Test Report

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

Report No	EQ0291-1
Client	Ideal Industries, Inc.
Address	Becker Place Sycamore, IL 60178
Phone	(815) 899 - 7774
Items tested	LS1401
FCC ID	2AAMXLS1401
IC	11250A-LS1401
FRN	0002862225
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	847KG1D
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 1
Test Dates	February 6 to 11, 2016
Results	As detailed within this report
Prepared by	Tuyen A. Truong – Test 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 26 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.

ACCREDITED Cert No. 1627-01

Contents

Contents 2
Summary 3
Test Methodology 4
Product Tested - Configuration Documentation 5
Statement of Conformity 6
Test Results 7
Bandwidth 7
Fundamental Emission Output Power 10
Radiated Spurious Emissions 13
Power Spectral Density 18
AC Line Conducted Emissions 21
Occupied Bandwidth 22
Measurement Uncertainty 25
Conditions Of Testing 26

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, ISED Canada RSS-247 Issue 1

The product is the LS1401. It is a digitally modulated transmitter that operates in the frequency range of 902.7-927.3MHz. Product has an internal PCB trace 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 20, 2017

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Testing Cert. No. 1627-01

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 v03r04 and ANSI C63.10-2013.

Radiated emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. The device antenna could not be maximized separately.

Conducted RF measurements at the antenna port could not be performed since the EUT has a non-removable integral antenna.

AC line conducted emissions testing was not applicable since the EUT is battery powered only.

3 channels were tested as follows,
Low = 902.7MHz
Middle = 915MHz
High = 927.3MHz

The following bandwidths were used during radiated spurious emissions testing.

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

Product Tested - Configuration Documentation

EUT Configuration			
Work Order:	Q0291		
Company:	Ideal Industries Inc.		
Company Address:	Becker Place		
	Sycamore, IL 60178		
Contact:	Tim Tunnell		
	MN	**PN**	**SN**
EUT:	LS1401	--	Sample 1
EUT Description:	Light Sensor		
EUT TX Frequency:	902.7 - 927.3 MHz		

Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	max length (m)	in/out	under test	comment
none											

Software Operating Mode Description:

EUT was set to transmit at 902.7 MHz, 915 MHz and 927.3 MHz channels. Channels were changed by pressing the ON button.

Statement of Conformity

The LS1401 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	EUT has a PCB trace 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 EUT complies with the requirements of 15.247
		RSS 247		The EUT 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: 11-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Tuyen Truong **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 22°C **Humidity:** 27% **Pressure:** 998mbar
Frequency Range: 902.7-927.3 MHz **Measurement Distance:** 3 m
Notes: **EUT Tx Freq:** 902.7-927.3 MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (KHz)	6dB BW Limit (KHz)	6dB BW Margin (KHz)	6dB BW Result (Pass/Fail)
H	902.7	656.848	≥500	+156.848	Pass
H	915.0	649.264	≥500	+149.264	Pass
H	927.3	650.470	≥500	+150.470	Pass

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.156
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/9/2016

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

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015

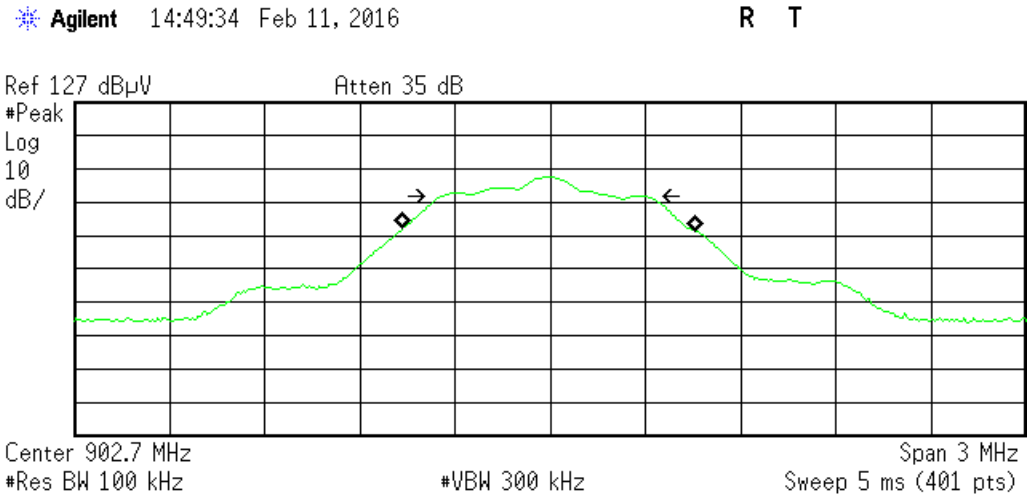
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015

Meteorological Meters		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

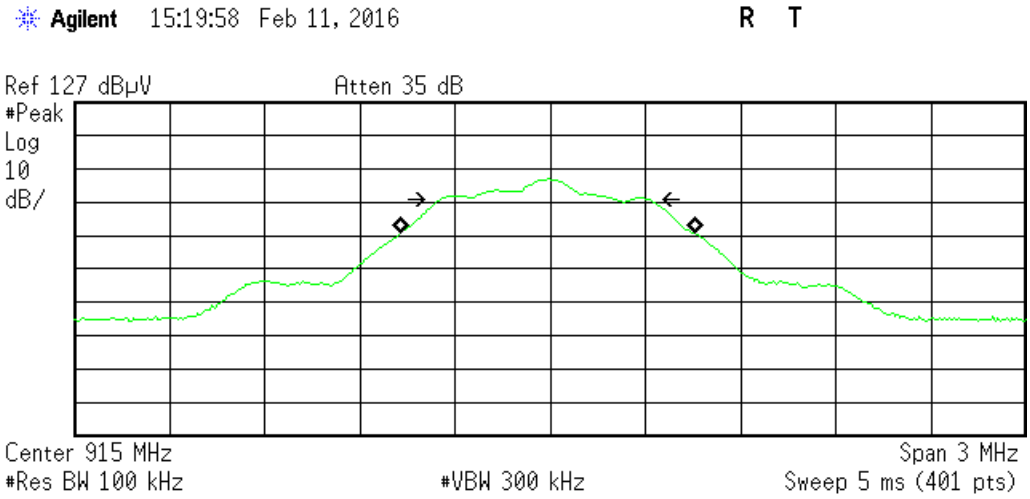
Cables	Range	Mfr			Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz	Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz	Florida RF			II	3/8/2016	3/8/2015

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

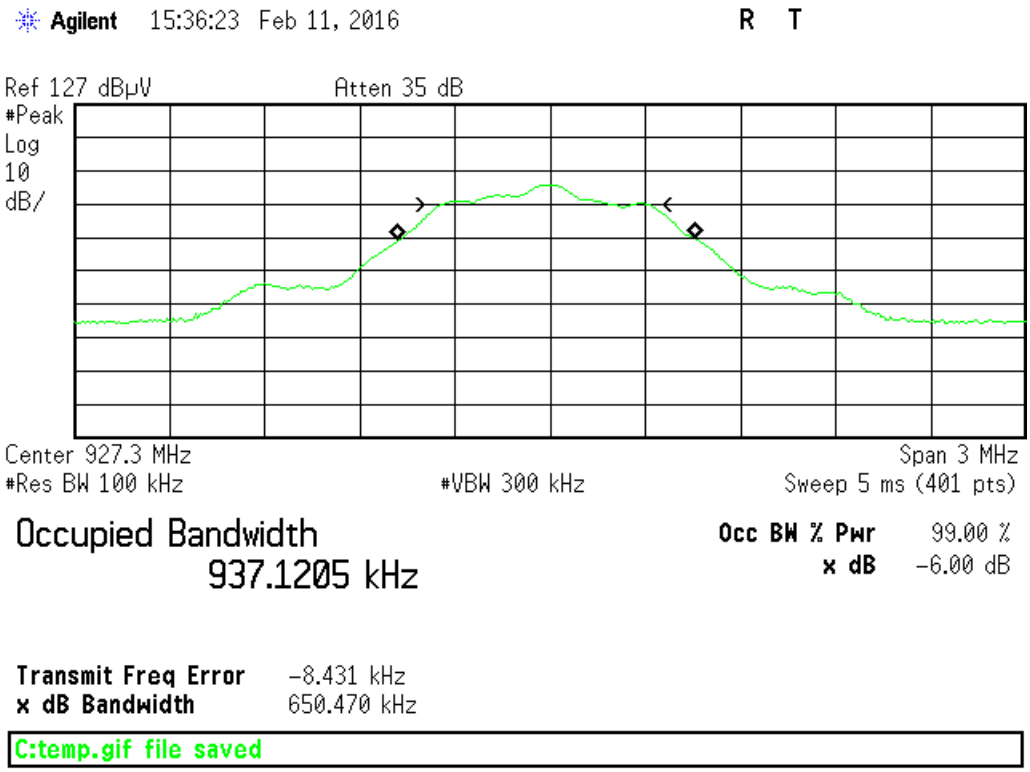
PLOT(s)



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)]

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: 11-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Tuyen Truong **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 22°C **Humidity:** 27% **Pressure:** 998mbar
Frequency Range: 902.7-927.3 MHz **Measurement Distance:** 3 m
Notes: **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)	Adjusted EIRP Reading (dBm)	Adjusted Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	Margin (dB)	Result (Pass/Fail)
H	*902.7*	*104.1*	*25.3*	*22.6*	*1.7*	*103.1*	*7.9*	*5.4*	30.0	-24.6	Pass
H	*915.0*	*103.3*	*25.4*	*22.6*	*1.7*	*102.2*	*7.0*	*4.5*	30.0	-25.5	Pass
H	*927.3*	*102.4*	*25.5*	*22.4*	*1.6*	*100.9*	*5.7*	*3.2*	30.0	-26.8	Pass

Table Result: Pass by -24.6 dB ***Worst Freq:*** 902.7 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.156
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/9/2016

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

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015

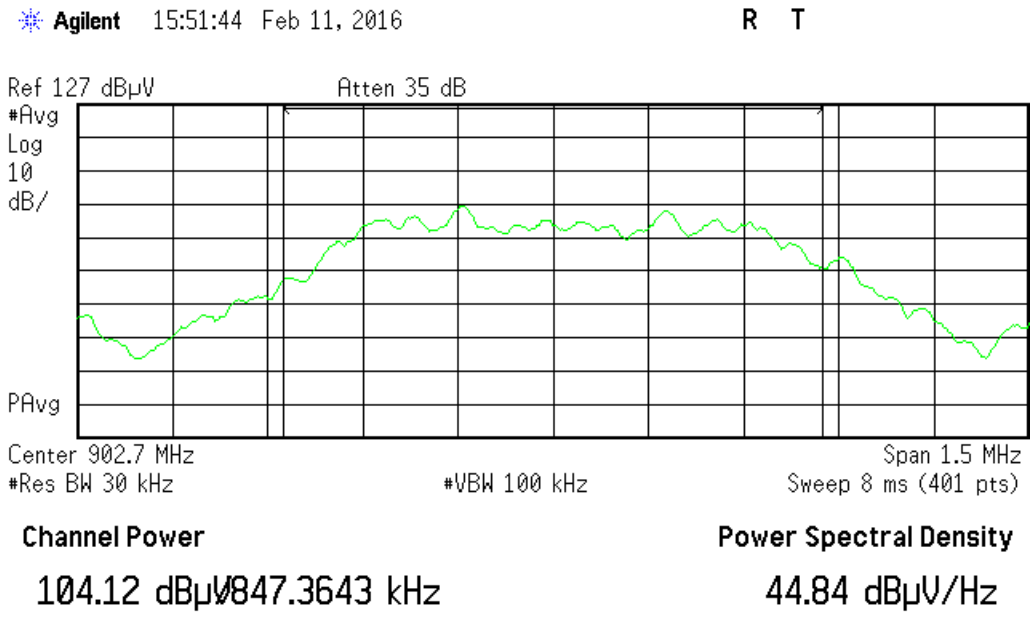
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015

Meteorological Meters	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

Cables	Range	Mfr	Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015

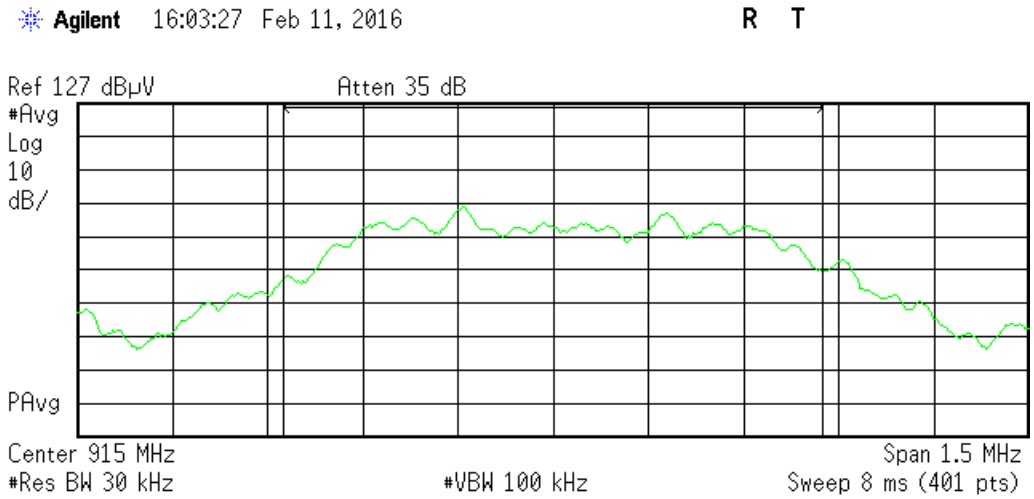
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

PLOTS



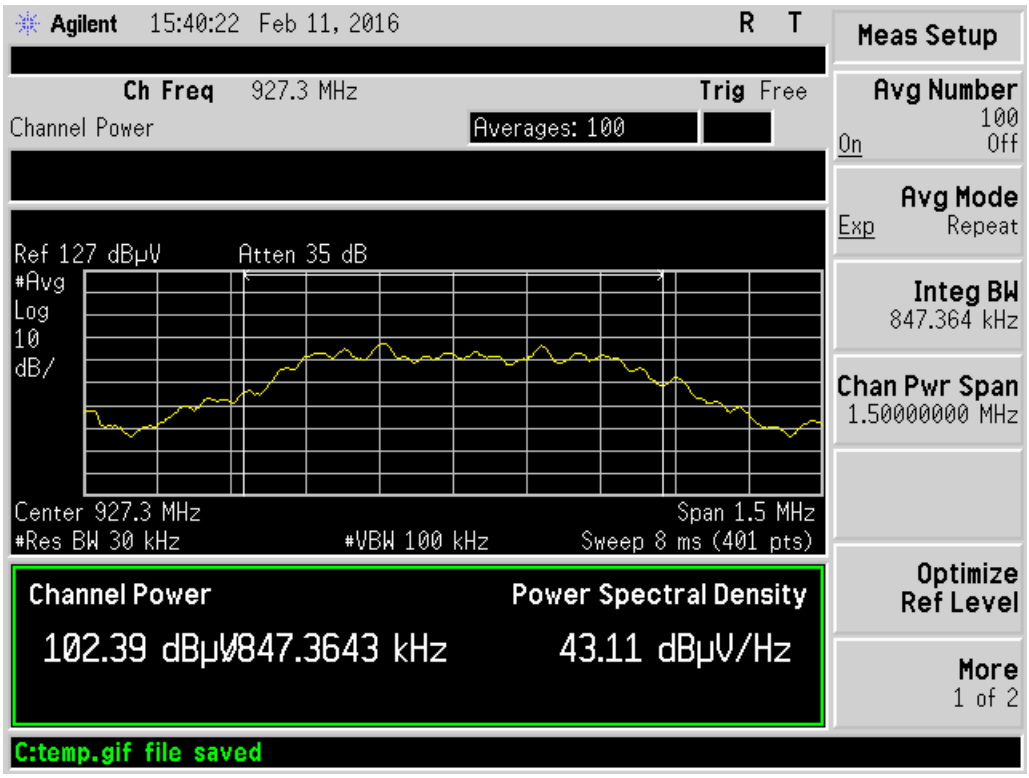
C:temp.gif file saved

Low Channel – Channel Power



C:temp.gif file saved

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: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: TX set on Low ch. **EUT Max Freq:** <108MHz
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)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
V	52.05	32.6	25.4	7.5	0.4	15.1	---	---	---	40.0	-24.9	Pass
V	154.5	34.6	25.9	12.5	0.8	22.0	---	---	---	43.5	-21.5	Pass
V	302.0	35.4	25.6	13.4	1.0	24.2	---	---	---	46.0	-21.8	Pass
H	331.55	31.0	25.6	13.9	1.1	20.4	---	---	---	46.0	-25.6	Pass
V	785.75	34.0	25.6	21.0	1.8	31.2	---	---	---	46.0	-14.8	Pass
H	871.0	34.0	25.5	21.9	1.8	32.2	---	---	---	46.0	-13.8	Pass

Table Result: Pass by -13.8 dB ***Worst Freq:*** 871.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White
CSsoft Radiated Emissions Calculator v 1.017.156
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/5/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Meteorological Meters		**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#2079		HTC-1	HDE		2079	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	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: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 1-6GHz **Measurement Distance:** 3 m
Notes: tx on low channel **EUT Max Freq:** <108MHz
EUT TX Freq: 902.7-927.3MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	FCC 15.209 High Frequency - Peak Margin (dB)	FCC 15.209 High Frequency - Peak Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	FCC 15.209 High Frequency - Average Margin (dB)	FCC 15.209 High Frequency - Average Result (Pass/Fail)
H	1805.4	42.02	32.4	18.8	30.6	2.6	56.4	46.8	74.0	-17.6	Pass	54.0	-7.2	Pass
H	3610.8	38.0	30.4	19.1	33.3	4.1	56.3	48.7	74.0	-17.7	Pass	54.0	-5.3	Pass
H	3660.0	37.4	30.4	19.1	33.4	4.1	55.8	48.8	74.0	-18.2	Pass	54.0	-5.2	Pass

Table Result: Pass by -5.2 dB ***Worst Freq:*** 3660.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.156
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 3 m
Notes: tx on low channel **EUT Max Freq:** <108MHz
EUT TX Freq: 902.7-927.3MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 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 THE LIMIT														

Table Result: Pass by dB ***Worst Freq:*** MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.156
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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	1-18GHz		I	4/29/2017	4/29/2015
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	8/6/2016	8/6/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
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#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	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: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: TX set on Mid ch. **EUT Max Freq:** <108MHz
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)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
V	52.05	32.6	25.4	7.5	0.4	15.1	---	---	---	40.0	-24.9	Pass
V	154.5	34.6	25.9	12.5	0.8	22.0	---	---	---	43.5	-21.5	Pass
V	302.0	35.4	25.6	13.4	1.0	24.2	---	---	---	46.0	-21.8	Pass
H	331.55	31.0	25.6	13.9	1.1	20.4	---	---	---	46.0	-25.6	Pass
V	785.75	34.0	25.6	21.0	1.8	31.2	---	---	---	46.0	-14.8	Pass
H	883.0	35.3	25.4	22.1	1.7	33.7	---	---	---	46.0	-12.3	Pass

Table Result: Pass by -12.3 dB ***Worst Freq:*** 883.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White
CSsoft Radiated Emissions Calculator v 1.017.156
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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**
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Meteorological Meters		**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#2079		HTC-1	HDE		2079	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	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: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 1-6GHz **Measurement Distance:** 3 m
Notes: tx on mid channel **EUT Max Freq:** <108MHz
EUT TX Freq: 902.7-927.3MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 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	44.32	36.0	18.8	30.7	2.7	58.9	50.6	74.0	-15.1	Pass	54.0	-3.4	Pass
H	3660.0	37.4	30.4	19.1	33.4	4.1	55.8	48.8	74.0	-18.2	Pass	54.0	-5.2	Pass

Table Result: Pass by -3.4 dB ***Worst Freq:*** 1830.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.156
Copyright Curtis-Straus LLC 2000
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 3 m
Notes: tx on mid channel **EUT Max Freq:** <108MHz
EUT TX Freq: 902.7-927.3MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 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 THE LIMIT														

Table Result: Pass by dB ***Worst Freq:*** MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.156
Copyright Curtis-Straus LLC 2000
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/5/2016

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	1-18GHz		I	4/29/2017	4/29/2015
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	8/6/2016	8/6/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
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#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	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: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: TX set on High ch. **EUT Max Freq:** <108MHz
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)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
V	52.05	32.6	25.4	7.5	0.4	15.1	---	---	---	40.0	-24.9	Pass
V	154.5	34.6	25.9	12.5	0.8	22.0	---	---	---	43.5	-21.5	Pass
V	302.0	35.4	25.6	13.4	1.0	24.2	---	---	---	46.0	-21.8	Pass
H	331.55	31.0	25.6	13.9	1.1	20.4	---	---	---	46.0	-25.6	Pass
V	785.75	34.0	25.6	21.0	1.8	31.2	---	---	---	46.0	-14.8	Pass
H	895.0	34.0	25.3	22.5	1.7	32.9	---	---	---	46.0	-13.1	Pass

Table Result: Pass by -13.1 dB ***Worst Freq:*** 895.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/5/2016

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

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015

Meteorological Meters		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#2079		HTC-1	HDE		2079	II	4/2/2016	4/2/2015

Cables	Range	Mfr	Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015
Asset #2053	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: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 1-6GHz **Measurement Distance:** 3 m
Notes: tx on high channel **EUT Max Freq:** <108MHz
EUT TX Freq: 902.7-927.3MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
H	1854.6	43.54	34.7	18.8	30.9	2.7	58.3	49.5	74.0	-15.7	Pass	54.0	-4.5	Pass
H	3709.2	38.1	32.2	19.1	33.4	4.2	56.6	50.7	74.0	-17.4	Pass	54.0	-3.3	Pass

Table Result: Pass by -3.3 dB ***Worst Freq:*** 3709.2 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.156
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 06-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Ahmed ahmed **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 23.5°C **Humidity:** 24% **Pressure:** 1010mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 3 m
Notes: tx on high channel **EUT Max Freq:** <108MHz
EUT TX Freq: 902.7-927.3MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 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 THE LIMIT														

Table Result: Pass by dB ***Worst Freq:*** MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.156
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
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Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
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	1-18GHz		I	4/29/2017	4/29/2015
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	8/6/2016	8/6/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
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#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	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.

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 AVGPSD-1 (Average PSD)

MEASUREMENTS / RESULTS

Power Spectral Density

Date: 11-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Tuyen Truong **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 22°C **Humidity:** 27% **Pressure:** 998mbar
Frequency Range: 902.7-927.3 MHz **Measurement Distance:** 3 m
Notes: **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)	Adjusted EIRP Reading (dBm)	Adjusted Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	Margin (dB)	Result (Pass/Fail)
H	902.7	93.4	25.3	22.6	1.7	92.4	-2.8	-5.3	8.0	-13.3	Pass
H	915.0	91.7	25.4	22.6	1.7	90.6	-4.6	-7.1	8.0	-15.1	Pass
H	927.3	89.8	25.5	22.4	1.6	88.3	-6.9	-9.4	8.0	-17.4	Pass

Table Result: Pass by -13.3 dB ***Worst Freq:*** 902.7 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/9/2016

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

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015

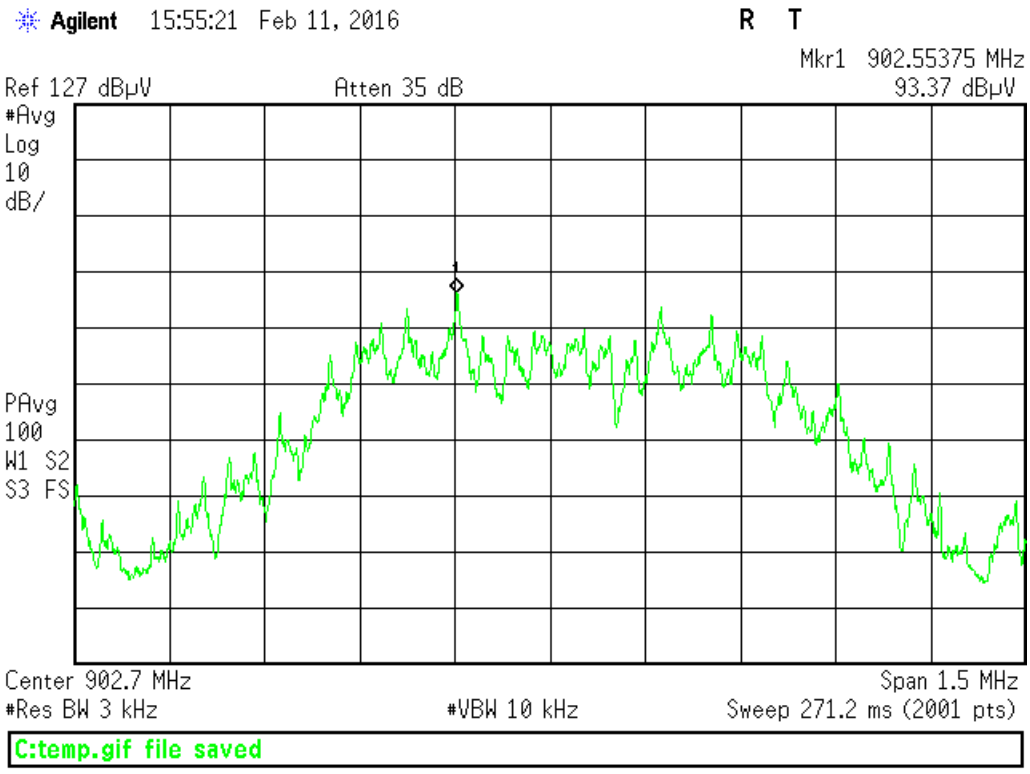
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015

Meteorological Meters	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

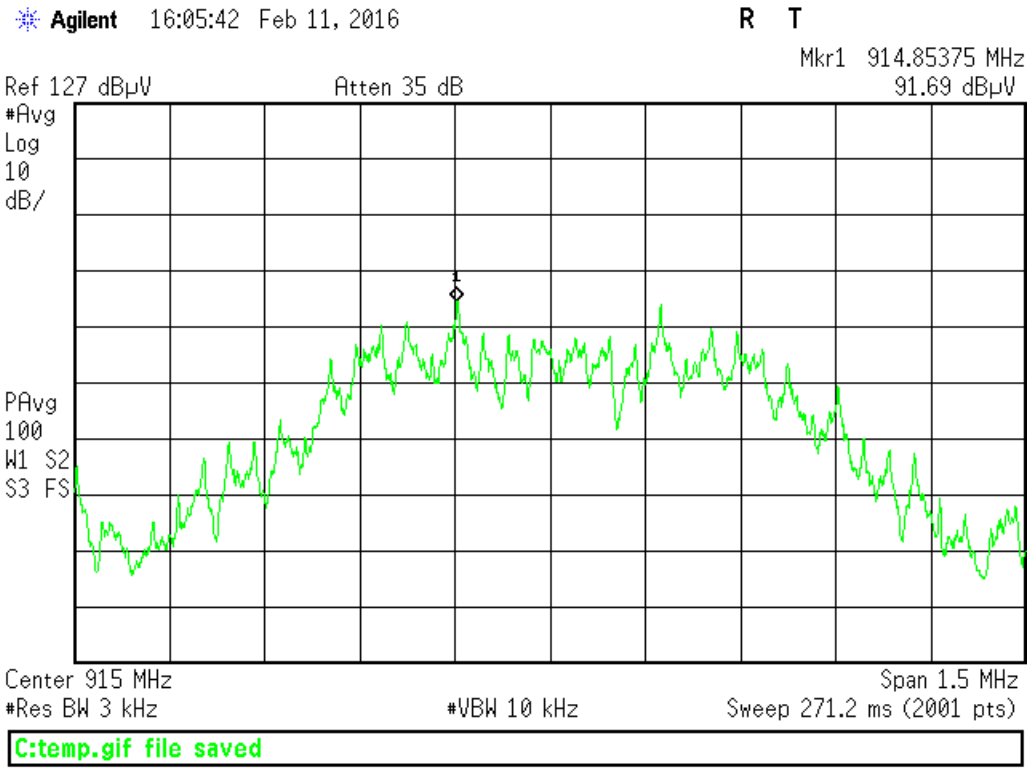
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015

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

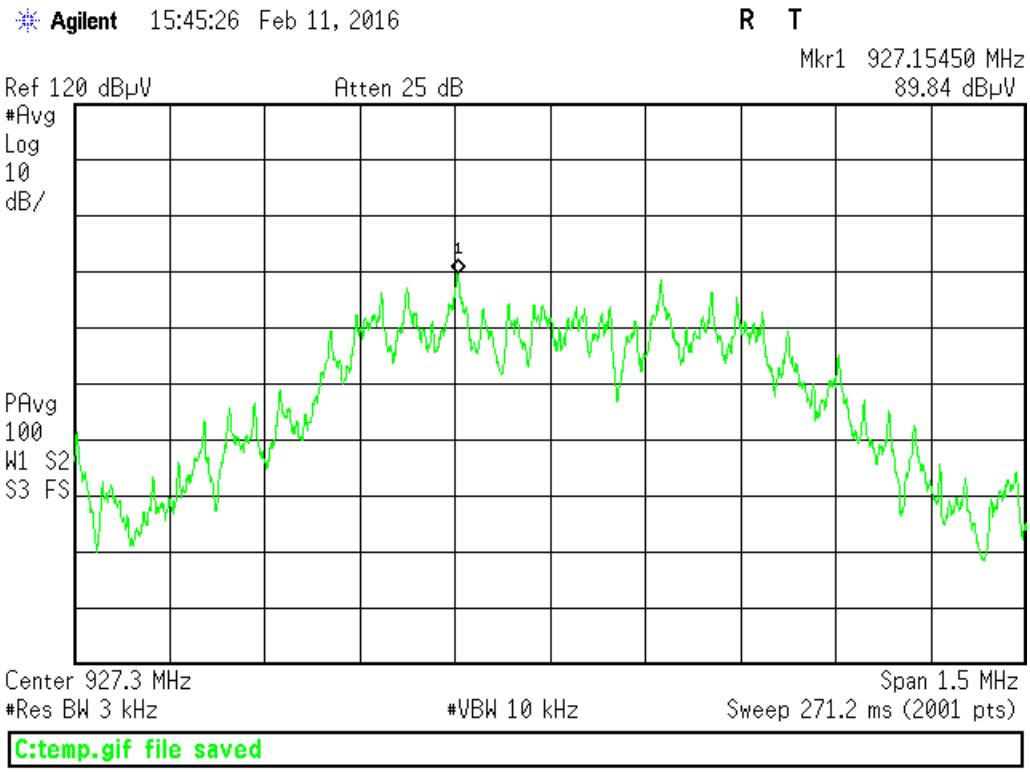
PLOTS



Low Channel – PSD



Mid Channel – PSD



High Channel – 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 line conducted emissions testing was not applicable since the EUT 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 its 99% emission bandwidth, as calculated or measured.
[RSS-GEN 6.6]

MEASUREMENTS / RESULTS

Occupied Bandwidth

Date: 11-Feb-16 **Company:** Ideal Industries, Inc. **Work Order:** Q0291
Engineer: Tuyen Truong **EUT Desc:** LS1401 **EUT Operating Voltage/Frequency:** Battery powered
Temp: 22°C **Humidity:** 27% **Pressure:** 998mbar
Frequency Range: 902.7-927.3 MHz **Measurement Distance:** 3 m
Notes: **EUT Tx Freq:** 902.7-927.3 MHz

Antenna Polarization (H / V)	Frequency (MHz)	Occupied Bandwidth - Reading (KHz)
H	902.7	821.2928
H	915.0	824.8977
H	927.3	847.3643

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.156
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
Rev. 2/9/2016

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

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015

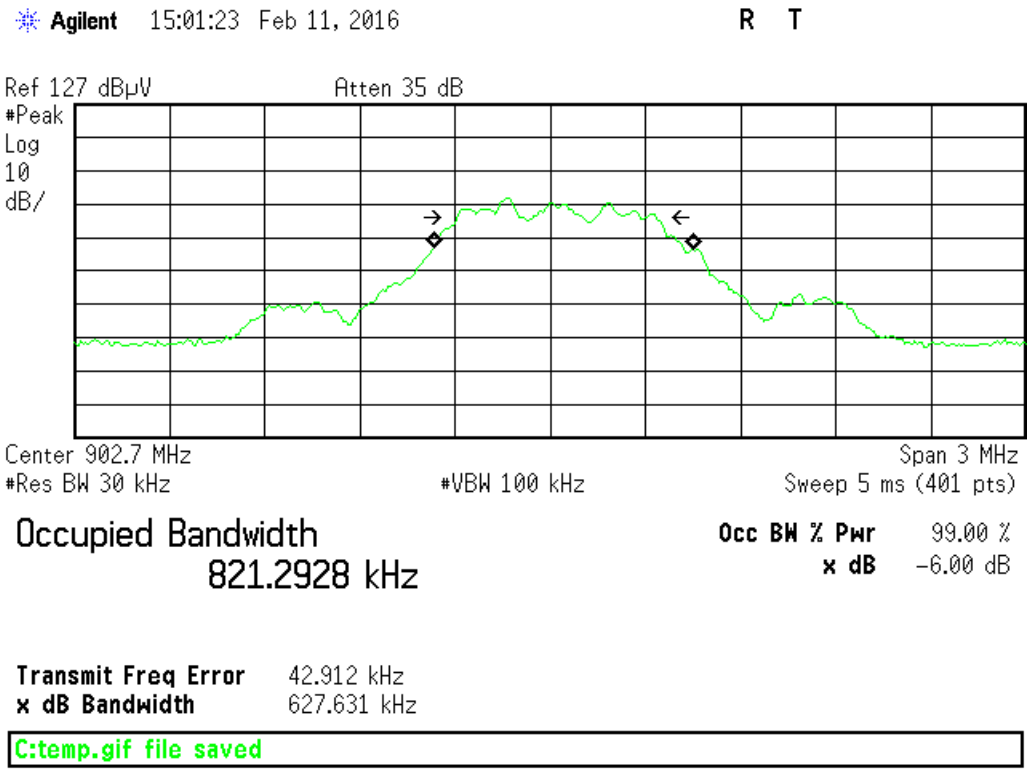
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015

Meteorological Meters		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

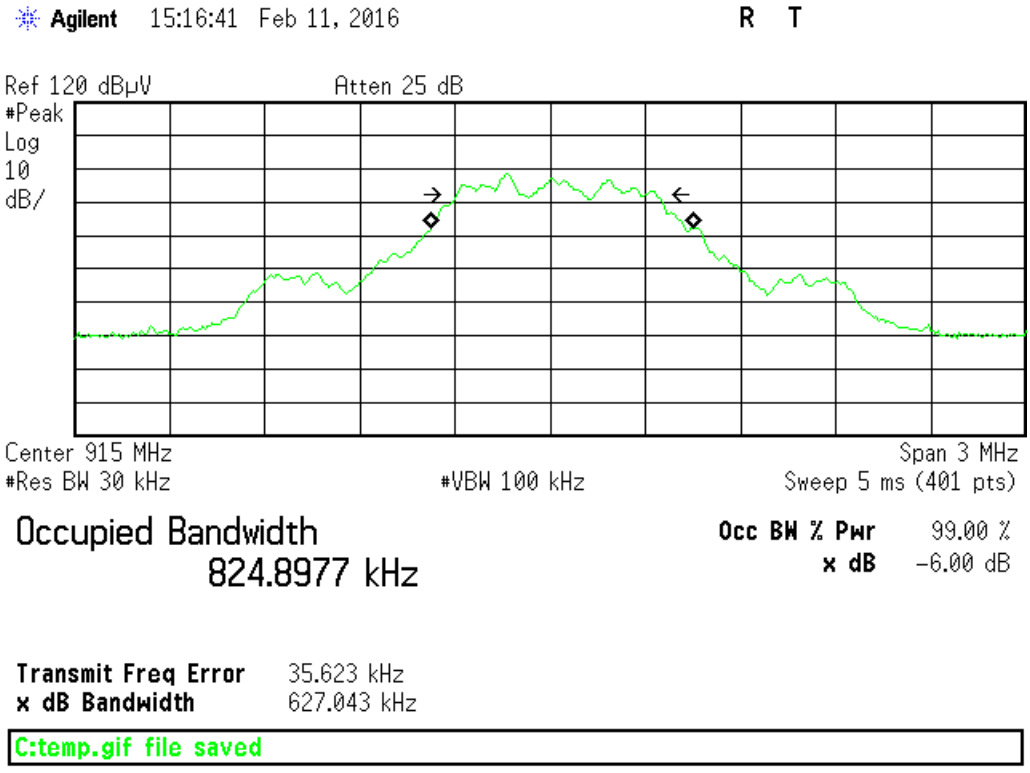
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015

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

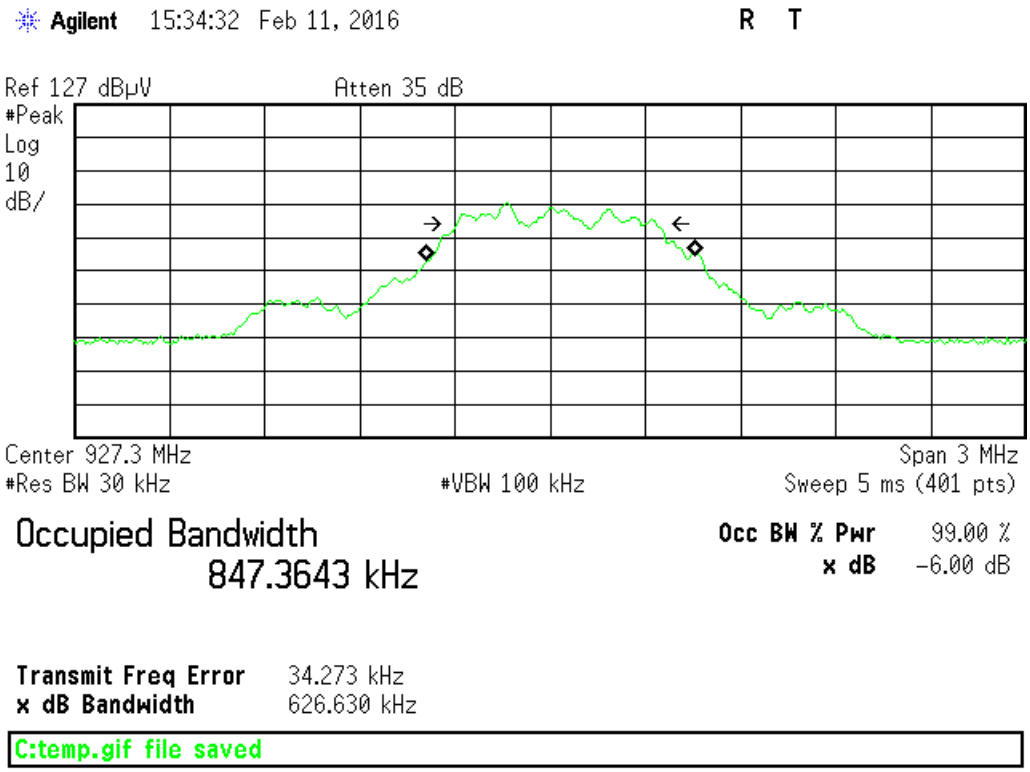
Plot(s)



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) NIST CISPR	 5.6dB 4.6dB	 N/A 5.2dB (Ucispr)
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 CISPR	 3.9dB 3.6dB	 N/A 3.6dB (Ucispr)
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% 0.3dB	 5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		

Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "**BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS", "MTL", "ACTS", "MTL-ACTS" and CURTIS-STRAUS** (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were 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.

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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