



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

Report No EP2928-2

Client ecoVent Robert Kim

Address 24 Cambridge St, Suite 6 Charlestown, MA 02129

Phone 857-204-4466

Items tested VENT

FCC ID 2AFTLSV1

FRN 0024870743

Equipment Type Part 15.247 Digitally Modulated

Equipment Code DTS

FCC/IC Rule Parts

47 CFR 15.247, RSS-247 Issue 1

Test Dates October 14, 16, 21, 22 and 29, 2015

Prepared by

Tuyen A. Truong – Test Engineer

Authorized by

Christopher Reynolds – EMC Supervisor

Issue Date

12/14/2015

Conditions of Issue

This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 27 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.





## **Contents**

Contents	
Summary	
Test Methodology	
Product Tested - Configuration Documentation	
Statement of Conformity	6
Modifications Required for Compliance	7
Bandwidth	
Fundamental Emission Output Power	11
Radiated Spurious Emissions	15
Power Spectral Density	
Occupied Bandwidth	
Measurement Uncertainty	
Conditions Of Testing	

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



# Summary

This test report details the partial testing of the VENT (with existing FCC ID: 2AFTLSV1) with the following modifications:

The channel plan was changed to operate on all channels (please see the channel plan exhibit) from 904 to 926 MHz range (formerly only 1 channel (915 MHz) used for operation). Per client, this is only a software change of the frequency. Also the setting for the EUT transmit power is reduced; 9.6 dBm of power from 904 MHz up to 915 MHz range. The transmit power setting remains at maximum transmit power (11.6 dBm) for frequency range from 915 to 926 MHz. Please note that for the mid channel (915 MHz), testing were performed and recorded with maximum transmit power setting (11.6 dBm).

We found that the product met the above requirements with modification (see Modification Required for Compliance section on page 7 for details). Testing of the original channel plan was previously performed under report EP2231-3.

Robert Kim from ecoVent was present during the testing. The test sample was received in good condition.

Issue No.

Reason for change Original Release

Date Issued December 15, 2015







Test Methodology

Radiated emission testing were performed according to DTS guidance document 558074D01 v03r03 specified in FCC Guidance for performing compliance measurement on DTS operating under section 15.247, April 19, 2013 and ANSI C63.10 (2013). Radiated Emissions were maximized by rotating the device around its axes as well as varying the test antenna's height and polarity. The device antenna could not be maximized separately.

Operating channel frequency = 904 MHz

Operating channel frequency = 915 MHz

Operating channel frequency = 926 MHz

The following bandwidths were used during radiated spurious emissions.

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



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# **Product Tested - Configuration Documentation**

					EUT C	onfiguration						
Work	Order:	P2928										
Con	npany:	ecoVer	nt									
Company Ac	ldress:	24 Can	nbridge St, S	uite 6								
		Charles	stown, MA, (	02129								
C	ontact:	Robert	Kim									
				MN			PN				SN	
	EUT:			SV1		701-0	00001 rev. I	3			Sample	1
EUT Descr	iption:	VENT										
EUT TX Freq	uency:	915 MI	Hz									
Support Equipment				MN	I					SN		
None												
		_		T		1			1			
Port Label	Port	Туре	# ports	# populated	cable type	shielded	ferrite s	length (m)	max length (m)	in/out	under test	comment
None												
<b>Software Operating</b>	Mode Do	escriptio	n:									
EUT is set to transmit High (926 MHz) are t												

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Testing Cert. No. 1827.01

# Statement of Conformity

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

RSS-GEN	RSS 247	Part 15	Comments
5.3		15.15(b)	There are no controls accessible to the user that varies the output power above specified limits.
5.2		15.19	The label is shown in the label exhibit.
8.4		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
		15.31	The EUT was tested in accordance with the measurement standards in this section.
		15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
		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.
6.7		15.203	EUT employs a permanently connected antenna with -2dBi gain.
	5.5	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.
8.8		15.207	N/A. EUT is battery powered
		15.247	The unit complies with the requirements of FCC Part 15.247
	RSS-247		The unit complies with the requirements of RSS-247
6.6		15.247	Occupied Bandwidth measurements were made.

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Modifications Required for Compliance

EUT transmit power was set to 9.6 dBm from 904 MHz up to 915 MHz frequency range. The transmit power setting remained at maximum transmit power (11.6 dBm) for frequency range from 915 to 926 MHz. Please note that for the mid channel (915 MHz) testing was performed and recorded with maximum transmit power setting (11.6 dBm). The power setting in the original application was 11.6dBm. This power setting is fixed in firmware and therefore the user cannot change the power settings. Ecovent is taking care of the firmware and sets fixed power settings at the factory.





Test Results

# Bandwidth

## LIMIT

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

## **MEASUREMENTS / RESULTS**

Date:	Oct 14 & 16, 2015	Company: ecoVent				Work Order:	P2928		
Engineer	Tuyen Truong	EUT Desc: VENT		EUT Operati	ng Voltage	e/Frequency:	3.2Vdc		
Oct 14 - Temp:	22°C	Humidity: 40%	Pressure: 1007mBar						
Oct 16 - Temp:	22°C	Humidity: 31%	Pressure: 1003mBar						
	Frequency Rai	nge: 902-928MHz		Measurement Distance: 3 m					
Notes									
Antenna						6dB BW			
Polarization	Frequency		Reading		Limit	Margin	Result		
(H/V)	(MHz)		(KHz)		(KHz)	(KHz)	(Pass/Fail)		
Н	904		669.604		≥500	+169.604	Pass		
Н	915		665.363		≥500	+165.363	Pass		
Н	926		665.732		≥500	+165.732	Pass		
Test Site:	EMI Chamber 1	Cable 1: Asset #2051		Cable 2: Asset #2053		Cable 3:			
Analyzer	Gold	Preamp: none		Antenna: Red-Brown		Preselector:			
CSsoft Radiated	Emissions Calculator	v 1.017.148				Copyright Curtis	-Straus LLC 2000		
A P 4 1 1 1 1 1 1 1	<u> </u>	Factor + Antenna Factor + Cable F	Costor						

Rev.10/8/2015								
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	4/22/2016	4/22/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	3/21/2017	3/21/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	12/4/2016	12/4/2014
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2051	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	- 1	3/19/2016	3/19/2014
TH A#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015

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



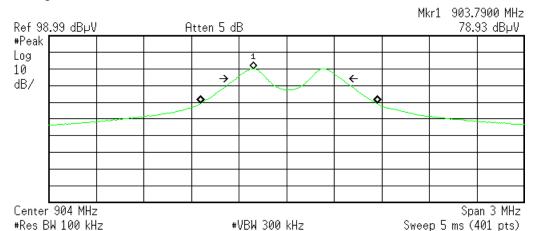
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Testing Cert. No. 1827.01

PLOT(s)

\* Agilent 10:43:07 Oct 16, 2015

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Occupied Bandwidth 1.1098 MHz

Occ BW % Pwr 99.00 % x dB -6.00 dB

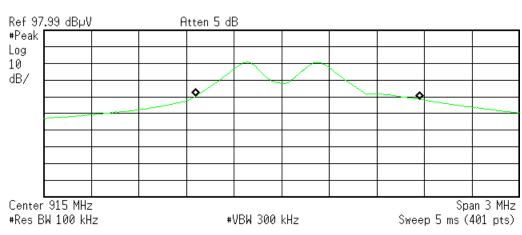
Transmit Freq Error 14.655 kHz x dB Bandwidth 669.604 kHz

C:temp.gif file saved

904 MHz - 6dB Bandwidth

\* Agilent 10:13:32 Oct 16, 2015

R T



Occupied Bandwidth 1.4108 MHz 0cc BW % Pwr 99.00 % x dB -6.00 dB

Transmit Freg Error 161.771 kHz

x dB Bandwidth 665.363 kHz

Printer Type is None

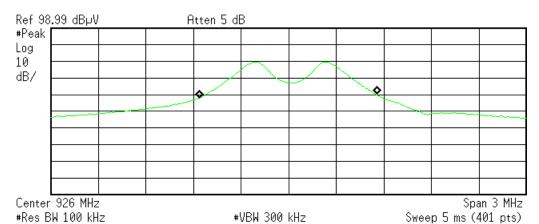
915 MHz - 6dB Bandwidth





\* Agilent 14:06:04 Oct 14, 2015

R T



Occupied Bandwidth 1.1123 MHz

Occ BW % Pwr 99.00 % x dB -6.00 dB

Transmit Freq Error -4.835 kHz x dB Bandwidth 665.732 kHz

C:temp.gif file saved

926 MHz - 6dB Bandwidth



# Fundamental Emission Output Power LIMIT

Conducted Output Power 1 Watt [15.247(b) (3)]

Per 558074 D01 DTS Measurement Guidance v0303 Section 9.2.2.2 (AVGSA-1 - Average Conducted Output Power)

### **MEASUREMENTS / RESULTS**

Date:	Oct 14 & 16, 2	2015	Company:	ecoVent					1	Work Order:	P2928
Engineer:	Tuyen Truong		EUT Desc:	VENT				EUT Operati	ing Voltage	/Frequency:	3.2Vdc
Oct 14 - Temp:	22°C		Humidity:	40%		Pressure:	1007mBar				
ct 16 - Temp:	22°C		Humidity:	31%		Pressure: 1003mBar					
	Freque	ncy Range	: 902-928MI	-lz				Measuremen	nt Distance:	3 m	
Notes:	For channel 90 AVGSA-1	04 up to 915	MHz, power	is reduced	to 9.6dBr	n					
Antenna Polarization	Frequency	Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Reading	Adjusted EIRP Reading	Final Conducted Reading	Limit	FCC 15.24	Result
(H/V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBm)	(dBm)	(dBm)	(dB)	(Pass/Fail)
Н Н Н	904.0 915.0 926.0	78.54 78.31 78.35	0.0 0.0 0.0	22.5 22.4 22.5	1.7 1.7 1.7	102.7 102.4 102.6	7.47 7.17 7.37	9.47 9.17 9.37	30.0 30.0 30.0	-20.53 -20.83 -20.63	Pass Pass Pass
Table	e Result:	Pass	by	-20.53	dB			Wo	orst Freq:	904.0	MHz
Analyzer:	EMI Chamber Gold Emissions Cal		Cable 1: Preamp: 1.017.148	Asset #209 none	51			Cable 2: Asset #2053 Antenna: Red-Brown		Cable 3: - Preselector: - Copyright	

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Rev.10/8/2015 Spectrum Analyzers / Receivers / Preselectors Gold	Range 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	Asset 1284	Cat I	Calibration Due 4/22/2016	Calibrated on 4/22/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	3/21/2017	3/21/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	1	12/4/2016	12/4/2014
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2051	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	1	3/19/2016	3/19/2014
TLI A#2000		LITC 1	LIDE		2000		4/2/2016	4/2/201E

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



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**Fundamental Emission Output Power** Date: 29-Oct-15 Company: Ecovent Work Order: P2928 Engineer: Tuyen Truong EUT Desc: VENT EUT Operating Voltage/Frequency: 3.2Vdc **Temp:** 22°C Humidity: 51% Pressure: 998mBar Frequency Range: 915 MHz Measurement Distance: 3 m Notes: 11.6dBm power setting FCC 15.247 Antenna Cable Adjusted Adjusted Final Antenna Polarization Frequency Reading Factor Factor Factor Reading EIRP Reading Conducted Reading Limit Margin Result (H/V) (MHz) (dBµV) (dB) (dB) (dBµV/m) (dBm) (dBm) (Pass/Fail 915.0 78.7 0.0 22.6 1.9 103.2 7.97 9.97 30.0 -20.03 Pass Table Result: Worst Freq: -20.03 dB 915.0 MHz Pass by Test Site: EMI Chamber 2 Cable 1: Asset #2052 Cable 2: Asset #1787 Antenna: Red-White Cable 3: ---Analyzer: Asset #1327 CSsoft Radiated Emissions Calculator Preamp: none Preselector: ---

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ev.10/19/2015								
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
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
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz		Florida RF			Ш	3/8/2016	3/8/2015
Asset #1787	9kHz - 18GHz		Florida RF			II	3/21/2016	3/21/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	- 1	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	Ш	4/2/2016	4/2/2015

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

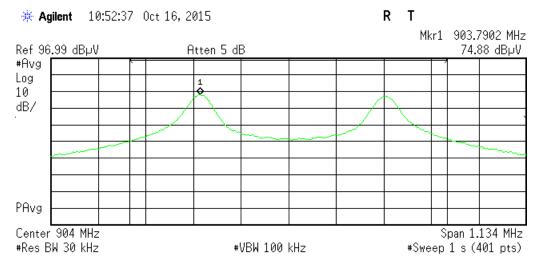
v 1.017.148

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor





**PLOTS** 

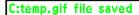


**Channel Power** 

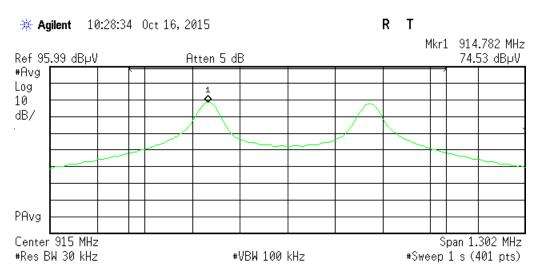
**Power Spectral Density** 

 $78.54 \text{ dB}\mu\text{V}/755.4243 \text{ kHz}$ 

19.76 dBµV/Hz



904 MHz - Channel Power (9.6dBm)



**Channel Power** 

**Power Spectral Density** 

78.31 dBµV/867.6203 kHz

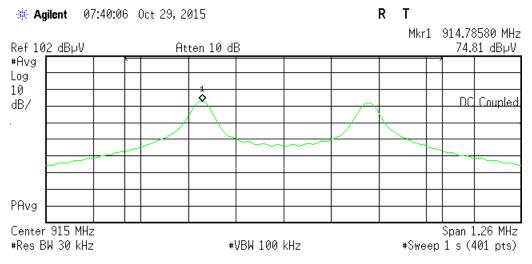
18.93 dBµV/Hz

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915 MHz - Channel Power (9.6dBm)



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**Channel Power** 

**Power Spectral Density** 

78.69 dBµV/839.4601 kHz

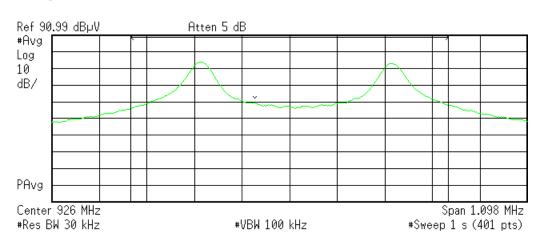
19.45 dBµV/Hz

## C:temp.gif file saved

915 MHz - Channel Power (11.6dBm)

\* Agilent 14:21:03 Oct 14, 2015

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**Channel Power** 

**Power Spectral Density** 

78.35 dBµV/731.7806 kHz

19.70 dBµV/Hz

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926 MHz - Channel Power (11.6dBm)





# Radiated 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 ...

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 Band Edge (902 – 928 MHz)

Date:	16-Oct-15		Company:	ecoVent						,	Work Order:	P2928
Engineer:	Tuyen Truong		EUT Desc:	VENT					EUT Opera	ting Voltage	/Frequency:	120VAC, 60H
Temp:	22°C		Humidity:	33%		Pressure:	1006mBar					
	Freque	ncy Range:	Bandedge	Readings					Measureme	nt Distance:	3 m	
Notes:	Limit is -30dB f	rom the max	mum in ban	nd PSD leve	l in 100kH	Iz RBW (or 73.2	dBuV/m)					
							1			F00.		AID I look
Antenna			Preamp	Antenna	Cable	Adjusted				FCC	Bandedge -30	Jab Limit
	Frequency	Reading	Factor	Factor	Factor	Reading	Limit	Margin	Result	Limit	Margin	Result
Polarization			(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fail)
olarization (H / V)	(MHz)	(dBµV)	(ub)									
	(MHz) 902.0	(dBµV) 42.1	0.0	22.5	1.7	66.3				73.2	-6.9	Pass
(H / V)	_ ` /			22.5 22.5	1.7 1.6	66.3 66.2				73.2 73.2	-6.9 -7.0	Pass Pass
(H / V) V V	902.0	42.1	0.0	-	1.6					-		Pass
(H / V) V V Tab	902.0 928.0	42.1 42.1 Pass	0.0 0.0 by	22.5	1.6 dB					73.2	-7.0	Pass MHz

Date:	16-Oct-15		Company:	ecoVent							Work Order:	P2928
Engineer:	Tuyen Truong		EUT Desc:	VENT					EUT Opera	ating Voltage	/Frequency:	120VAC, 60Hz
Temp:	22°C		Humidity:	33%	Pressure: 1006mB							
	Freque	ency Range:	Fundament	tal Reading					Measureme	nt Distance:	3 m	
Notes:												
A-1			D	<b>A</b>	Cabla	Adimeted						
Antenna Polarization	Frequency	Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Reading	Limit	 Margin	Result	Limit	 Margin	Result
	Frequency (MHz)	Reading (dBµV)				•	Limit (dBµV/m)	1	Result (Pass/Fail)	Limit (dBµV/m)		Result (Pass/Fail)
Polarization (H / V)			Factor	Factor	Factor	Reading		Margin			Margin	
Polarization (H / V)	(MHz)		Factor	Factor	Factor	Reading		Margin			Margin	
Polarization (H / V) aximum Peak PS V	(MHz) D in 100kHz rbw	(dBμV) 79.0	Factor (dB)	Factor (dB/m)	Factor (dB)	Reading (dBµV/m)	(dBµV/m)	Margin (dB)		(dBµV/m)	Margin (dB)	(Pass/Fail)





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Rev.10/8/2015 Spectrum	Analyzers / Receivers / Preselectors Gold	Range 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>M</b> fr Agilent	<b>SN</b> MY45113816	Asset 1284	Cat 	Calibration Due 4/22/2016	<b>Calibrated on</b> 4/22/2015
	Radiated Emissions Sites EMI Chamber 1	FCC Code 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 3/21/2017	Calibrated on 3/21/2015
	<b>Antennas</b> Red-Brown Bilog	Range 30-2000MHz	<b>MN</b> JB1	<b>M</b> fr Sunol	<b>SN</b> A0032406	<b>Asset</b> 1218	Cat 	Calibration Due 12/4/2016	Calibrated on 12/4/2014
	Cables Asset #2051 Asset #2053	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			Cat II	Calibration Due 3/8/2016 3/8/2016	Calibrated on 3/8/2015 3/8/2015
W	Meteorological Meters Veather Clock (Pressure Only) TH A#2080		MN BA928 HTC-1	Mfr Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	Cat   	Calibration Due 3/19/2016 4/2/2016	Calibrated on 3/19/2014 4/2/2015

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





Radiated Spurious EMI (30 to 10000 MHz)

**Radiated Emissions Table** Date: 16-Oct-15 Company: ecoVent Work Order: P2928 Engineer: Tuyen Truong EUT Desc: VENT EUT Operating Voltage/Frequency: 3.2Vdc Temp: 22°C Pressure: 1003mBar Humidity: 31% Frequency Range: 30 - 1000MHz Measurement Distance: 3 m Notes: TX on 904 MHz EUT Tx Freq: 902-928MHz 9.6dBm FCC 15.209 Antenna Preamp Antenna Cable Adjusted Limit Polarization Frequency Reading Factor Factor Factor Reading Margin Result Limit Margin Result (H/V) (MHz) (dBµV) (dB) (dB/m) (dB) (dBµV/m) (dBµV/m) (dB) (Pass/Fail) dBµV/m) (Pass/Fail) 34.9 18.3 Pass 151.8 35.1 12.5 23.2 Pass 280.0 28.3 25.5 13.4 1.0 17.2 46.0 -28.8 Pass h 400.0 30.5 15.6 22.0 -24.0 25.2 46.0 Pass 1.1 426.6 32.8 ---Pass 40.7 25.4 16.5 1.0 ---46.0 -13.2 --h

Table Result: Pass -13.2 dB Worst Freq: 426.6 MHz by

28.2

Test Site: EMI Chamber 1

614.0

968.9

Cable 1: Asset #2051

Cable 2: Asset #2053 Antenna: Red-Brown

Cable 3: -

Preselector: ---

-17.8

-19.8

46.0

Analyzer: Gold CSsoft Radiated Emissions Calculator

Preamp: Blue-Blk

32.8

33.9

v 1.017.148

25.3

24.4

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

19.2

22.9

1.5

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Pass

Pass

Rev.10/8/2015

h

Nev. 10/6/2013								
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	- 1	4/22/2016	4/22/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	3/21/2017	3/21/2015
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/26/2015	12/26/2014
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	12/4/2016	12/4/2014
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2051	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	- 1	3/19/2016	3/19/2014
TH A#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015

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

Date:	21-Oct-15			Company:	ecoVent							v	Vork Order:	P2928
Engineer:	Tuyen Truong			EUT Desc:	VENT						<b>EUT Operati</b>	ng Voltage/	Frequency:	3.2Vdc
Temp:	22.4°C			Humidity:	32%			Pressure	: 1018mBar					
		Freque	ncy Range:	1 - 6 GHz							Measuremer	nt Distance:	3 m	
Notes:	TX on Low cha 9.6dBm	annel									El	JT Tx Freq:	904 - 926 M	Hz
Antenna		Peak	Average	Preamp	Antenna	Cable	Adjusted	Adjusted	FCC 15.209	High Frequ	ency - Peak	FCC 15.2	equency -	
Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Reading (dBµV)	Factor (dB)	Factor (dB/m)	Factor (dB)	Peak Reading (dBµV/m)	Avg Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fa
h	1808.0	40.92	32.6	18.8	30.6	2.6	55.3	47.0	74.0	-18.7	Pass	54.0	-7.0	Pass
v	1808.0	38.36	23.0	18.8	30.6	2.6	52.8	37.4	74.0	-21.2	Pass	54.0	-16.6	Pass
h	2712.0	36.73	24.5	18.9	32.9	3.5	54.2	42.0	74.0	-19.8	Pass	54.0	-12.0	Pass
V	2712.0	39.17	25.8	18.9	32.9	3.5	56.7	43.3	74.0	-17.3	Pass	54.0	-10.7	Pass
V	3616.0	38.84	25.0	18.5	33.3	4.1	57.7	43.9	74.0	-16.3	Pass	54.0	-10.1	Pass
h	4520.0	35.5	22.4	17.1	34.2	4.5	57.1	44.0	74.0	-16.9	Pass	54.0	-10.0	Pass
V	4520.0	37.23	25.4	17.1	34.2	4.5	58.8	47.0	74.0	-15.2	Pass	54.0	-7.0	Pass
h	5424.0	36.93	22.1	16.4	34.8	5.1	60.4	45.6	74.0	-13.6	Pass	54.0	-8.4	Pass
٧	5424.0	35.95	23.8	16.4	34.8	5.1	.1 59.5 47.3 74.0 -14.5 Pass 54.0 -6.7 Pa						Pass	
Table	e Result:		Pass	by	-6.7	dB	dB <b>Worst Freq:</b> 5424.0 MHz					MHz		
Test Site:	EMI Chamber	1		Cable 1:	Asset #20	51	Cable 2: Asset #2053							



Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor



**Radiated Emissions Table** Date: 22-Oct-15 Work Order: P2928 Company: ecoVent Engineer: Tuyen Truong EUT Desc: VENT EUT Operating Voltage/Frequency: 3.2Vdc Temp: 23.2°C Humidity: 32% Pressure: 1013mBar Frequency Range: 6 - 10GHz Measurement Distance: 1 m Notes: TX on Low channel EUT Tx Freq: 904 - 926 MHz 9.6dBm FCC 15.209 High Frequency - Peal FCC 15.209 High Frequency Cable Adjusted Adjusted Average Polarization Frequency Reading Reading Factor Factor Factor Peak Reading Avg Reading Limit Margin Result Limit Margin Result (MHz) (dBµV) (dBµV) (dB) (dB/m) (dB) (dBµV/m) (dBµV/m) dΒμV/m (Pass/Fail) (dBµV/m (dB) 6328.0 34.28 23.5 16.2 35.8 5.8 48.9 83.5 -23.8 63.5 -14.6 Pass 34.37 6328.0 23.6 16.2 35.8 5.8 59.8 49.0 83.5 -23.7Pass 63.5 -14.5 Pass Table Result: **Pass** by -14.5 dB Worst Freq: 6328.0 MHz Test Site: EMI Chamber Cable 3: -Cable 1: Asset #2051 Cable 2: Asset #2053 Analyzer: Gold Ssoft Radiated Emissions Calculator Preamp: Brown Antenna: Blue Horn Preselector: -v 1.017.148 Copyright Curtis-Straus LLC 20

Rev.10/19/2015

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

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

Notes: TX on 915 MHz EUT Tx Freq: 902-928MHz

11.6dBm

	11.6dBm											
											FCC 15.209	
Antenna			Preamp	Antenna	Cable	Adjusted						
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading	Limit	Margin	Result	Limit	Margin	Result
(H/V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fail)
V	51.8	33.8	25.4	7.8	0.4	16.6				40.0	-23.4	Pass
V	114.0	29.4	25.3	13.3	0.6	18.0				43.5	-25.5	Pass
h	280.0	27.5	25.5	13.4	1.0	16.4				46.0	-29.6	Pass
V	400.0	30.1	25.2	15.6	1.1	21.6				46.0	-24.4	Pass
h	415.6	32.7	25.3	16.2	1.2	24.8				46.0	-21.2	Pass
v	422.9	32.2	25.4	16.4	1.1	24.3				46.0	-21.7	Pass
h	614.0	35.2	25.3	19.2	1.5	30.6				46.0	-15.4	Pass
h	965.0	35.3	24.4	22.9	1.7	35.5				54.0	-18.5	Pass

Table Result: Pass by -15.4 dB Worst Freq: 614.0 MHz

Test Site: EMI Chamber 1 Cable 1: Asset #2051 Cable 2: Asset #2053 Cable 3: --
Analyzer: Gold Preamp: Blue-Blk Antenna: Red-Brown Preselector: --
CSsoft Radiated Emissions Calculator v 1.017.148 Cable 2: Asset #2053 Cable 3: --
Preselector: --
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor





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Rev.10/8/2015 Spectrum Analyzers / Receivers / Preselectors Gold	Range 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	Asset 1284	Cat	Calibration Due 4/22/2016	Calibrated on 4/22/2015
Radiated Emissions Sites EMI Chamber 1	<b>FCC Code</b> 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 3/21/2017	Calibrated on 3/21/2015
Preamps/Couplers Attenuators / Filters Blue-Black	<b>Range</b> 0.009-2000MHz	MN ZFL-1000-LN	Mfr CS	SN N/A	Asset 800	Cat II	Calibration Due 12/26/2015	Calibrated on 12/26/2014
Antennas Red-Brown Bilog	Range 30-2000MHz	MN JB1	<b>Mfr</b> Sunol	<b>SN</b> A0032406	Asset 1218	Cat I	Calibration Due 12/4/2016	Calibrated on 12/4/2014
Cables Asset #2051 Asset #2053	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			Cat II	Calibration Due 3/8/2016 3/8/2016	Calibrated on 3/8/2015 3/8/2015
Meteorological Meters Weather Clock (Pressure Only) TH A#2080		MN BA928 HTC-1	Mfr Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	Cat   	Calibration Due 3/19/2016 4/2/2016	Calibrated on 3/19/2014 4/2/2015

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

Date:	: 21-Oct-15			Company:	ecoVent							1	Work Order:	P2928
Engineer:	: Tuyen Truong			EUT Desc:	VENT						<b>EUT Operati</b>	ng Voltage	Frequency:	3.2Vdc
Temp:	: 22.4°C			Humidity:	32%			Pressure	: 1018mBar					
		Freque	ncy Range:	1 - 6 GHz							Measuremer	nt Distance:	3 m	
Notes:	TX on Mid cha 11.6dBm	nnel									El	JT Tx Freq:	904 - 926 MI	Hz
,									FCC 15.209	High Frequ	ency - Peak	FCC 15.	209 High Fre	equency -
Antenna Polarization	F	Peak	Average	Preamp	Antenna	Cable	Adjusted	Adjusted	1.5		December	Limit	Average	D it
(H/V)	Frequency (MHz)	Reading (dBuV)	Reading (dBµV)	Factor (dB)	Factor (dB/m)	Factor (dB)	Peak Reading (dBµV/m)	Avg Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	(dBµV/m)	Margin (dB)	Result (Pass/Fai
(11/ V) V	1830.0	37.17	23.9	18.9	30.7	2.7	51.7	38.4	74.0	-22.3	Pass	54.0	-15.6	Pass
h	1830.0	40.95	31.9	18.9	30.7	2.7						54.0	-7.6	Pass
v	2745.0	40.14	29.0	18.9	33.0	3.5	57.7	46.6	74.0	-16.3	Pass	54.0	-7.4	Pass
h	2745.0	39.01	26.0	18.9	33.0	3.5	56.6	43.6	74.0	-17.4	Pass	54.0	-10.4	Pass
V	3660.0	41.66	29.9	18.5	33.4	4.1	60.7	48.9	74.0	-13.3	Pass	54.0	-5.1	Pass
h	3660.0	39.39	23.1	18.5	33.4	4.1	58.4	42.1	74.0	-15.6	Pass	54.0	-11.9	Pass
V	4575.0	41.55	29.2	17.2	34.3	4.6	63.3	50.9	74.0	-10.7	Pass	54.0	-3.1	Pass
h	4575.0	39.96	27.8	17.2	34.3	4.6	61.7	49.5	74.0	-12.3	Pass	54.0	-4.5	Pass
٧	5490.0	38.52	25.8	16.4	34.8	5.2	62.1	49.4	74.0	-11.9	Pass	54.0	-4.6	Pass
Tabl	e Result:		Pass	by	-3.1	dB					Wo	orst Freq:	4575.0	MHz
Test Site:	: EMI Chamber	1		Cable 1:	Asset #20	51				Cable 2:	Asset #2053		Cable 3:	
				Preamp:			Antenna: Blue Horn Preselector:							

Date:	22-Oct-15			Company:	ecoVent							V	Vork Order:	P2928
Engineer:	Tuyen Truong			EUT Desc:	VENT						<b>EUT Operat</b>	ing Voltage/	Frequency:	3.2Vdc
Temp:	23.2°C			Humidity:	32%			Pressure:	1013mBar					
		Freque	ncy Range:	6 - 10GHz							Measureme	nt Distance:	1 m	
Notes:	TX on Mid cha 11.6dBm	innel									E	UT Tx Freq:	904 - 926 M	Hz
Antenna		Peak	Average	Preamp	Antenna	Cable	Adjusted	Adjusted	FCC 15.209	High Frequ	ency - Peak	FCC 15.:	209 High Frequency - Average	
Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Reading (dBµV)	Factor (dB)	Factor (dB/m)	Factor (dB)	Peak Reading (dBµV/m)	Avg Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Lim it (dBµV/m)	Margin (dB)	Result (Pass/Fa
h v	6405.0 6405.0	35.67 36.85	24.3 26.0	16.0 16.0	35.8 35.8	5.9 5.9	61.4 62.6	50.0 51.7	83.5 83.5	-22.1 -20.9	Pass Pass	63.5 63.5	-13.5 -11.8	Pass Pass
Table	e Result:		Pass	by	-11.8	dB					Wo	orst Freq:	6405.0	MHz
Test Site:	EMI Chamber	1		Cable 1:	Asset #205	51				Cable 2:	e 2: Asset #2053			
i ca cito.											tenna: Blue Horn Preselector:			





Rev.10/19/2015 Spectrum Analyzers / Receivers / Preselectors Gold	Range 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	Asset 1284	Cat 	Calibration Due 4/22/2016	Calibrated on 4/22/2015
Radiated Emissions Sites EMI Chamber 1	<b>FCC Code</b> 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 3/21/2017	Calibrated on 3/21/2015
Preamps/Couplers Attenuators / Filters Brown	Range 1-10GHz	MN CS	Mfr CS	SN N/A	<b>Asset</b> 1523	Cat II	Calibration Due 4/9/2016	Calibrated on 10/8/2015
<b>Antennas</b> Blue Hom	Range 1-18Ghz	<b>MN</b> 3117	Mfr ETS	<b>SN</b> 157647	Asset 1861	Cat 	Calibration Due 2/8/2017	Calibrated on 2/8/2015
Cables Asset #2051 Asset #2053	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>M</b> fr Florida RF Florida RF			Cat II	Calibration Due 3/8/2016 3/8/2016	Calibrated on 3/8/2015 3/8/2015
Meteorological Meters Weather Clock (Pressure Only) TH A#2080		MN BA928 HTC-1	Mfr Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	Cat I	<b>Calibration Due</b> 3/19/2016 4/2/2016	Calibrated on 3/19/2014 4/2/2015

Date:	16-Oct-15		Company:	ecoVent				•		V	Vork Order:	P2928	
Engineer:	Tuyen Truong		EUT Desc:	VENT					EUT Operat	ing Voltage/	Frequency:	3.2Vdc	
Temp:			Humidity:	31%		Pressure:	1003mBar			3			
	Freque	ncy Range:	30 - 1000N	lHz					Measureme	nt Distance:	3 m		
Notes:	TX on 926 MHz 11.6dBm	<u>z</u>							Е	UT Tx Freq:	902-928MHz	:	
Antenna			Preamp	Antenna	Cable	Adjusted		-	1 00 10:200				
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading	Limit	imit Margin Result Limit Margin					
(H/V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)						(Pass/Fa	
v	51.8	33.5	25.4	7.8	0.4	16.3				40.0	-23.7	Pass	
v	117.3	29.3	25.3	13.7	0.6	18.3				43.5	-25.2	Pass	
h	280.0	27.0	25.5	13.4	1.0	15.9				46.0	-30.1	Pass	
v	400.0	29.5	25.2	15.6	1.1	21.0				46.0	-25.0	Pass	
v	418.0	34.3	25.3	16.3	1.1	26.4				46.0	-19.6	Pass	
h	420.0	42.5	25.3	16.3	1.1	34.6				46.0	-11.4	Pass	
h	614.0	33.2	25.3	19.2	1.5	28.6	28.6 46.0 -17.4					Pass	
h	965.0	36.9	24.4	22.9	1.7	37.1	37.1 54.0 -16.9 Pa						
T-41	e Result:	Pass	by	-11.4	dВ	Worst Freq: 420.0 MHz					MHz		

Analyzer: Gold Preamp: Blue-Blk
CSsoft Radiated Emissions Calculator v 1.017.148
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Preselector: --Copyright Curtis-Straus LLC 200

Rev.10/8/2015								
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	<b>Calibration Due</b>	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	4/22/2016	4/22/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	3/21/2017	3/21/2015
Preamps/Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/26/2015	12/26/2014
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	- 1	12/4/2016	12/4/2014
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2051	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	- 1	3/19/2016	3/19/2014
TH A#2080		HTC-1	HDE		2080	II	4/2/2016	4/2/2015

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



**Radiated Emissions Table** Date: 22-Oct-15 Work Order: P2928 Company: ecoVent Engineer: Tuyen Truong EUT Desc: VENT EUT Operating Voltage/Frequency: 3.2Vdc Temp: 23.2°C Humidity: 32% Pressure: 1013mBar Frequency Range: 1 - 6 GHz Measurement Distance: 3 m Notes: TX on High channel EUT Tx Freq: 904 - 926 MHz 11.6dBm FCC 15.209 High Frequency - Peak FCC 15.209 High Frequency Cable Adjusted Adjusted Average Polarization Frequency Reading Reading Factor Factor Factor Peak Reading Avg Reading Limit Margin Result Limit Margin Result (H/V) (MHz) (dBµV) (dBµV) (dB) (dB) (dBµV/m) (dBµV/m) (Pass/Fail dBµV/n (dB) 39.8 45.6 1852.0 35.77 25.1 18.9 30.9 74.0 -23.5 -14.2 Pass 74.0 54.0 h 1852.0 39.73 30.9 18.9 30.9 2.7 54.4 -19.6 Pass -8.4 Pass 2778.0 40.79 29.4 58.4 47.0 74.0 -15.6 54.0 -7.0 18.9 33.0 Pass 3.5 Pass 2778.0 39.12 27.3 18.9 33.0 3.5 56.7 44.9 50.0 74.0 -17.3 Pass 54.0 -9.1 Pass 3704.0 31.64 30.9 50.7 74.0 -23.3 54.0 -4.0 Pass 18.5 33.4 4.2 Pass 3704.0 40.63 29.0 18.5 4.2 59.7 48.1 -14.3 54.0 -5.9 40.25 38.98 28.7 27.6 17.1 17.1 4.6 4.6 74.0 74.0 -3.5 -4.6 4630.0 34.3 62.1 50.5 -11.9 Pass 54.0 Pass 34.3 -13.2 54.0 Pass Pass 4630.0 60.8 49.4 5556.0 25.6 16.4 34.9 49.3 -13.0 54.0 -4.7 5556.0 34.0 16.4 57.7 47.1 -16.3 Pass -6.9 Pass Table Result: **Pass** by -3.5 dB Worst Freq: 4630.0 MHz Test Site: EMI Chamber Cable 1: Asset #2051 Cable 2: Asset #2053 Cable 3: Analyzer: Gold CSsoft Radiated Emissions Calculator Preamp: Brown Antenna: Blue Horn Preselector: --v 1.017.148 Copyright Curtis-Straus LLC 20 ljusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Duic.	22-Oct-15			Company:	ecoVent							V	ork Order:	P2928			
Engineer:	Tuyen Truong			EUT Desc:	VENT						<b>EUT Operati</b>	ng Voltage/I	requency:	3.2Vdc			
Temp:	23.2°C			Humidity:	32%			Pressure:	1013mBar								
		Freque	ncy Range:	6 - 10GHz							Measureme	nt Distance:	1 m				
Notes:	TX on High ch 11.6dBm	annel									E	JT Tx Freq:	904 - 926 M	Hz			
Antenna		Peak	Average	Preamp	Antenna	Cable	Adjusted	Adjusted	FCC 15.209	High Frequ	ency - Peak	FCC 15.2	209 High Frequency - Average				
Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Reading (dBµV)	Factor (dB)	Factor (dB/m)	Factor (dB)	Peak Reading (dBµV/m)	Avg Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fai			
٧	6480.0 6480.0	35.96 36.67	24.1 24.3	16.1 16.1	35.8 35.8	5.9 5.9	61.6 62.3	49.7 49.9	83.5 83.5	-21.9 -21.2	Pass Pass	63.5 63.5	-13.8 -13.6	Pass Pass			
h			Pass	by	-13.6	dB					<b>Worst Freq:</b> 6480.0 MHz						
	e Result:		1 033	-,										2: Asset #2053 Cable 3:			
Tabl	e Result: EMI Chamber	1	1 033		Asset #20	51				Cable 2:	Asset #2053		Cable 3:				

00Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	Asset 1284	Cat 	Calibration Due 4/22/2016	Calibrated on 4/22/2015
<b>FCC Code</b> 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 3/21/2017	Calibrated on 3/21/2015
Range 1-10GHz	MN CS	Mfr CS	SN N/A	Asset 1523	Cat II	Calibration Due 4/9/2016	Calibrated on 10/8/2015
Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			Cat II	Calibration Due 3/8/2016 3/8/2016	Calibrated on 3/8/2015 3/8/2015
	MN BA928	•	<b>SN</b> C3166-1	Asset 831	Cat	Calibration Due 3/19/2016	Calibrated on 3/19/2014 4/2/2015
	FCC Code 719150 Range 1-10GHz Range 1-18Ghz Range 9kHz - 18GHz	00Hz-26.5 GHz E4407B  FCC Code 719150 2762A-6  Range MN 1-10GHz CS  Range MN 3117  Range MN 3117  Range SKHz - 18GHz SKHz - 18GHz	FCC Code 719150         IC Code 2762A-6         VCCI Code A-0015           Range 1-10GHz         MN CS         Mfr CS           Range 1-18Ghz         MN 3117         Mfr ETS           Range 9kHz - 18GHz 9kHz - 18GHz         Mfr Florida RF Florida RF           MN Mfr         Mfr Florida RF           Oregon Scientific         Oregon Scientific	FCC Code 719150         IC Code 2762A-6         VCCI Code A-0015         Range 30-1000MHz           Range 1-10GHz         MN CS         Mfr SN N/A           Range 1-18Ghz         MN 3117         Mfr ETS         SN 157647           Range 9kHz - 18GHz 9kHz - 18GHz         Mfr Florida RF Florida RF         SN 157647           MN BA928         Mfr Oregon Scientific         SN C3166-1	FCC Code 719150         IC Code 2762A-6         VCCI Code A-0015         Range 30-1000MHz         Asset 1523           Range 1-10GHz         MN CS         Mfr CS         N/A         1523           Range 1-18Ghz         MN 3117         Mfr ETS         SN ETS         Asset 157647         1861           Range 9kHz - 18GHz 9kHz - 18GHz         Mfr Florida RF Florida RF         SN Florida RF Florida RF         Asset C3166-1         Asset 831	FCC Code         IC Code         VCCI Code         Range         30-1000MHz         Cat           719150         2762A-6         A-0015         30-1000MHz         II           Range         MN         Mfr         SN         Asset         Cat           1-10GHz         CS         CS         N/A         1523         II           Range         MN         Mfr         SN         Asset         Cat           1-18Ghz         3117         ETS         157647         1861         I           Range         9kHz - 18GHz         Florida RF         II         II           9kHz - 18GHz         Florida RF         II         II           MN         Mfr         SN         Asset         Cat           9kHz - 18GHz         Florida RF         II         II           MN         Mfr         SN         Asset         Cat           BA928         Oregon Scientific         C3166-1         831         I	FCC Code 719150         IC Code 2762A-6         VCCI Code A-0015         Range 30-1000MHz         Cat III         Calibration Due 3/21/2017           Range 1-10GHz         MN CS         Mfr CS         SN N/A         Asset 1523         Cat III         Calibration Due 3/21/2017           Range 1-18Ghz         MN 3117         Mfr ETS         SN 157647         Asset 1861         Cat II         Calibration Due 4/9/2016           Range 9kHz - 18GHz 9kHz - 18GHz         Mfr Florida RF Florida RF         Cat III         Calibration Due 3/8/2016         III         3/8/2016 III         3/8/2016           MN BA928         Mfr Oregon Scientific         SN C3166-1         Asset 831         Cat I         Calibration Due Calibration Due 3/19/2016

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



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# **Power Spectral Density**

## **LIMIT**

...the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. [15.247(e)]

Per 558074 D01 DTS Measurement Guidance v0303 Section 10.3 (AVGPSD-1)

### **MEASUREMENTS / RESULTS**

Euric Desc: VENT   Frequency   2°C   Humidity: 40%   Pressure: 1007mBar   Pressure: 1003mBar   Pressure: 1003mB	Date:	Oct 14 & 16, 20	015	Company:	ecoVent						Work Order:	P2928
Oct 16 - Temp: 22°C   Humidity: 31%   Pressure: 1003mBar	Engineer:	Tuyen Truong		EUT Desc:	VENT				EUT Opera	ting Voltage	/Frequency:	3.2Vdc
Notes: For channel 904MHz, power is reduced to 9.6dBm AVGPSD-1	Oct 14 - Temp:	22°C		Humidity:	40%		Pressure:	1007mBar	·			
Notes: For channel 904MHz, power is reduced to 9.6dBm AVGPSD-1	Oct 16 - Temp:	22°C		Humidity:	31%		Pressure:	1003mBar				
Antenna Polarization (H/V) (MHz) (gBμV) (gB		Freque	ency Range:	902-928MH	Ηz				Measuremen	nt Distance:	3 m	
Antenna   Polarization   Frequency   Reading   Factor   Factor   Factor   Factor   GBby   GBy	Notes:		4MHz, powe	r is reduced	to 9.6dBm							
Polarization (H / V)   Frequency (MHz)   Factor (dB)											FCC 15.247	,
(H/V)         (MHz)         (dB)	Antenna			Preamp	Antenna	Cable	-	•	I			
H 904.0 69.17 0.0 22.5 1.7 93.4 -1.83 0.17 8.0 -7.83 Pass H 915.0 67.85 0.0 22.4 1.7 91.95 -3.28 -1.28 8.0 -9.28 Pass H 926.0 68.72 0.0 22.5 1.7 92.9 -2.33 -0.33 8.0 -8.33 Pass Pass Pass Pass Pass Pass Pass Pa											- 5	
H 915.0 67.85 0.0 22.4 1.7 91.95 -3.28 -1.28 8.0 -9.28 Pass Pass Pass Pass Pass Pass Pass Pas		\ /						V: /		V /		,,
H         926.0         68.72         0.0         22.5         1.7         92.9         -2.33         -0.33         8.0         -8.33         Pass           Table Result:         Pass         by         -7.83 dB         Worst Freq:         904.0 MHz           Test Site: EMI Chamber 1         Cable 1: Asset #2051         Cable 3:												
Table Result:         Pass         by         -7.83 dB         Worst Freq:         904.0 MHz           Test Site:         EMI Chamber 1         Cable 1: Asset #2051         Cable 2: Asset #2053         Cable 3:											0.20	
Test Site: EMI Chamber 1 Cable 1: Asset #2051 Cable 2: Asset #2053 Cable 3:	Н	926.0	68.72	0.0	22.5	1.7	92.9	-2.33	-0.33	8.0	-8.33	Pass
	Tab	le Result:	Pass	by	-7.83	dB			Wo	orst Freq:	904.0	MHz
Analyzer: Gold Preamp: none Antenna: Red-Brown Preselector:	Test Site:	EMI Chamber	1	Cable 1:	Asset #205	51			Cable 2: Asset #2053		Cable 3:	
	Analyzer: Gold Preamp: none								Antenna: Red-Brown	Preselector:		

Rev.10/8/2015 Spectrum Analyzers / Receivers / Preselectors Gold	Range 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	<b>Asset</b> 1284	Cat 	Calibration Due 4/22/2016	<b>Calibrated on</b> 4/22/2015
Radiated Emissions Sites EMI Chamber 1	FCC Code 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 3/21/2017	Calibrated on 3/21/2015
<b>Antennas</b> Red-Brown Bilog	Range 30-2000MHz	MN JB1	<b>Mfr</b> Sunol	<b>SN</b> A0032406	<b>Asset</b> 1218	Cat 	Calibration Due 12/4/2016	Calibrated on 12/4/2014
Cables Asset #2051 Asset #2053	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			Cat II	Calibration Due 3/8/2016 3/8/2016	Calibrated on 3/8/2015 3/8/2015
Meteorological Meters Weather Clock (Pressure Only) TH A#2080		MN BA928 HTC-1	Mfr Oregon Scientific HDE	<b>SN</b> C3166-1	Asset 831 2080	Cat   	Calibration Due 3/19/2016 4/2/2016	Calibrated on 3/19/2014 4/2/2015

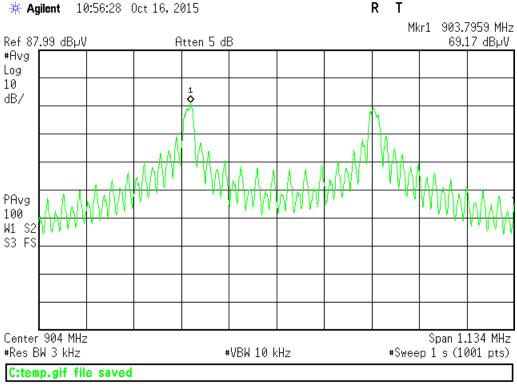
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



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**PLOTS** 



904 MHz - PSD

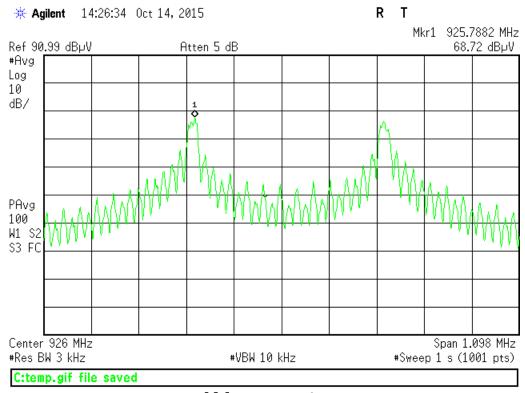




R T **\* Agilent** 10:32:16 Oct 16, 2015 Mkr1 914.7891 MHz Ref 87.99 dB UV Atten 5 dB 67.85 dBµV #Avg Log 10 dB/ PAvg 100 W1 S2 S3 FC Center 915 MHz Span 1.302 MHz #Res BW 3 kHz #VBW 10 kHz #Sweep 1 s (1001 pts)

915 MHz - PSD

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926 MHz - PSD



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# Occupied Bandwidth REQUIREMENT

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

### **MEASUREMENTS / RESULTS**

Date: Oct 14 & 16, 2015 Engineer: Tuyen Truong Oct 14 - Temp: 22°C		Company: ecoVent			Work Order: P2928		
		EUT Desc: VENT		EUT Operating Voltage/Frequency: 3.2Vdc			
		Humidity: 40% Pressure: 1007mBar					
Oct 16 - Temp:	: 22°C	Humidity: 31%	Pressure: 1003mBar				
	Frequency Rai	nge: 902-928MHz		Measurement Dis	tance: 3 m		
Notes	:						
Antenna							
Polarization	Frequency		Occupied Bandwidth Re	ading			
(H/V)	(MHz)		(KHz)				
Н	904		755.4243				
Н	915		867.6203				
Н	926		731.7806				
Test Site:	: EMI Chamber 1	Cable 1: Asset #2051	C	Cable 2: Asset #2053	Cable 3:		
Analyzer: Gold Prea		Preamp: none	A	ntenna: Red-Brown	Preselector:		
CSsoft Radiated	Emissions Calculator	v 1.017.148			Copyright Curtis-Straus LLC 20		
Adjusted Readir	ng = Reading - Preamp	Factor + Antenna Factor + Cable Factor	or				

Rev.10/8/2015 Spectrum Analyzers / Receivers / Preselectors Gold	<b>Range</b> 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>M</b> fr Agilent	<b>SN</b> MY45113816	Asset 1284	Cat 	Calibration Due 4/22/2016	Calibrated on 4/22/2015
Radiated Emissions Sites EMI Chamber 1	<b>FCC Code</b> 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 3/21/2017	Calibrated on 3/21/2015
<b>Antennas</b> Red-Brown Bilog	Range 30-2000MHz	MN JB1	<b>M</b> fr Sunol	<b>SN</b> A0032406	<b>Asset</b> 1218	Cat I	Calibration Due 12/4/2016	Calibrated on 12/4/2014
Cables Asset #2051 Asset #2053	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			Cat    	Calibration Due 3/8/2016 3/8/2016	Calibrated on 3/8/2015 3/8/2015
Meteorological Meters Weather Clock (Pressure Only) TH A#2080		MN BA928 HTC-1	Mfr Oregon Scientific HDE	<b>SN</b> C3166-1	<b>Asset</b> 831 2080	Cat   	Calibration Due 3/19/2016 4/2/2016	Calibrated on 3/19/2014 4/2/2015

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

Date:	29-Oct-15	Company: Ecovent			Work Order: P2928		
Engineer: Tuyen Truong		EUT Desc: VENT		EUT Operating Voltage/Frequency: 3.2Vdc			
Temp:	22°C	Humidity: 51%	Humidity: 51% Pressure: 998mBar				
	Frequency R	ange: 915 MHz		Measurement Dis	tance: 3 m		
Notes:	TX power at 11.6dBr	n					
Antenna							
Antenna Polarization	Frequency		Occupied Bandwic	Ith Reading			
	Frequency (MHz)		Occupied Bandwio (KHz)	ith Reading			
Polarization			•				
Polarization (H/V)	(MHz)	<b>Cable 1:</b> Asset #2052	(KHz)		Cable 3:		
Polarization (H/V) H Test Site:	915	Cable 1: Asset #2052 Preamp: none	(KHz)	)1	Cable 3: Preselector:		



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Rev.10/19/2015 Spectrum Analyzers / Receivers / Preselectors Range MN Mfr SN Cat **Calibration Due** Calibrated on 9kHz-13.2 GHz SA EMI Chamber (1327) E4405B Agilent MY45103416 1327 7/10/2016 7/10/2015 VCCI Code Radiated Emissions Sites FCC Code IC Code Range 30-1000MHz Cat Calibration Due Calibrated on EMI Chamber 2 719150 2762A-7 3/22/2017 3/22/2015 A-0015 Ш Antennas **Calibration Due** Calibrated on Range MN Mfr Asset Cat Red-White Bilog 30-2000MHz Sunol A091604-1 1105 8/12/2017 8/12/2015 Range 9kHz - 18GHz 9kHz - 18GHz Cables Mfr Cat **Calibration Due** Calibrated on Florida RF Asset #2052 Ш 3/8/2016 3/8/2015 Asset #1787 Florida RF Ш 3/21/2016 3/21/2015 **Meteorological Meters** MN Mfr SN Cat **Calibration Due** Calibrated on Asset Weather Clock (Pressure Only) BA928 Oregon Scientific C3166-1 831 3/19/2016 3/19/2014 TH A#2081 HDE 2081 П 4/2/2016 4/2/2015

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

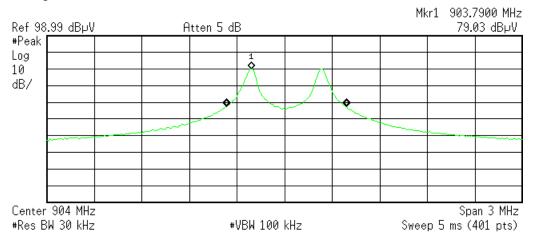




Plot(s)

\* Agilent 10:47:57 Oct 16, 2015

R T



Occupied Bandwidth 755,4243 kHz

Occ BW % Pwr 99.00 % x dB -6.00 dB

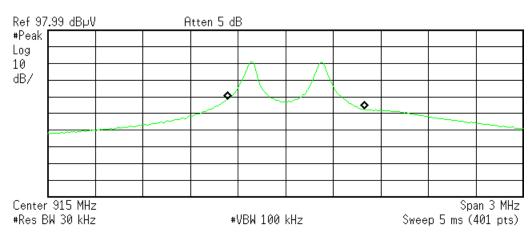
Transmit Freq Error 8.721 kHz x dB Bandwidth 511.142 kHz

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904 MHz - Occupied Bandwidth (9.6dBm)

\* Agilent 10:18:35 Oct 16, 2015

R T



Occupied Bandwidth 867.6203 kHz 0cc BW % Pwr 99.00 % x dB -6.00 dB

Transmit Freq Error 64.340 kHz x dB Bandwidth 511.429 kHz

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915 MHz - Occupied Bandwidth (9.6dBm)

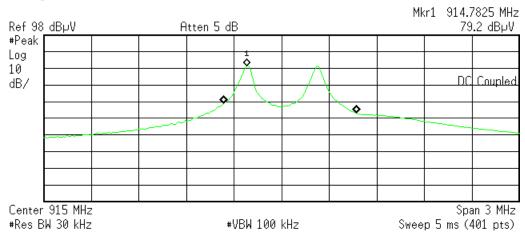


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Agilent 07:34:56 Oct 29, 2015

R T



Occupied Bandwidth 839,4601 kHz

Occ BW % Pwr 99.00 % x dB -6.00 dB

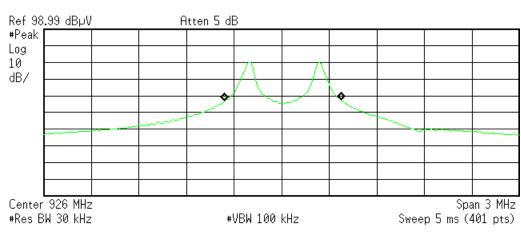
Transmit Freq Error 53.301 kHz x dB Bandwidth 508.833 kHz

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915 MHz - Occupied Bandwidth (11.6dBm)

**\* Agilent** 14:15:56 Oct 14, 2015

R T



Occupied Bandwidth 731,7806 kHz

0cc BW % Pwr 99.00 % x dB -6.00 dB

Transmit Freq Error 9.561 kHz x dB Bandwidth 505.852 kHz

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926 MHz - Occupied Bandwidth (11.6dBm)



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**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 Radiated Emissions (30-1000MHz)	Expanded Uncertainty k=2	Maximum allowable uncertainty
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 x 10 <sup>-8</sup>	1 x 10 <sup>-7</sup>
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		



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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

- 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.
- 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.
   These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof
- 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. CLIÉNT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABÍLITY 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 HERELINDER

(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



