
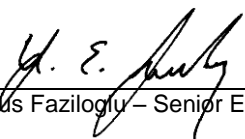




# Test Report

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

Report No	EQ0290-1
Client	Ideal Industries, Inc.
Address	Becker Place Sycamore, IL 60178
Phone	815-895-1295
Items tested	RPS2000
FCC ID	2AAMXRPS2000
IC ID	11250A-RPS2000
FRN	0002862225
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	769KG1D
FCC/IC Rule Parts	47 CFR 15.247, RSS-247 Issue 1
Test Dates	February 4 and 23, 2016
Results	As detailed within this report
Prepared by	 Tuyen A. Truong – Test Engineer
Authorized by	 Yunus Faziloglu – Senior EMC Engineer
Issue Date	3/21/2016
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 31 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 47 CFR 15.247 and RSS-247. The product is the RPS2000. It is a digitally modulated transmitter that operates in the 902.7MHz to 927.3MHz frequency range. Product was tested with an internal PCB antenna with 2.5dBi gain.

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

Issue No.	Reason for change	Date Issued
1	Original Release	March 21, 2016

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## Test Methodology

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

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) as well as varying the test antenna's height and polarity. The device antenna could not be maximized separately.

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

Low: 902.7 MHz, Middle: 915MHz, High: 927.3MHz

Since the device is only battery powered, AC line conducted emissions testing was not applicable.

The following bandwidths were used during radiated spurious and line conducted emissions testing.

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

**Product Tested - Configuration Documentation**

EUT Configuration										
<b>Work Order:</b>	Q0290									
<b>Company:</b>	Ideal Industries, Inc.									
<b>Company Address:</b>	566 Alpha Drive									
	Pittsburgh, PA, 15238									
<b>Contact:</b>	Charlie Greene									
	MN		PN		SN					
<b>EUT:</b>	RPS2000		--		Sample 1 (used for conducted testing)					
	RPS2000		--		Sample 2 (used for radiated testing)					
<b>EUT Description:</b>	Partition Sensor									
<b>EUT TX Frequency:</b>	902.7- 927.3 MHz									
<b>Port Label</b>	<b>Port Type</b>	<b># ports</b>	<b># populated</b>	<b>cable type</b>	<b>shielded</b>	<b>ferrites</b>	<b>length (m)</b>	<b>in/out</b>	<b>under test</b>	<b>comment</b>
Switch	terminal	1	1	four wires	No	No	1	in	yes	
<b>Software Operating Mode Description:</b>										
EUT is set to transmit at 902.7 MHz, 915 MHz and 927.3 MHz respectively. Pressing ON button to change from one channel to another channel. Modulation used is DMSS.										



BUREAU  
VERITAS

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**Statement of Conformity**

The RPS2000 has been found to conform to the following parts of 47 CFR and as detailed below:

RSS-GEN	RSP-100	RSS 247	Part 15	Comments
6.3			15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
	3.1		15.19	The label is shown in the label exhibit.
	4		15.21	Information to the user is shown in the instruction manual exhibit.
			15.27	No special accessories are required for compliance.
3, 6.1			15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13			15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
8.1			15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
8.3			15.203	The antenna for this device is permanently installed PCB antenna with a gain of 2.5dBi
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	Not applicable since EUT is battery powered.
			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: 04-Feb-16		Company: Ideal Industries, Inc.		Work Order: Q0290
Engineer: Tuyen Truong		EUT Desc: RPS2000		EUT Operating Voltage/Frequency: Battery Powered
Temp: 23°C		Humidity: 37%		Pressure: 1005mBar
Frequency Range: 902.7-927.3 MHz				
Notes: EUT is a Partition Sensor				
Frequency (MHz)	Reading (KHz)	6dB BW		
		Limit (KHz)	Margin (KHz)	Result (Pass/Fail)
902.7	663.802	≥500	+163.802	Pass
915	663.189	≥500	+163.189	Pass
927.3	663.425	≥500	+163.425	Pass
Test Site: Chamber 2		Attenuation: Asset#791		
Analyzer: Gold				
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**Spectrum Analyzers / Receivers / Preselectors**

Gold

Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016

**Radiated Emissions Sites**

EMI Chamber 2

FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on
719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015

**Preamps / Couplers Attenuators / Filters**

HF 20dB 50W Attenuator

Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015

**Meteorological Meters**Weather Clock (Pressure Only)  
TH A#2081

MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
HTC-1	HDE		2081	II	4/2/2016	4/2/2015

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



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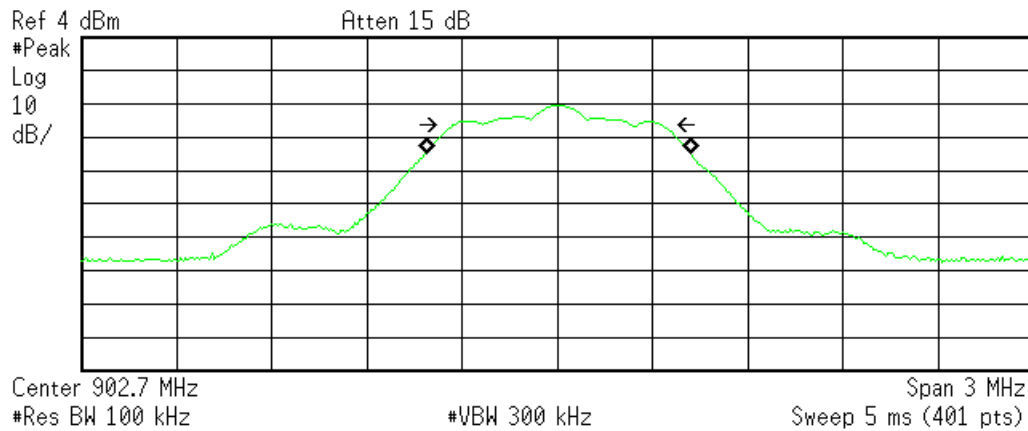


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## PLOT(s)

\* Agilent 11:16:08 Feb 4, 2016

R T



Occupied Bandwidth  
833.7986 kHz

Occ BW % Pwr 99.00 %  
x dB -6.00 dB

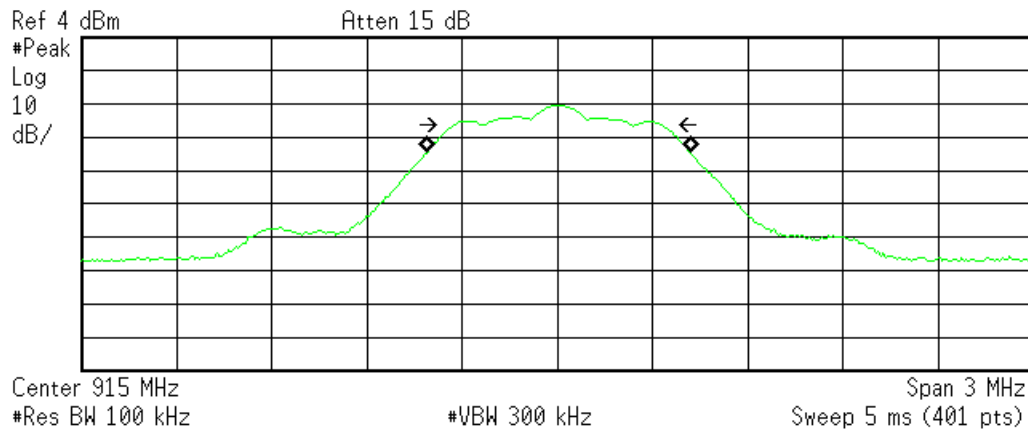
Transmit Freq Error 2.641 kHz  
x dB Bandwidth 663.802 kHz

C:\temp.gif file saved

902.7 MHz – 6dB Bandwidth

\* Agilent 10:53:17 Feb 4, 2016

R T



Occupied Bandwidth  
830.5495 kHz

Occ BW % Pwr 99.00 %  
x dB -6.00 dB

Transmit Freq Error 3.706 kHz  
x dB Bandwidth 663.189 kHz

C:\temp.gif file saved

915 MHz – 6dB Bandwidth



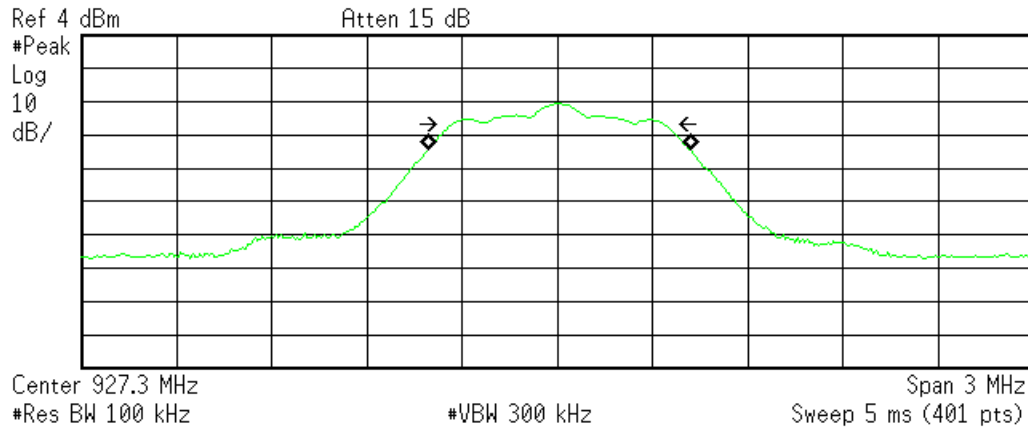
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Agilent 10:54:33 Feb 4, 2016

R T



Occupied Bandwidth  
826.1563 kHz

Occ BW % Pwr 99.00 %  
x dB -6.00 dB

Transmit Freq Error 5.069 kHz  
x dB Bandwidth 663.425 kHz

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927.3 MHz – 6dB Bandwidth

**Fundamental Emission Output Power****LIMIT**

Conducted Output Power

1 Watt

[15.247(b) (3)]

Per 558074 D01 DTS Measurement Guidance v03r04 Section 9.2.2.2 (AVGSA-1 Average Conducted Output Power)

**MEASUREMENTS / RESULTS**

Fundamental Emission Output Power						
Date: 04-Feb-16		Company: Ideal Industries, Inc.			Work Order: Q0290	
Engineer: Tuyen Truong		EUT Desc: RPS2000		EUT Operating Voltage/Frequency: Battery Powered		
Temp: 23°C		Humidity: 37%		Pressure: 1005mBar		
Frequency Range: 902.7-927.3 MHz						
Notes:						
Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247		
				Limit (dBm)	Margin (dB)	Result (Pass/Fail)
902.7	-16.93	19.55	2.62	30.0	-27.38	Pass
915	-16.98	19.55	2.57	30.0	-27.43	Pass
927.3	-16.90	19.55	2.65	30.0	-27.35	Pass
Table Result:		Pass	by	-27.35 dB	Worst Freq: 927.3 MHz	
Test Site: Chamber 2		Attenuation: Asset#791				
Analyzer: Gold						
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<b>Spectrum Analyzers / Receivers / Preselectors</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
<b>Radiated Emissions Sites</b>	<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015	
<b>Preamps / Couplers Attenuators / Filters</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
<b>Meteorological Meters</b>		<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

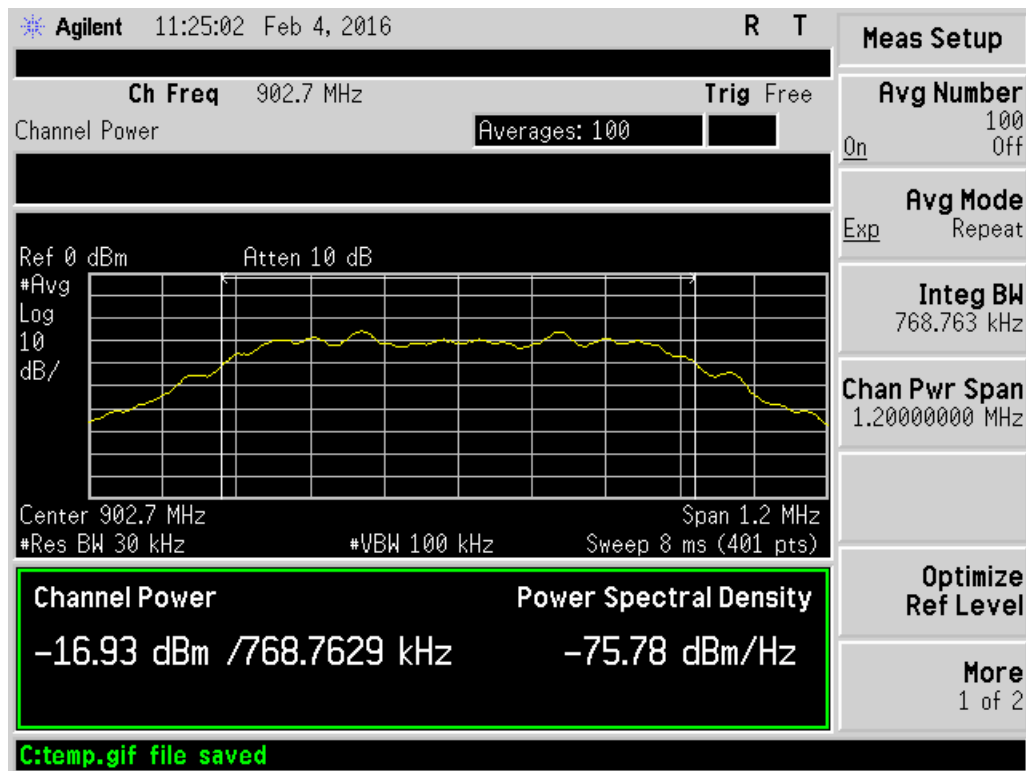
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



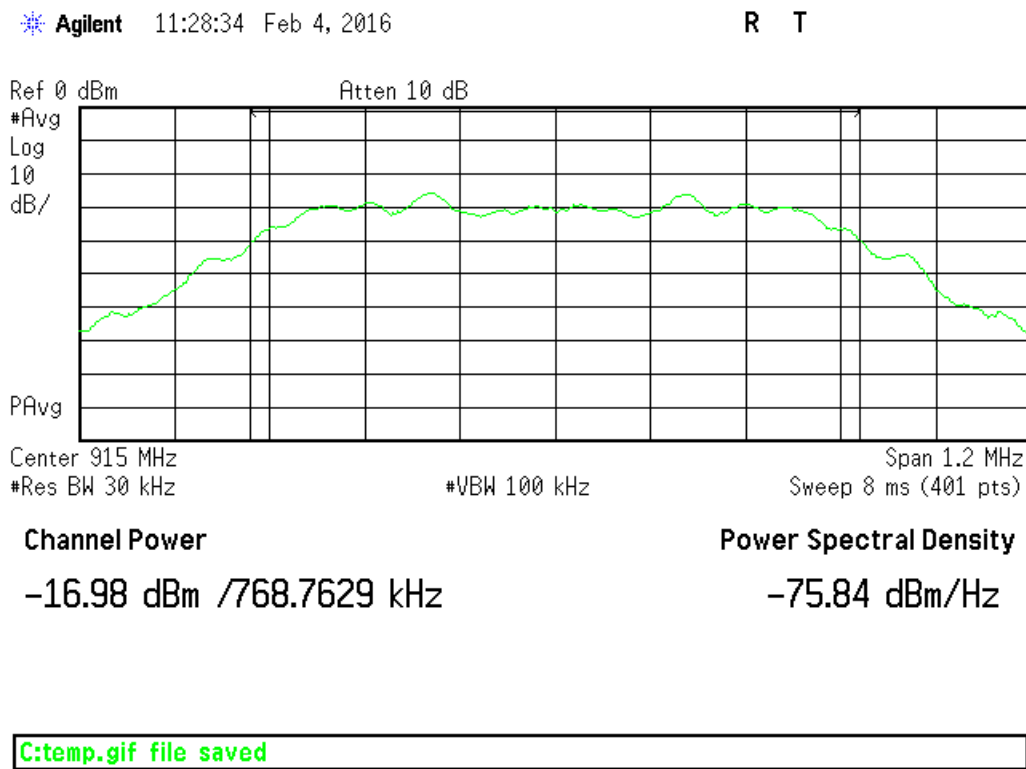
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## PLOTS



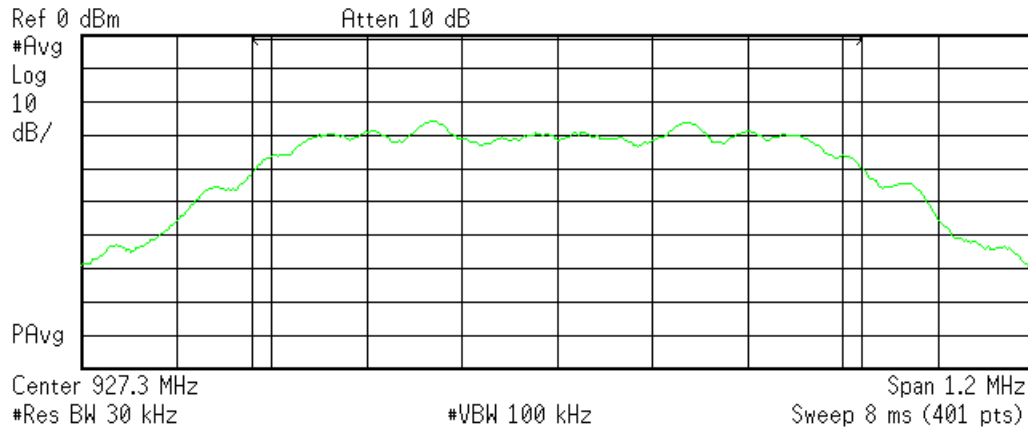
902.7 MHz – Channel Power



915 MHz – Channel Power

Agilent 11:30:35 Feb 4, 2016

R T



Channel Power

-16.90 dBm /768.7629 kHz

Power Spectral Density

-75.76 dBm/Hz

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927.3 MHz – 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)]

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) and worst case emissions observed in X orientation. All the results below are for the X orientation.

### MEASUREMENTS / RESULTS

Radiated Emissions Table												
Date: 23-Feb-16			Company: Ideal Industries, Inc.						Work Order: Q0290			
Engineer: Tuyen Truong			EUT Desc: RPS2000						EUT Operating Voltage/Frequency: Battery Powered			
Temp: 22°C			Humidity: 25%			Pressure: 1023mBar						
Frequency Range: 30 to 1000 MHz							Measurement Distance: 3 m					
Notes: TX on low channel							EUT TX Freq: 902.7-927.3 MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC 15.209		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
v	47.0	37.1	25.5	9.6	0.6	21.8	---	---	---	40.0	-18.2	Pass
h	66.4	28.6	25.6	8.3	0.6	11.9	---	---	---	40.0	-28.1	Pass
v	68.8	31.5	25.6	8.6	0.6	15.1	---	---	---	40.0	-24.9	Pass
v	110.0	26.9	25.6	12.7	0.8	14.8	---	---	---	43.5	-28.7	Pass
h	316.2	31.6	25.7	13.8	1.3	21.0	---	---	---	46.0	-25.0	Pass
v	437.4	33.2	25.7	16.6	1.6	25.7	---	---	---	46.0	-20.3	Pass
v	609.6	26.7	25.2	18.8	1.8	22.1	---	---	---	46.0	-23.9	Pass
Table Result: Pass by -18.2 dB							Worst Freq: 47.0 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #2051			Cable 2: Asset #1784			Cable 3: ---			
Analyzer: Rental SA#1			Preamp: Green			Antenna: Red-Black			Preselector: ---			
CSsoft Radiated Emissions Calculator			v 1.017.157									
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												
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<b>Spectrum Analyzers / Receivers/Preselectors</b> SA #2 (1860)	<b>Range</b> 9kHz-26.5 GHz	<b>MN</b> E7405A	<b>Mfr</b> Agilent	<b>SN</b> MY45104916	<b>Asset</b> 1860	<b>Cat</b> I	<b>Calibration Due</b> 12/23/2016	<b>Calibrated on</b> 12/23/2015
<b>Radiated Emissions Sites</b> EMI Chamber 1	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-6	<b>VCCI Code</b> A-0015	<b>Range</b> 30-1000MHz		<b>Cat</b> II	<b>Calibration Due</b> 3/21/2017	<b>Calibrated on</b> 3/21/2015
<b>Preamps/Couplers Attenuators / Filters</b> Green	<b>Range</b> 0.009-2000MHz	<b>MN</b> ZFL-1000-LN	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 802	<b>Cat</b> II	<b>Calibration Due</b> 9/17/2016	<b>Calibrated on</b> 9/17/2015
<b>Antennas</b> Red-Black Bilog	<b>Range</b> 30-2000MHz	<b>MN</b> JB1	<b>Mfr</b> Sunol	<b>SN</b> A091604-2	<b>Asset</b> 1106	<b>Cat</b> I	<b>Calibration Due</b> 2/9/2017	<b>Calibrated on</b> 2/9/2015
<b>Meteorological Meters</b> Weather Clock (Pressure Only) TH A#2080		<b>MN</b> BA928 HTC-1	<b>Mfr</b> Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	<b>Cat</b> I II	<b>Calibration Due</b> 3/19/2016 4/2/2016	<b>Calibrated on</b> 3/19/2014 4/2/2015
<b>Cables</b> Asset #1784 Asset #2051	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			<b>Cat</b> II II	<b>Calibration Due</b> 3/20/2016 3/8/2016	<b>Calibrated on</b> 3/20/2015 3/8/2015

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**Radiated Emissions Table**

Date: 23-Feb-16		Company: Ideal Industries, Inc.				Work Order: Q0290								
Engineer: Tuyen Truong		EUT Desc: RPS2000				EUT Operating Voltage/Frequency: Battery Powered								
Temp: 22°C		Humidity: 25%				Pressure: 1023mBar								
Frequency Range: 1 to 6 GHz						Measurement Distance: 3 m								
Notes: TX on Low Channel						EUT TX Freq: 902.7-927.3 MHz								
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	1805.4	38.99	31.6	18.8	30.6	3.0	53.8	46.4	74.0	-20.2	Pass	54.0	-7.6	Pass
h	1805.4	41.41	34.3	18.8	30.6	3.0	56.2	49.1	74.0	-17.8	Pass	54.0	-4.9	Pass
v	3610.8	35.5	28.9	19.1	33.3	4.6	54.3	47.7	74.0	-19.7	Pass	54.0	-6.3	Pass
h	3610.8	36.4	29.3	19.1	33.3	4.6	55.2	48.1	74.0	-18.8	Pass	54.0	-5.9	Pass
Table Result:		Pass		by		-4.9 dB		Worst Freq:		1805.4 MHz				
Test Site: EMI Chamber 1				Cable 1: Asset #2051				Cable 2: Asset #1784				Cable 3: ---		
Analyzer: Rental SA#1				Preamp: Asset #1517				Antenna: Blue Horn				Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.157														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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**Radiated Emissions Table**

Date: 23-Feb-16		Company: Ideal Industries, Inc.				Work Order: Q0290								
Engineer: Tuyen Truong		EUT Desc: RPS2000				EUT Operating Voltage/Frequency: Battery Powered								
Temp: 22°C		Humidity: 25%				Pressure: 1023mBar								
Frequency Range: 6 to 10 GHz						Measurement Distance: 1 m								
Notes: TX on Low Channel						EUT TX Freq: 902.7-927.3 MHz								
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
NO EMISSIONS FOUND WITHIN 10dB OF LIMIT														
Table Result: --- by --- dB Worst Freq: --- MHz														
Test Site: EMI Chamber 1				Cable 1: Asset #2051				Cable 2: Asset #1784				Cable 3: ---		
Analyzer: Rental SA#1				Preamp: Asset #1517				Antenna: Blue Horn				Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.157														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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<b>Spectrum Analyzers / Receivers / Preselectors</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
SA #2 (1860)	9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	12/23/2016	12/23/2015
<b>Radiated Emissions Sites</b>	<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>		<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz		I	5/23/2017	5/23/2015
<b>Preamps / Couplers Attenuators / Filters</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
<b>Antennas</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
<b>Meteorological Meters</b>		<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015
<b>Cables</b>	<b>Range</b>		<b>Mfr</b>			<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Asset #1784	9kHz - 18GHz		Florida RF			II	3/20/2016	3/20/2015
Asset #2051	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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



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**Radiated Emissions Table**

Date: 23-Feb-16		Company: Ideal Industries, Inc.		Work Order: Q0290									
Engineer: Tuyen Truong		EUT Desc: RPS2000		EUT Operating Voltage/Frequency: Battery Powered									
Temp: 22°C		Humidity: 25%		Pressure: 1023mBar									
Frequency Range: 30 to 1000 MHz				Measurement Distance: 3 m									
Notes: Tx on mid channel				EUT Max Freq: 902.7-927.3 MHz									
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	—			FCC 15.209			
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
v	49.4	36.8	25.5	8.6	0.6	20.5	---	---	---	40.0	-19.5	Pass	
v	66.4	31.8	25.6	8.3	0.6	15.1	---	---	---	40.0	-24.9	Pass	
h	66.4	27.7	25.6	8.3	0.6	11.0	---	---	---	40.0	-29.0	Pass	
v	102.8	34.6	25.6	11.1	0.8	20.9	---	---	---	43.5	-22.6	Pass	
v	228.9	27.2	25.7	11.2	1.2	13.9	---	---	---	46.0	-32.1	Pass	
h	275.0	27.2	25.7	13.3	1.3	16.1	---	---	---	46.0	-29.9	Pass	
v	624.1	27.3	25.4	19.4	1.8	23.1	---	---	---	46.0	-22.9	Pass	
Table Result: Pass by -19.5 dB												Worst Freq: 49.4 MHz	
Test Site: EMI Chamber 1		Cable 1: Asset #2051		Cable 2: Asset #1784		Cable 3: ---							
Analyzer: Rental SA#1		Preamp: Green		Antenna: Red-Black		Preselector: ---							
CSsoft Radiated Emissions Calculator		v 1.017.157										Copyright Curtis-Straus LLC 2000	
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor													

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<b>Spectrum Analyzers / Receivers/Preselectors</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
SA #2 (1860)		9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	12/23/2016	12/23/2015
<b>Radiated Emissions Sites</b>		<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>		<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
EMI Chamber 1		719150	2762A-6	A-0015	30-1000MHz		II	3/21/2017	3/21/2015
<b>Preamps/Couplers Attenuators / Filters</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Green		0.009-2000MHz	ZFL-1000-LN	CS	N/A	802	II	9/17/2016	9/17/2015
<b>Antennas</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Red-Black Bilog		30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
<b>Meteorological Meters</b>			<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Weather Clock (Pressure Only)			BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2080			HTC-1	HDE		2080	II	4/2/2016	4/2/2015
<b>Cables</b>		<b>Range</b>		<b>Mfr</b>			<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Asset #1784		9kHz - 18GHz		Florida RF			II	3/20/2016	3/20/2015
Asset #2051		9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

**Radiated Emissions Table**

Date: 23-Feb-16		Company: Ideal Industries, Inc.				Work Order: Q0290									
Engineer: Tuyen Truong		EUT Desc: RPS2000				EUT Operating Voltage/Frequency: Battery Powered									
Temp: 22°C		Humidity: 25%				Pressure: 1023mBar									
Frequency Range: 1 to 6 GHz						Measurement Distance: 3 m									
Notes: TX on Mid Channel						EUT TX Freq: 902.7-927.3 MHz									
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average			
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
h	1830.0	40.8	33.4	18.8	30.7	3.0	55.7	48.3	74.0	-18.3	Pass	54.0	-5.7	Pass	
v	1830.0	40.03	32.2	18.8	30.7	3.0	54.9	47.1	74.0	-19.1	Pass	54.0	-6.9	Pass	
h	3660.0	34.32	28.5	19.1	33.4	4.4	53.0	47.2	74.0	-21.0	Pass	54.0	-6.8	Pass	
v	3660.0	33.42	27.5	19.1	33.4	4.4	52.1	46.2	74.0	-21.9	Pass	54.0	-7.8	Pass	
Table Result:		Pass		by		-5.7 dB		Worst Freq:		1830.0 MHz					
Test Site: EMI Chamber 1				Cable 1: Asset #2051				Cable 2: Asset #1784				Cable 3: ---			
Analyzer: Rental SA#1				Preamp: Asset #1517				Antenna: Blue Horn				Preselector: ---			
CSsoft Radiated Emissions Calculator v 1.017.157															
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															
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Radiated Emissions Table														
Date: 23-Feb-16				Company: Ideal Industries, Inc.				Work Order: Q0290						
Engineer: Tuyen Truong				EUT Desc: RPS2000				EUT Operating Voltage/Frequency: Battery Powered						
Temp: 22°C				Humidity: 25%				Pressure: 1023mBar						
Frequency Range: 6 to 10 GHz								Measurement Distance: 1 m						
Notes: TX on Mid Channel								EUT TX Freq: 902.7-927.3 MHz						
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
NO EMISSIONS FOUND WITHIN 10dB OF LIMIT														
Table Result: --- by --- dB Worst Freq: --- MHz														
Test Site: EMI Chamber 1				Cable 1: Asset #2051				Cable 2: Asset #1784				Cable 3: ---		
Analyzer: Rental SA#1				Preamp: Asset #1517				Antenna: Blue Horn				Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.157														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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<b>Spectrum Analyzers / Receivers/Preselectors</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
SA #2 (1860)		9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	12/23/2016	12/23/2015
<b>Radiated Emissions Sites</b>		<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>		<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
EMI Chamber 1		719150	2762A-6	A-0015	1-18GHz		I	5/23/2017	5/23/2015
<b>Preamps/Couplers Attenuators / Filters</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
1517 HF Preamp		1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
<b>Antennas</b>		<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Blue Horn		1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
<b>Meteorological Meters</b>			<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Weather Clock (Pressure Only)			BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2080			HTC-1	HDE		2080	II	4/2/2016	4/2/2015
<b>Cables</b>		<b>Range</b>		<b>Mfr</b>			<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Asset #1784		9kHz - 18GHz		Florida RF			II	3/20/2016	3/20/2015
Asset #2051		9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table												
Date: 23-Feb-16			Company: Ideal Industries, Inc.					Work Order: Q0290				
Engineer: Tuyen Truong			EUT Desc: RPS2000					EUT Operating Voltage/Frequency: Battery Powered				
Temp: 22°C			Humidity: 25%			Pressure: 1023mBar						
Frequency Range: 30 to 1000 MHz							Measurement Distance: 3 m					
Notes: TX on high channel							EUT TX Freq: 902.7-927.3 MHz					
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC 15.209		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
v	47.0	39.7	25.5	9.6	0.6	24.4	---	---	---	40.0	-15.6	Pass
h	49.4	27.3	25.5	8.6	0.6	11.0	---	---	---	40.0	-29.0	Pass
v	66.4	30.9	25.6	8.3	0.6	14.2	---	---	---	40.0	-25.8	Pass
h	68.8	27.3	25.6	8.6	0.6	10.9	---	---	---	40.0	-29.1	Pass
v	102.8	28.5	25.6	11.1	0.8	14.8	---	---	---	43.5	-28.7	Pass
v	124.6	28.5	25.5	14.4	0.9	18.3	---	---	---	43.5	-25.2	Pass
v	272.5	27.0	25.7	13.3	1.3	15.9	---	---	---	46.0	-30.1	Pass
v	655.7	26.6	25.9	20.0	1.8	22.5	---	---	---	46.0	-23.5	Pass
v	769.6	26.9	25.8	21.1	2.0	24.2	---	---	---	46.0	-21.8	Pass
Table Result: Pass by -15.6 dB Worst Freq: 47.0 MHz												
Test Site: EMI Chamber 1			Cable 1: Asset #2051				Cable 2: Asset #1784			Cable 3: ---		
Analyzer: Rental SA#1			Preamp: Green				Antenna: Red-Black			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.157												
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												
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<b>Spectrum Analyzers / Receivers / Preselectors</b> SA #2 (1860)	<b>Range</b> 9kHz-26.5 GHz	<b>MN</b> E7405A	<b>Mfr</b> Agilent	<b>SN</b> MY45104916	<b>Asset</b> 1860	<b>Cat</b> I	<b>Calibration Due</b> 12/23/2016	<b>Calibrated on</b> 12/23/2015
<b>Radiated Emissions Sites</b> EMI Chamber 1	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-6	<b>VCCI Code</b> A-0015	<b>Range</b> 30-1000MHz		<b>Cat</b> II	<b>Calibration Due</b> 3/21/2017	<b>Calibrated on</b> 3/21/2015
<b>Preamps / Couplers Attenuators / Filters</b> Green	<b>Range</b> 0.009-2000MHz	<b>MN</b> ZFL-1000-LN	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 802	<b>Cat</b> II	<b>Calibration Due</b> 9/17/2016	<b>Calibrated on</b> 9/17/2015
<b>Antennas</b> Red-Black Bilog	<b>Range</b> 30-2000MHz	<b>MN</b> JB1	<b>Mfr</b> Sunol	<b>SN</b> A091604-2	<b>Asset</b> 1106	<b>Cat</b> I	<b>Calibration Due</b> 2/9/2017	<b>Calibrated on</b> 2/9/2015
<b>Meteorological Meters</b> Weather Clock (Pressure Only) TH A#2080		<b>MN</b> BA928 HTC-1	<b>Mfr</b> Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	<b>Cat</b> I II	<b>Calibration Due</b> 3/19/2016 4/2/2016	<b>Calibrated on</b> 3/19/2014 4/2/2015
<b>Cables</b> Asset #1784 Asset #2051	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			<b>Cat</b> II II	<b>Calibration Due</b> 3/20/2016 3/8/2016	<b>Calibrated on</b> 3/20/2015 3/8/2015

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

**Radiated Emissions Table**

Date: 23-Feb-16		Company: Ideal Industries, Inc.				Work Order: Q0290								
Engineer: Tuyen Truong		EUT Desc: RPS2000				EUT Operating Voltage/Frequency: Battery Powered								
Temp: 22°C		Humidity: 25%		Pressure: 1023mBar										
Frequency Range: 1 to 6 GHz						Measurement Distance: 3 m								
Notes: TX on High Channel						EUT TX Freq: 902.7-927.3 MHz								
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
v	1854.6	40.43	32.4	18.8	30.9	3.1	55.6	47.6	74.0	-18.4	Pass	54.0	-6.4	Pass
h	1854.6	37.94	31.6	18.8	30.9	3.1	53.1	46.8	74.0	-20.9	Pass	54.0	-7.2	Pass
v	3709.2	33.87	27.7	19.1	33.4	4.2	52.4	46.2	74.0	-21.6	Pass	54.0	-7.8	Pass
h	3709.2	35.76	28.3	19.1	33.4	4.2	54.3	46.8	74.0	-19.7	Pass	54.0	-7.2	Pass
Table Result: Pass by -6.4 dB Worst Freq: 1854.6 MHz														
Test Site: EMI Chamber 1			Cable 1: Asset #2051			Cable 2: Asset #1784			Cable 3: ---					
Analyzer: Rental SA#1			Preamp: Asset #1517			Antenna: Blue Horn			Preselector: ---					
CSsoft Radiated Emissions Calculator v 1.017.157														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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**Radiated Emissions Table**

Date: 23-Feb-16		Company: Ideal Industries, Inc.				Work Order: Q0290								
Engineer: Tuyen Truong		EUT Desc: RPS2000				EUT Operating Voltage/Frequency: Battery Powered								
Temp: 22°C		Humidity: 25%				Pressure: 1023mBar								
Frequency Range: 6 to 10 GHz						Measurement Distance: 1 m								
Notes: TX on High Channel						EUT TX Freq: 902.7-927.3 MHz								
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
NO EMISSIONS FOUND WITHIN 10dB OF LIMIT														
Table Result: --- by --- dB Worst Freq: --- MHz														
Test Site: EMI Chamber 1			Cable 1: Asset #2051			Cable 2: Asset #1784			Cable 3: ---					
Analyzer: Rental SA#1			Preamp: Asset #1517			Antenna: Blue Horn			Preselector: ---					
CSsoft Radiated Emissions Calculator v 1.017.157														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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<b>Spectrum Analyzers / Receivers / Preselectors</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
SA #2 (1860)	9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	12/23/2016	12/23/2015
<b>Radiated Emissions Sites</b>	<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>		<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz		I	5/23/2017	5/23/2015
<b>Preamps / Couplers Attenuators / Filters</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
<b>Antennas</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
<b>Meteorological Meters</b>		<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015
<b>Cables</b>	<b>Range</b>		<b>Mfr</b>			<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Asset #1784	9kHz - 18GHz		Florida RF			II	3/20/2016	3/20/2015
Asset #2051	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

## Conducted Spurious Emissions

### LIMITS

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

[15.247(d)]

### MEASUREMENTS / RESULTS

#### Conducted Band Edges

Spurious Conducted Emissions - Maximum Peak PSD in 100 KHz RBW			
Date: 04-Feb-16		Company: Ideal Industries, Inc.	
Engineer: Tuyen Truong		EUT Desc: RPS2000	
Temp: 23°C		Humidity: 37%	
		Pressure: 1005mBar	
Frequency Range: 902-928MHz			
Notes:			
Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Adjusted Reading (dBm)
902.7	-16.42	19.55	3.13
Test Site: Chamber 2		Attenuation: Asset#791	
Analyzer: Gold			
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Band Edge						
Date: 04-Feb-16		Company: Ideal Industries, Inc.			Work Order: Q0290	
Engineer: Tuyen Truong		EUT Desc: RPS2000		EUT Operating Voltage/Frequency: Battery Powered		
Temp: 23°C		Humidity: 37%		Pressure: 1005mBar		
Frequency Range: 902-928 MHz						
Notes: The Limit here is set to -30dB from the max in-band peak PSD level in 100kHz RBW (Attenuation factor included or 19.55dB)						
Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247		
				Limit (dBm)	Margin (dB)	Result (Pass/Fail)
902.0	-53.42	19.55	-33.87	-26.87	-7.00	Pass
928.0	-55.90	19.55	-36.35	-26.87	-9.48	Pass
Table Result: Pass by -7.00 dB Worst Freq: 902.0 MHz						
Test Site: Chamber 2		Attenuation: Asset#791				
Analyzer: Gold						
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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
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

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



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## Plot(s)

Agilent 12:04:44 Feb 4, 2016

R T

Mkr4 901.30375 MHz  
-61.39 dBm

Ref 4 dBm

Atten 15 dB

#Peak

Log

10

dB/

DI

-46.4

dBm

Start 900 MHz

Stop 903.5 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 5 ms (401 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	902.70375 MHz	-16.41 dBm
2	(1)	Freq	902.00000 MHz	-53.42 dBm
3	(1)	Freq	901.81125 MHz	-51.52 dBm
4	(1)	Freq	901.30375 MHz	-61.39 dBm

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## Lower Channel - Band Edge

Agilent 12:08:05 Feb 4, 2016

R T

Mkr4 928.78375 MHz  
-61.77 dBm

Ref 4 dBm

Atten 15 dB

#Peak

Log

10

dB/

DI

-46.4

dBm

Start 926.5 MHz

Stop 930 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 5 ms (401 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	927.30500 MHz	-16.57 dBm
2	(1)	Freq	928.00000 MHz	-55.9 dBm
3	(1)	Freq	928.16250 MHz	-56.99 dBm
4	(1)	Freq	928.78375 MHz	-61.77 dBm

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## Upper Channel - Band Edge



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## Conducted Spurious Emission

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

Rev. 1/19/2016

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	30-18000MHz		I & II	3/22/2017	3/22/2015
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

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



## 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)]

Per 558074 D01 DTS Measurement Guidance v03r04 Section 10.3 Method AVGPS-1  
(Average PSD)

## MEASUREMENTS / RESULTS

Power Spectral Density						
Date: 04-Feb-16		Company: Ideal Industries, Inc.			Work Order: Q0290	
Engineer: Tuyen Truong		EUT Desc: RPS2000			EUT Operating Voltage/Frequency: Battery Powered	
Temp: 23°C		Humidity: 37%		Pressure: 1005mBar		
Frequency Range: 902.7-927.3 MHz						
Notes:						
Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247		
				Limit (dBm)	Margin (dB)	Result (Pass/Fail)
902.7	-23.12	19.55	-3.57	8.0	-11.57	Pass
915	-23.41	19.55	-3.86	8.0	-11.86	Pass
927.3	-23.15	19.55	-3.60	8.0	-11.60	Pass
Table Result:		Pass	by	-11.57 dB	Worst Freq: 902.7 MHz	
Test Site: Chamber 2		Attenuation: Asset#791				
Analyzer: Gold						
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<b>Spectrum Analyzers / Receivers / Preselectors</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
<b>Radiated Emissions Sites</b>	<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015	
<b>Preamps / Couplers Attenuators / Filters</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
<b>Meteorological Meters</b>		<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

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



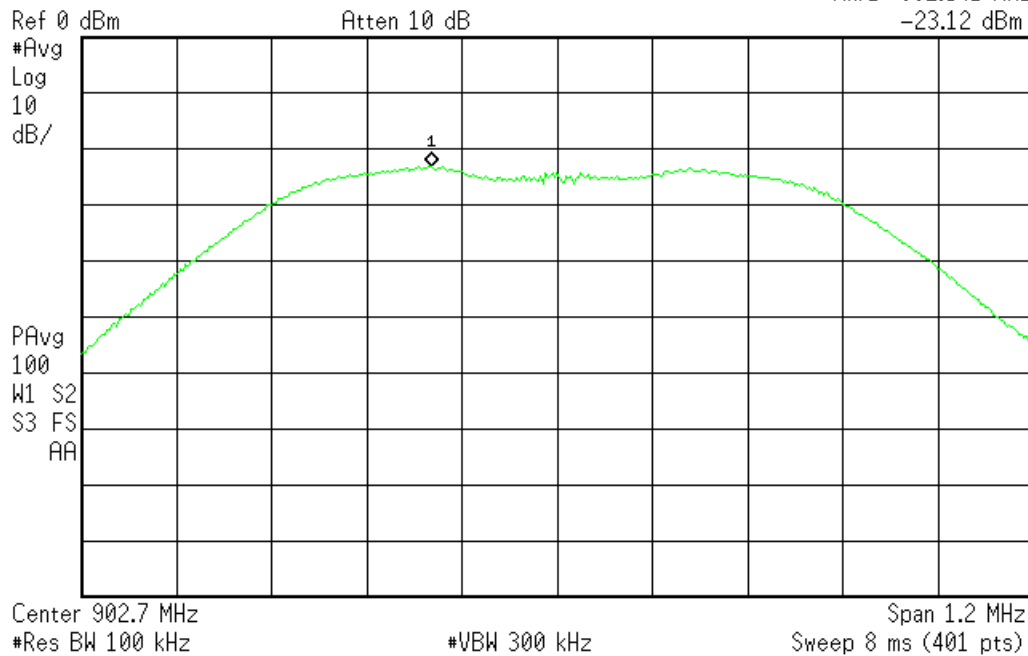
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## PLOTS

Agilent 11:50:30 Feb 4, 2016

R T

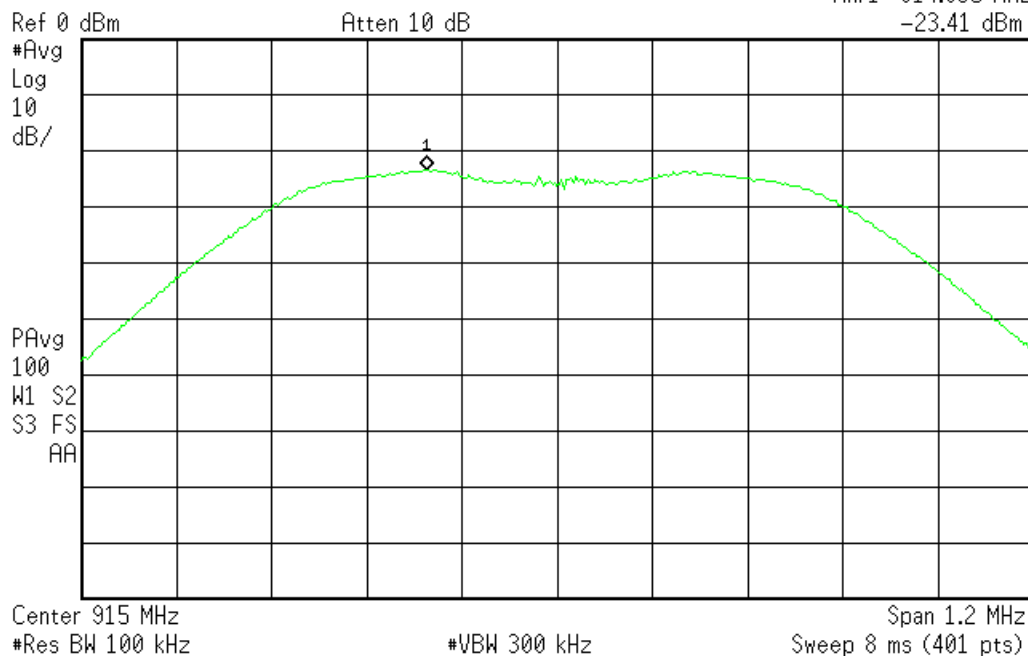
Mkr1 902.541 MHz  
-23.12 dBm

C:\temp.gif file saved

902.7 MHz – PSD

Agilent 11:44:15 Feb 4, 2016

R T

Mkr1 914.835 MHz  
-23.41 dBm

C:\temp.gif file saved

915 MHz – PSD



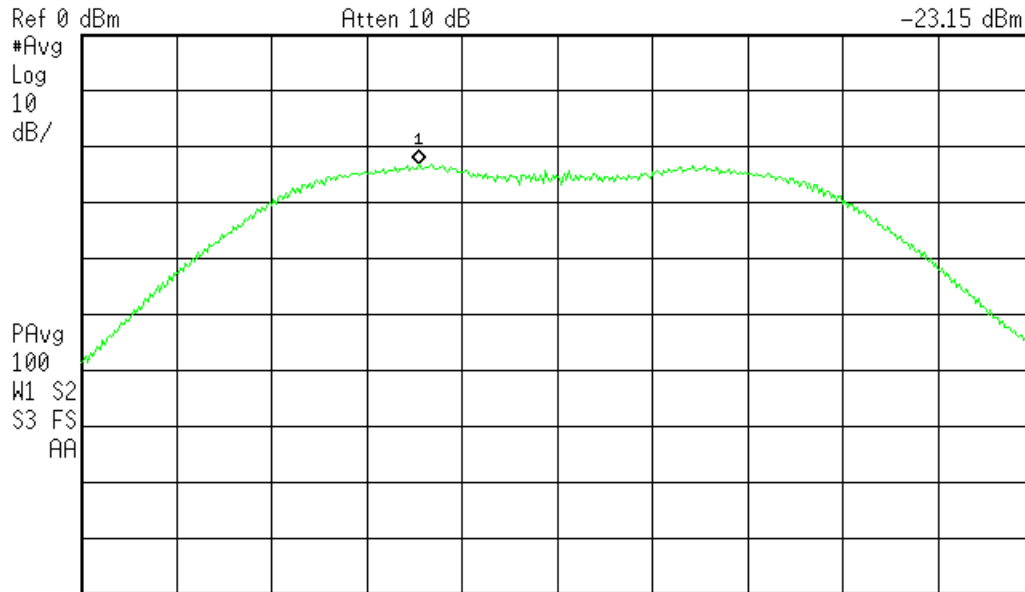
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Agilent 11:45:22 Feb 4, 2016

R T

Mkr1 927.126 MHz  
-23.15 dBm



Center 927.3 MHz Span 1.2 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 8 ms (401 pts)

C:\temp.gif file saved

927.3 MHz – PSD



## AC Line Conducted Emissions LIMITS

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

\*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

## MEASUREMENTS / RESULTS

Not applicable since the device is battery powered only.

**Occupied Bandwidth****REQUIREMENT**

*When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.*  
[RSS-GEN 6.6]

**MEASUREMENTS / RESULTS**

99% OCCUPIED BANDWIDTH			
Date: 04-Feb-16		Company: Ideal Industries, Inc.	
Engineer: Tuyen Truong		EUT Desc: RPS2000	
Temp: 23°C		Humidity: 37%	
		Pressure: 1005mBar	
Frequency Range: 902.7-927.3 MHz			
Notes:			
Frequency (MHz)		Occupied Bandwidth Reading (KHz)	
902.7		768.7629	
915		764.1961	
927.3		761.1671	
Test Site: Chamber 2		Attenuation: Asset#791	
Analyzer: Gold			
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Rev. 1/19/2016

<b>Spectrum Analyzers / Receivers / Preselectors</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
<b>Radiated Emissions Sites</b>	<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>		<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
<b>Preamps / Couplers Attenuators / Filters</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
<b>Meteorological Meters</b>		<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

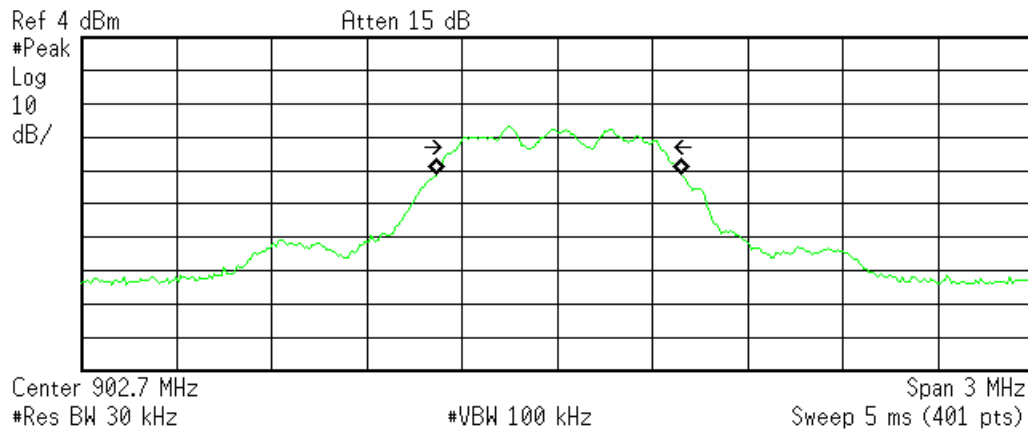
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



## Plot(s)

Agilent 11:07:40 Feb 4, 2016

R T



Occupied Bandwidth  
768.7629 kHz

Occ BW % Pwr 99.00 %  
x dB -6.00 dB

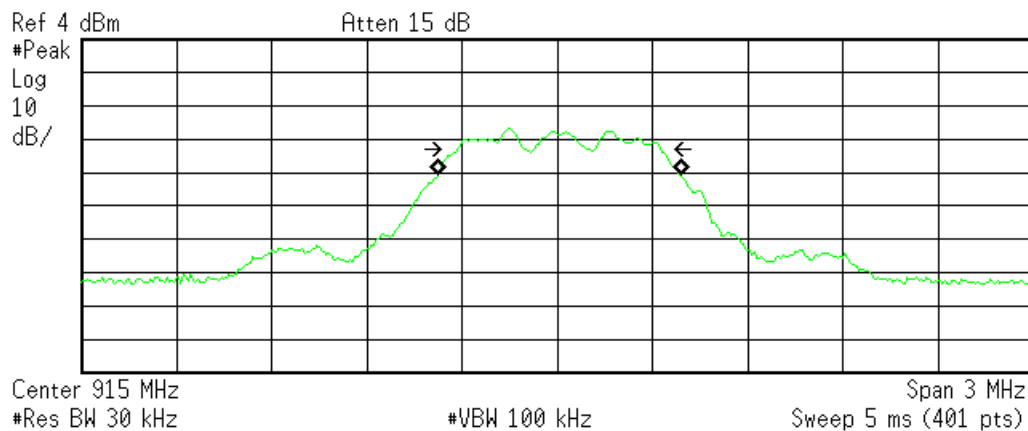
Transmit Freq Error 3.939 kHz  
x dB Bandwidth 639.156 kHz

C:\temp.gif file saved

902.7 MHz – Occupied Bandwidth

Agilent 11:13:10 Feb 4, 2016

R T



Occupied Bandwidth  
764.1961 kHz

Occ BW % Pwr 99.00 %  
x dB -6.00 dB

Transmit Freq Error 5.299 kHz  
x dB Bandwidth 638.107 kHz

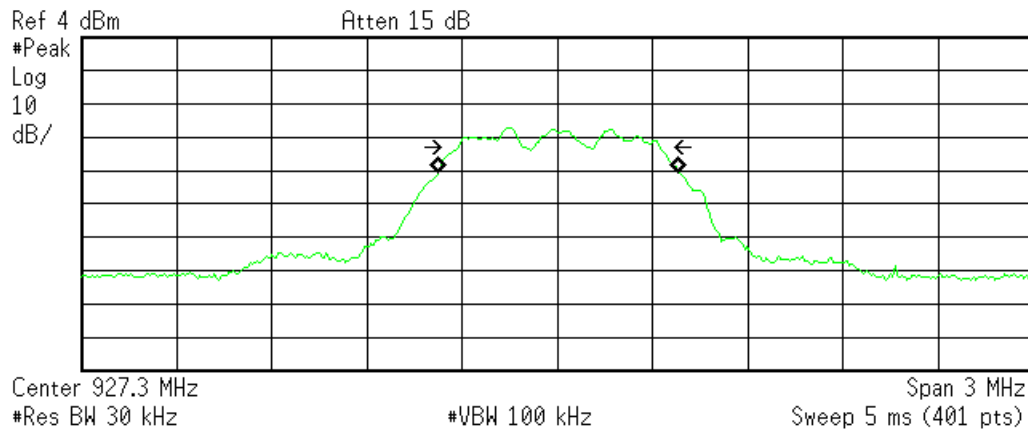
C:\temp.gif file saved

915 MHz – Occupied Bandwidth



Agilent 11:03:36 Feb 4, 2016

R T



Occupied Bandwidth  
761.1671 kHz

Occ BW % Pwr 99.00 %  
x dB -6.00 dB

Transmit Freq Error 5.209 kHz  
x dB Bandwidth 639.536 kHz

C:\temp.gif file saved

927.3 MHz – 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 (Ucisp)
CISPR		
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisp)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	$3.23 \times 10^{-8}$	$1 \times 10^{-7}$
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		



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## 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.  
Rev.160009121(2)\_#684340 v14CS

