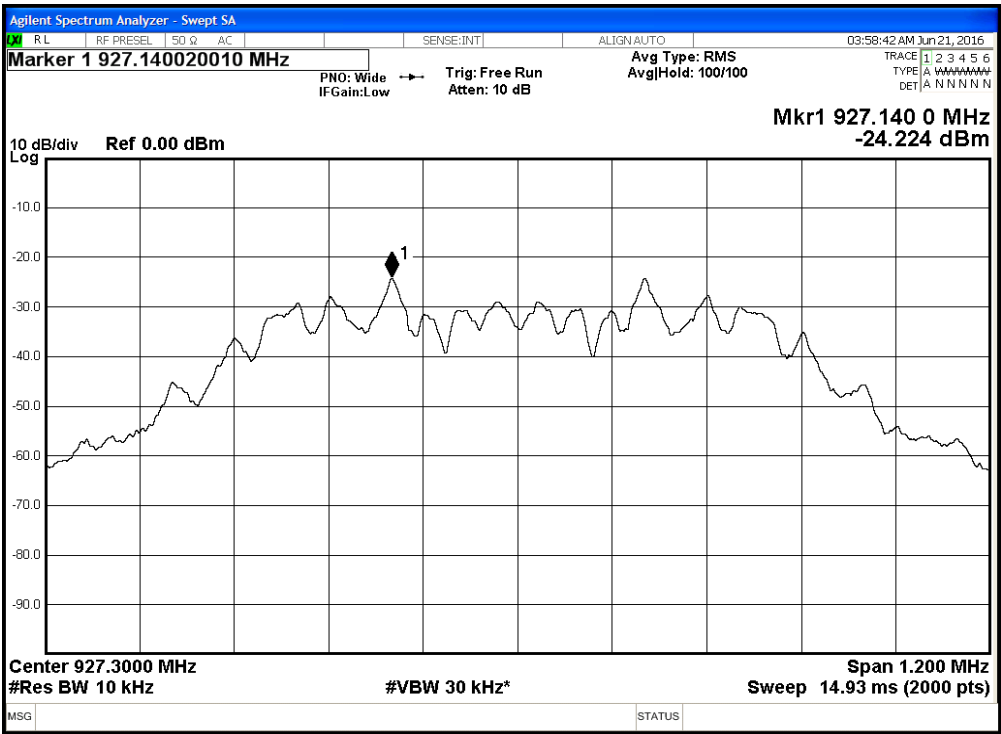
PLOTS



Channel Low – PSD



Channel Mid – PSD



Channel High – PSD

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 side of DC Power Supply -- Conducted Emissions Data Table														
Date: 01-Jul-16					Company: Ideal Industries, Inc.					Work Order: Q1779				
Engineer: Fatou Faye					EUT Desc: ESCGRID1000									
Temp: 24.1 °C					Humidity: 46%					Pressure: 1007 mBar				
Notes: Tested the AC side of 24VDC power supply														
Frequency Range: 0.15-30MHzEUT Input Voltage/Frequency: 120Vac/60Hz														
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	FCC 15.207			FCC 15.207		
	OP1 (dBμV)	OP2 (dBμV)	AVG1 (dBμV)	AVG2 (dBμV)	L1 (dB)	L2 (dB)			OP Limit (dBμV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBμV)	Margin (dB)	Result (Pass/Fail)
0.15	26.1	25.9	15.9	16.7	-0.1	-0.1	-0.1	-20.4	66.0	-19.3	Pass	56.0	-18.7	Pass
0.19	21.5	20.6	14.9	15.7	-0.1	-0.1	-0.1	-20.4	64.2	-22.1	Pass	54.2	-17.9	Pass
0.31	20.4	20.9	17.8	18.2	0.0	-0.1	-0.1	-20.4	60.0	-18.6	Pass	50.0	-11.3	Pass
0.44	11.9	11.6	7.9	7.5	0.0	0.0	-0.1	-20.4	57.0	-24.6	Pass	47.0	-18.6	Pass
0.76	11.3	11.1	6.9	6.9	0.0	0.0	-0.1	-20.4	56.0	-24.1	Pass	46.0	-18.5	Pass
1.05	10.4	10.1	6.3	5.6	0.0	0.0	-0.1	-20.4	56.0	-25.1	Pass	46.0	-19.2	Pass
Result: Pass					Worst Margin: -11.3 dB					Frequency: 0.308 MHz				
Measurement Device: LISN ASSET 1727(Line 1) LISN ASSET 1726(Line 2)					Cable: CEMI-02					Spectrum Analyzer: 1327				
					Attenuator: 20dB Attenuator-64					Site: CEMI 1				
C-S CEMI Calculator Version 3.0.14														
Adjusted Reading = Raw Reading + LISN Insertion Loss + Cable Loss + Attenuation														
Equipment Factor Sheet rev: 5/11/2016														

Rev. 9/25/2016

Spectrum Analyzers / Receivers / Preselectors

SA EMI Chamber (1327)

Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	8/4/2017	8/4/2016

LISNs/Measurement Probes

LISN Asset 1726
LISN Asset 1727

Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
150kHz-30MHz	LI-150A	Com-Power	201092	1726	I	2/4/2017	2/4/2016
150kHz-30MHz	LI-150A	Com-Power	201093	1727	I	2/4/2017	2/4/2016

Conducted Test Sites (Mains / Telco)

CEMI 1

FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on
719150	A-0015	III	NA	N/A

Meteorological Meters

Weather Clock (Pressure Only)
TH A#2084

MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
HTC-1	HDE		2084	II	4/5/2017	4/5/2016

Cables

CEMI-02

Range	Mfr	Cat	Calibration Due	Calibrated on
9kHz - 2GHz	C-S	II	4/10/2017	4/10/2016

Attenuators

20dB Attenuator-64

Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
9kHz-2GHz			N/A		II	11/15/2016	11/15/2015

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Occupied Bandwidth

REQUIREMENT

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

[RSS-GEN 6.6]

MEASUREMENTS / RESULTS

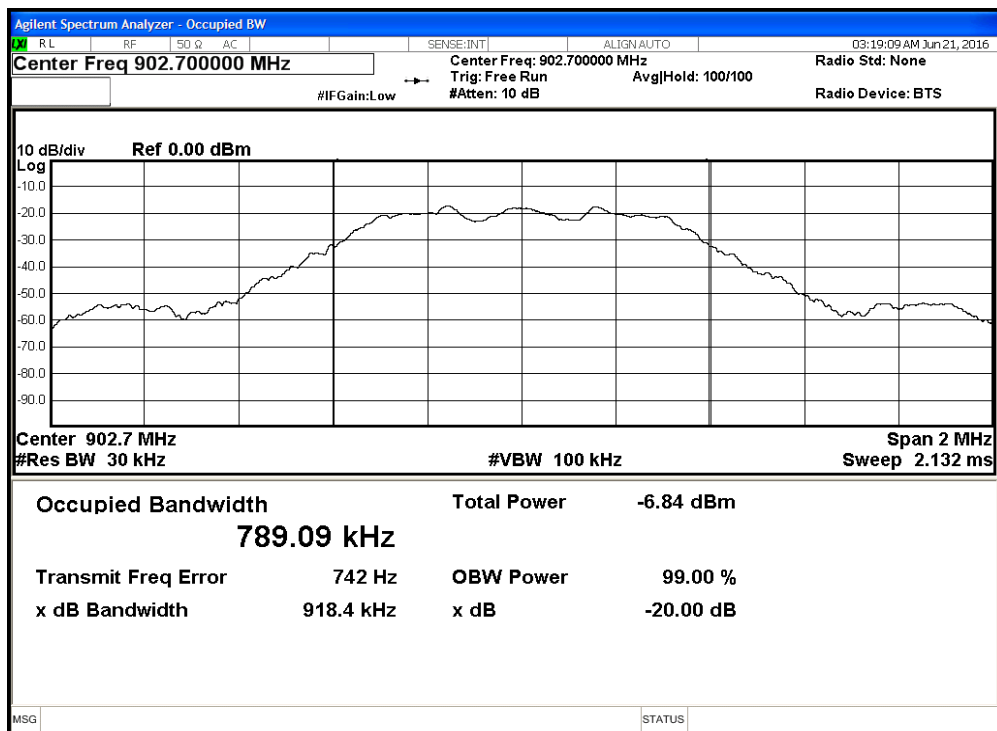
99% Occupied Bandwidth		
Date: 20-Jun-16	Company: Ideal Industries, Inc.	Work Order: Q1779
Engineer: Yunus Faziloglu	EUT Desc: ESCGRID1000	EUT Operating Voltage/Frequency: 24VDC
Temp: 24.5°C	Humidity: 44%	Pressure: 1008mBar
Frequency Range: 902.7MHz - 927.3MHz		
Notes: Per RSS-Gen Section 6.6		
Frequency (MHz)	Occupied Bandwidth (kHz)	
902.7	789.09	
915.0	779.40	
927.3	794.78	

Rev. 6/8/2016

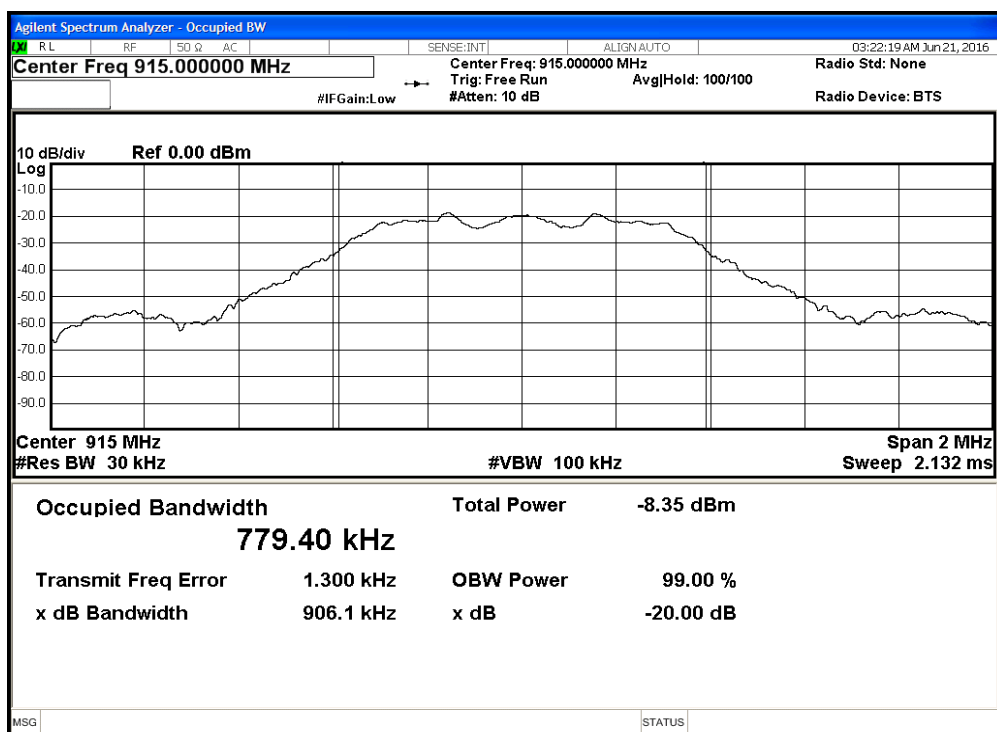
Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver		20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	7/21/2016	7/21/2015
Preamps/Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
API - 30dB 20W Attenuator		9KHz-40GHz	89-30-11	PI Weinsche	703	2121	I	2/10/2017	2/10/2016
Meteorological Meters			MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)			BA928	egon Scienti	C3166-1	831	I	4/28/2017	4/28/2016
TH A#2082			HTC-1	HDE		2082	II	4/5/2017	4/5/2016

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

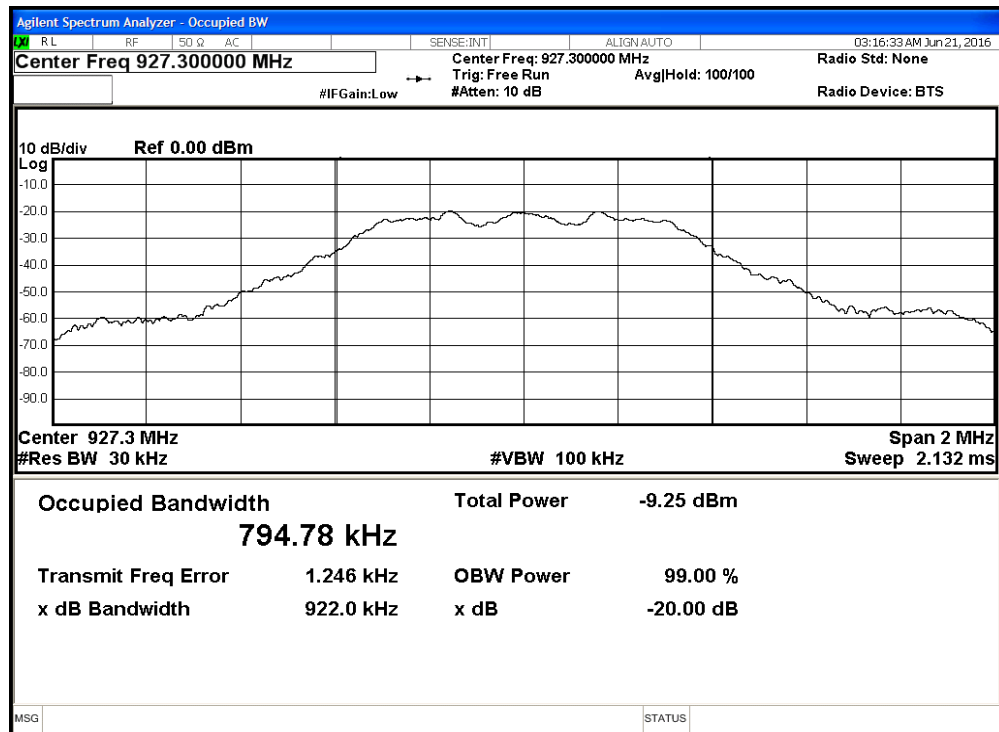
Plot(s)



Low Channel – Occupied Bandwidth



Mid Channel – Occupied Bandwidth



High Channel – Occupied Bandwidth

Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz)	5.6dB	N/A
NIST	4.6dB	5.2dB (Ucisprr)
CISPR		
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (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%
	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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