





Test Report



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

Report No	EO3616-1
Client	Powercast Corporation Charlie Greene
Address	566 Alpha Drive Pittsburgh, PA 15238
Phone	412-436-4077
Items tested	RS1800
FCC ID	2AAMXRS1800
IC	11250A-RS1800
FRN	0002862225
Equipment Type	Part 15.247 Digitally Modulated
Equipment Code	DTS
FCC/IC Rule Parts	47 CFR 15.247, RSS-210 Issue 8
Test Dates	December 31, 2014, January 2, 5 and 7 and February 10, 2015
Results	As detailed within this report
Prepared by	 Tuyen Truong A. – Test Engineer
Authorized by	 Christopher Reynolds – EMC Supervisor
Issue Date	5/4/2015
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.



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



Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.247. The product is the RS1800. It is a digitally modulated transmitter that operates in the range 902.7-927.3MHz. The product was tested with an integrated wire antenna with a gain of 2.0dBi.

We found that the product met the above requirements without modification. Charlie Greene from Powercast Corporation was present during the testing. The test samples were received in good condition.



Test Methodology

Radiated emission and AC line conducted testing were performed according to the procedures specified in FCC Guidance for performing compliance measurement on DTS operating under section 15.247, April 19, 2013 and ANSI C63.10 (2009) and C63.4 (2003). Radiated Emissions were maximized by rotating the device around its axes as well as varying the test antenna's height and polarity.

Conducted emissions at the antenna port were performed with temporary connector for testing only, as required by rule section.

The EUT operating voltage is 120VAC, 60Hz

Low operating channel frequency = 902.7MHz

Mid operating channel frequency = 915MHz

High operating channel frequency = 927.3MHz

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

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



Product Tested - Configuration Documentation

EUT Configuration											
Work Order: O3616 Company: Powercast Corporation Company Address: 566 Alpha Drive Pittsburgh PA USA 15238 Contact: Charlie Greene											
MN						SN					
EUT:		RS1800				Sample 1					
		RS1800				Sample 2					
EUT Description: Smart Connector EUT Tx Frequency: 902.7-927.3MHz											
Support Equipment: MN						SN					
None											
EUT Ports:											
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Comment	
AC Power IN	AC Power	1	1	2-wire	No	No	3m	N/A	In		
AC Power Out	AC Power	1	1	2-wire	No	No	1m	N/A	In		
Antenna	SMA	1	1	Coaxial	Yes	No	1inch	NA	In	Temporary connector (conducted testing only)	
Software / Operating Mode Description: Transmits at Low, Mid, or High Channel from 902.7-927.3MHz.											



Statement of Conformity

The RS1800 has been found to conform to the following parts of 47 CFR and as detailed below:

RSS-GEN	RSS 210	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.
7.1.5		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.
7.1.4		15.203	EUT employs a permanently installed wire antenna.
	2.6	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.
7.2.2		15.207	EUT meets the AC Line conducted emissions requirements of 15.207.
	Annex 8	15.247	The unit complies with the requirements of 15.247
4.6.1		15.247	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

Engineer	Chris Bramley
Date	12/31/2014
Site	Chamber 2
Environmental Conditions	20°C, 23%, 1017mBar

6dB Bandwidth

15:247(a)(2): Specifies that the minimum 6dB bandwidth shall be at least 500kHz.

Frequency (MHz)	Mode	6dB BW (MHz)	Limit (kHz)	Margin (MHz)
902.7	DMSS	0.655	>500	-0.155
915	DMSS	0.655	>500	-0.155
927.3	DMSS	0.655	>500	-0.155

Tested by: Chris Bramley **RBW = 100KHz** **VBW = 300KHz**
Date: 12/31/2014 **Analyzer:** Brown SA
Company: Powercast Corporation **Attenuator:** PE7019-20 #791
EUT: RS1800

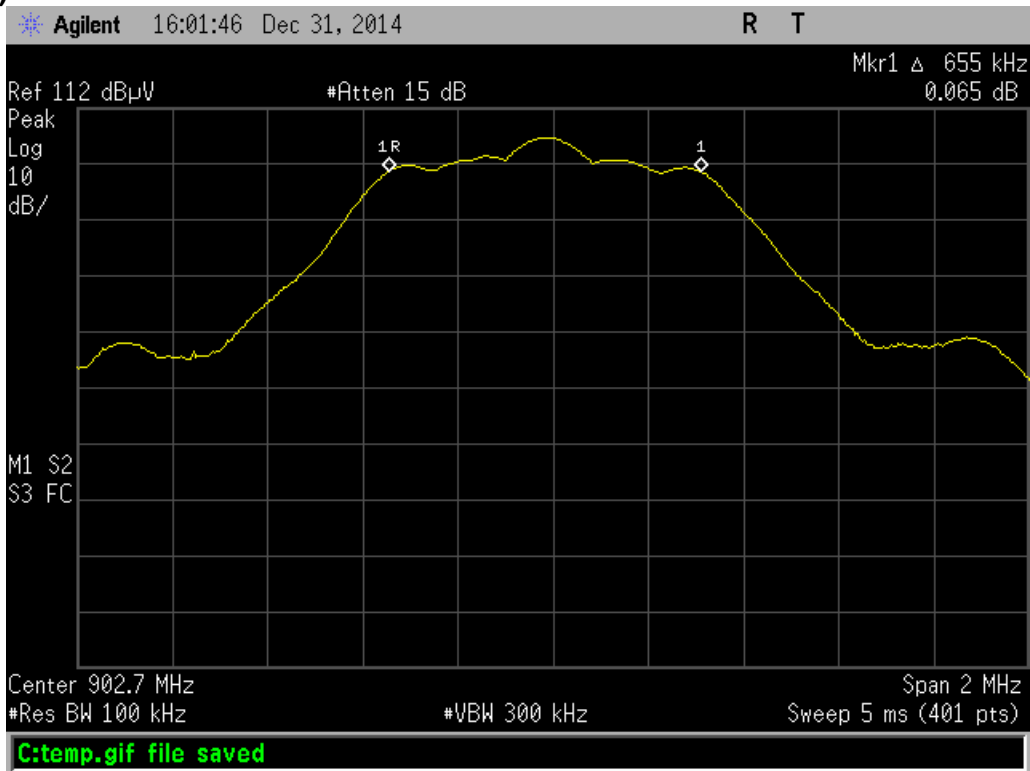
Rev. 12/26/2014

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	5/12/2015	5/12/2014
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	3/9/2015	3/9/2014	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/14/2015	7/14/2014
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Weather Clock (Pressure Only) TH A#1833	BA928 35519-044	Oregon Scientific Control Company	C3166-1 130318278	831 1833	I II	3/19/2016 6/13/2015	3/19/2014 6/13/2013	

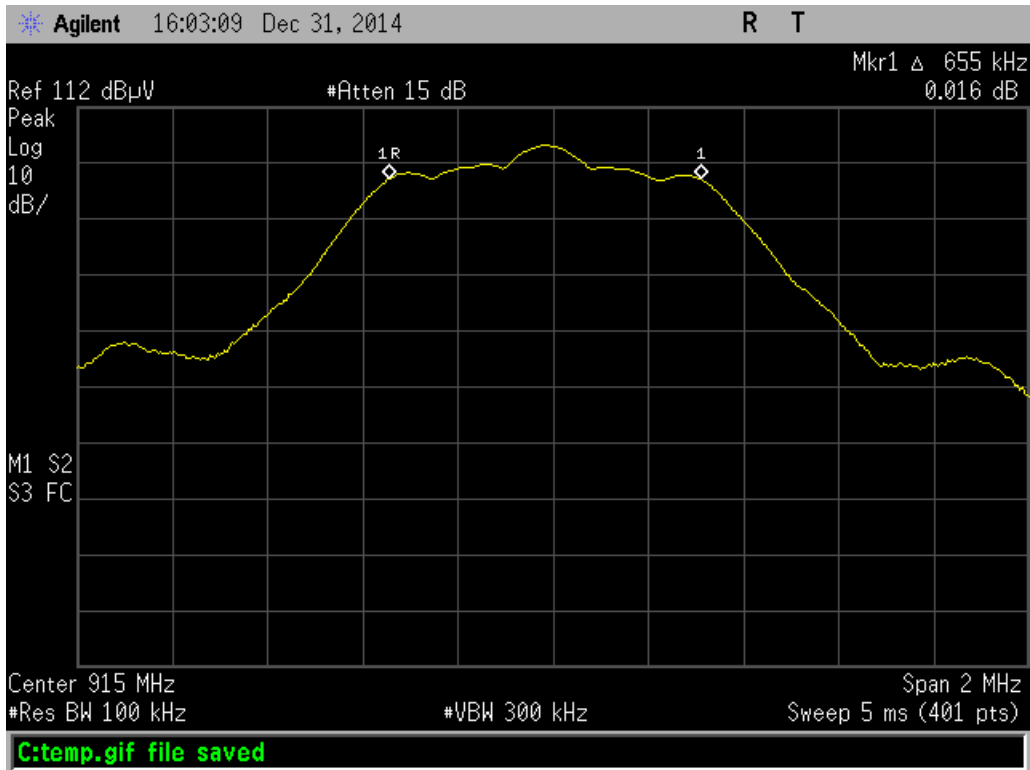
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOT(s)

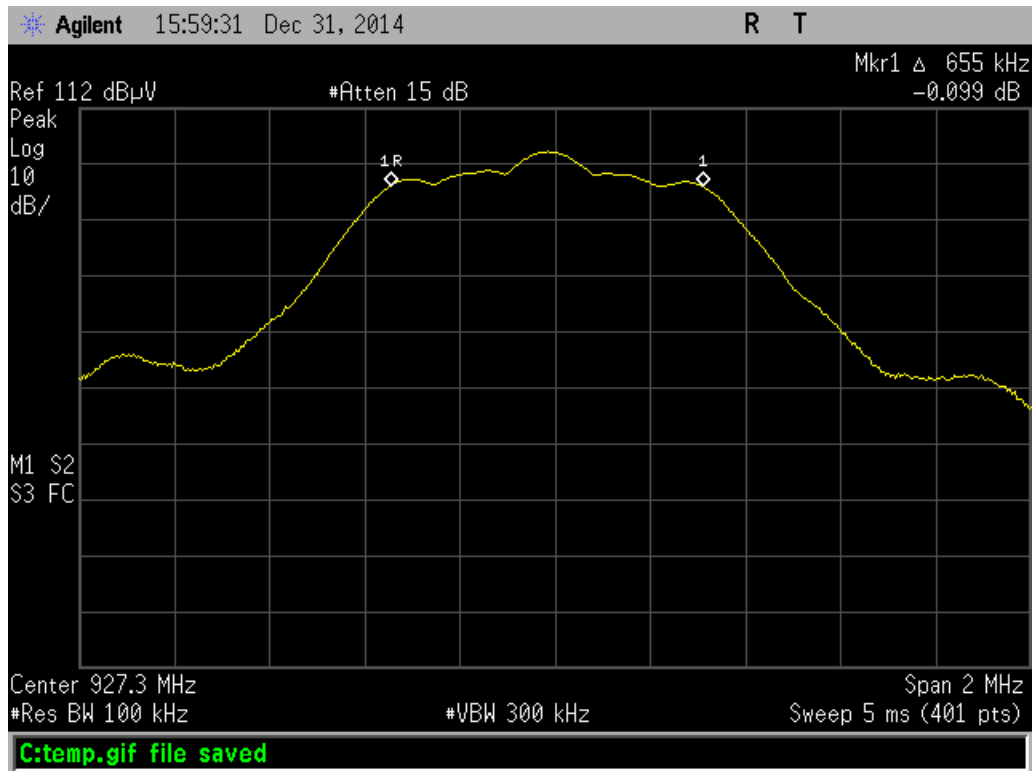


Low Channel – 6dB Bandwidth



Mid Channel – 6dB Bandwidth





High Channel – 6 dB Bandwidth

Fundamental Emission Output Power

LIMIT

Conducted Output Power

1 Watt

[15.247(b) (3)]

MEASUREMENTS / RESULTS

Engineer	Chris Bramley
Date	12/31/2014
Site	Chamber 2
Environmental Conditions	20°C, 33%, 1017mBar

DTS Method 9.2.2.2 Method AVGSA-1 (Trace averaging with the EUT transmitting at full power throughout each sweep)

Maximum Conducted (average) Output Power						
Tested by: Chris Bramley			Analyzer: Brown SA		WO: O3616	
Date: 12/31/2014			Attenuator: PE7019-20 #791		RBW = 30KHz	
Company: Powercast Corporation			Operating Voltage: 120Vac/60Hz		VBW = 100KHz	
EUT: RS1800					Limit = 1Watt or 30dBm	
TX Mode: DMSS						
Channel (MHz)	Measured power (dBm)	Attenuator factor (dB)	Adjusted power measurement (dBm)	Limit (dBm)	Margin (dB)	Result
902.7	-1.23	19.57	18.34	30	-11.66	Pass
915	-2.78	19.57	16.79	30	-13.21	Pass
927.3	-3.72	19.57	15.85	30	-14.15	Pass

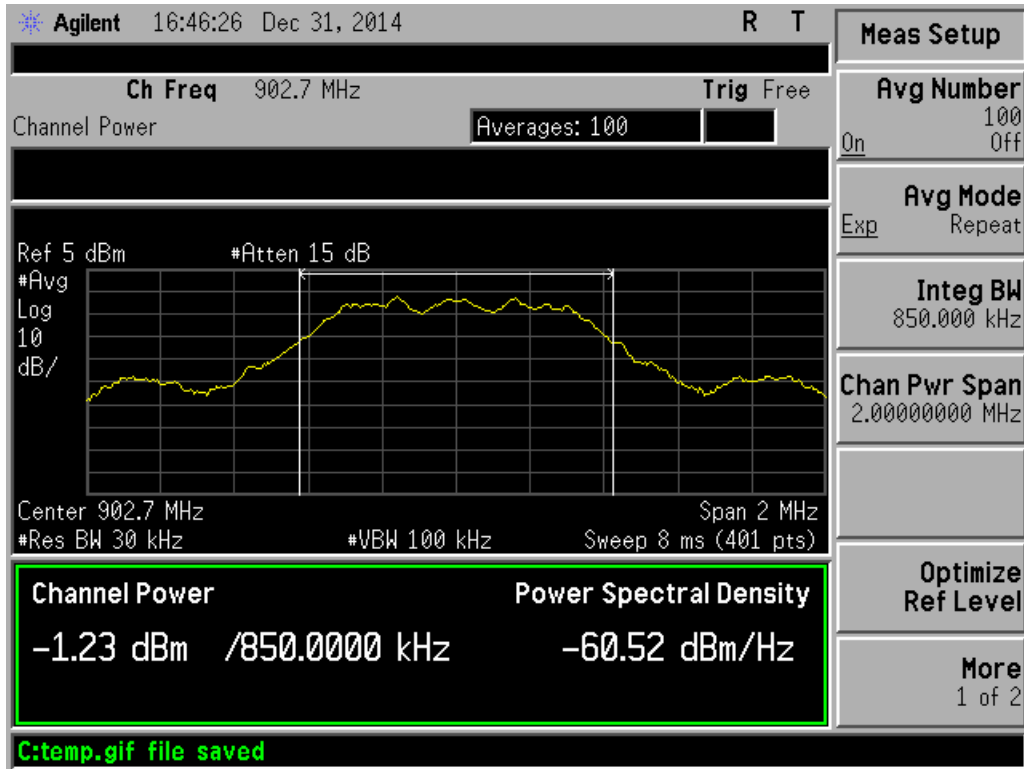
Rev. 12/26/2014

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	5/12/2015	5/12/2014
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	3/9/2015	3/9/2014
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/14/2015	7/14/2014
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only) TH A#1833		BA928 35519-044	Oregon Scientific Control Company	C3166-1 130318278	831 1833	I II	3/19/2016 6/13/2015	3/19/2014 6/13/2013

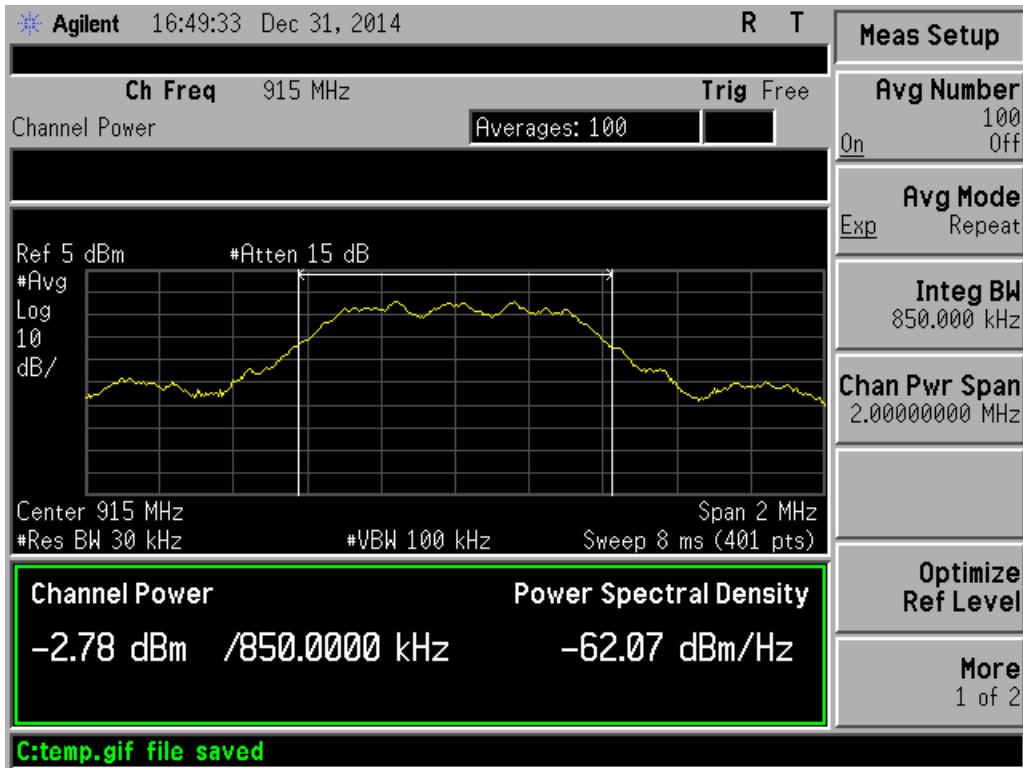
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



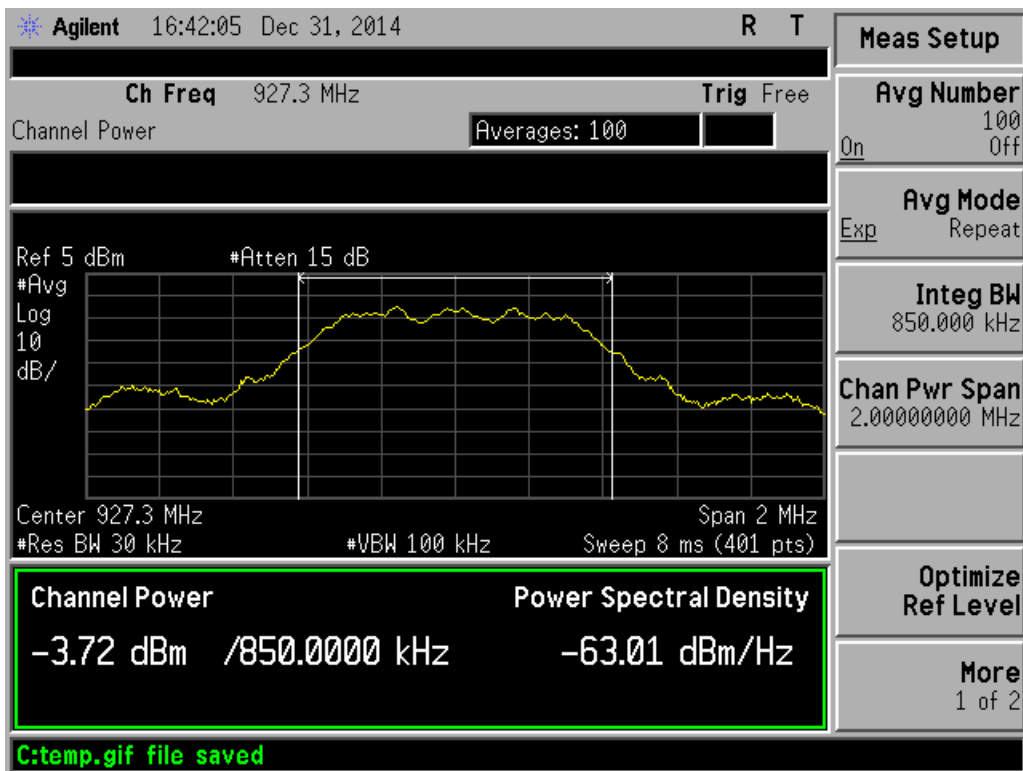
PLOTS



Low Channel – Channel Power



Mid Channel – Channel Power



High Channel – Channel Power



Radiated Spurious Emissions

LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). [15.247(d)]

MEASUREMENTS / RESULTS

Radiated Emissions Table												
Date: 02-Jan-15			Company: Powercast Corporation				Work Order: O3616					
Engineer: Tuyen Truong			EUT Desc: Smart Connector RS1800				EUT Operating Voltage/Frequency: 120Vac/60Hz					
Temp: 23°C			Humidity: 2%				Pressure: 1010 mBar					
Frequency Range: 30 to 1000MHz						Measurement Distance: 3 m						
Notes: Low Channel TX						EUT Max 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	403.2	44.7	25.9	15.7	1.5	36.0	---	---	---	46.0	-10.0	Pass
v	40.6	39.0	25.5	13.2	0.4	27.1	---	---	---	40.0	-12.9	Pass
h	105.2	45.3	25.5	11.4	0.7	31.9	---	---	---	43.5	-11.6	Pass
v	106.4	44.7	25.5	11.7	0.7	31.6	---	---	---	43.5	-11.9	Pass
h	243.4	44.9	25.6	11.8	1.2	32.3	---	---	---	46.0	-13.7	Pass
v	246.0	45.8	25.6	11.8	1.2	33.2	---	---	---	46.0	-12.8	Pass
v	282.6	44.5	25.7	13.3	1.2	33.3	---	---	---	46.0	-12.7	Pass
h	408.0	43.6	25.9	16.0	1.6	35.3	---	---	---	46.0	-10.7	Pass
Table Result: Pass						by -10.0 dB			Worst Freq: 403.2 MHz			
Test Site: EMI Chamber 1			Cable 1: Asset #1505				Cable 2: Asset #1787			Cable 3: ---		
Analyzer: Gold			Preamp: Green				Antenna: Red-Black			Preselector: ---		

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Spectrum Analyzers / Receivers/Preselectors	Gold	Range	100Hz-26.5 GHz	MN	E4407B	Mfr	Agilent	SN	MY45113816	Asset	1284	Cat	I	Calibration Due	3/28/2015	Calibrated on	3/28/2014
Radiated Emissions Sites	EMI Chamber 1	FCC Code	719150	IC Code	2762A-6	VCCI Code	A-0015	Range	30-1000MHz	Cat	II	Calibration Due	3/15/2015	Calibrated on	3/15/2014		
Preamps/Couplers Attenuators / Filters	Green	Range	0.009-2000MHz	MN	ZFL-1000-LN	Mfr	CS	SN	N/A	Asset	802	Cat	II	Calibration Due	9/14/2015	Calibrated on	9/14/2014
Antennas	Red-Black Bilog	Range	30-2000MHz	MN	JB1	Mfr	Sunol	SN	A091604-2	Asset	1106	Cat	I	Calibration Due	1/28/2015	Calibrated on	1/28/2013
Cables	Asset #1505	Range	9kHz - 18GHz			Mfr	Florida RF			Asset		Cat	II	Calibration Due	3/7/2015	Calibrated on	3/7/2014
	Asset #1787	Range	9kHz - 18GHz			Mfr	Florida RF			Asset		Cat	II	Calibration Due	3/14/2015	Calibrated on	3/14/2014
Meteorological Meters	Weather Clock (Pressure Only)			MN	BA928	Mfr	Oregon Scientific	SN	C3166-1	Asset	831	Cat	I	Calibration Due	3/19/2016	Calibrated on	3/19/2014
	TH A#1832				35519-044	Mfr	Control Company	SN	130318277	Asset	1832	Cat	II	Calibration Due	6/13/2015	Calibrated on	6/13/2013

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



Radiated Emissions Table												
Date: 02-Jan-15			Company: Powercast Corporation				Work Order: O3616					
Engineer: Tuyen Truong			EUT Desc: Smart Connector RS1800				EUT Operating Voltage/Frequency: 120Vac/60Hz					
Temp: 23°C			Humidity: 2%				Pressure: 1010 mBar					
Frequency Range: 30 to 1000MHz							Measurement Distance: 3 m					
Notes: Mid Channel TX							EUT Max Freq: 902.7-927.3MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBuV/m)	---			FCC 15.209		
							Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
v	40.6	38.3	25.5	13.2	0.4	26.4	---	---	---	40.0	-13.6	Pass
v	107.2	44.0	25.5	11.9	0.8	31.2	---	---	---	43.5	-12.3	Pass
v	242.7	44.0	25.6	11.8	1.1	31.3	---	---	---	46.0	-14.7	Pass
h	270.8	46.3	25.6	13.2	1.2	35.1	---	---	---	46.0	-10.9	Pass
v	280.3	44.1	25.7	13.4	1.2	33.0	---	---	---	46.0	-13.0	Pass
v	347.3	42.2	25.7	14.2	1.4	32.1	---	---	---	46.0	-13.9	Pass
v	409.5	44.5	25.9	16.1	1.6	36.3	---	---	---	46.0	-9.7	Pass
h	411.6	43.5	25.9	16.1	1.6	35.3	---	---	---	46.0	-10.7	Pass
v	805.0	32.3	25.6	21.3	2.1	30.1	---	---	---	46.0	-15.9	Pass
Table Result: Pass by -9.7 dB							Worst Freq: 409.5 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #1505				Cable 2: Asset #1787			Cable 3: ---		
Analyzer: Gold			Preamp: Green				Antenna: Red-Black			Preselector: ---		

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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	3/28/2015	3/28/2014
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	3/15/2015	3/15/2014	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Green	0.009-2000MHz	ZFL-1000-LN	CS	N/A	802	II	9/14/2015	9/14/2014
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	1/28/2015	1/28/2013
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on			
Asset #1505	9kHz - 18GHz	Florida RF	II	3/7/2015	3/7/2014			
Asset #1787	9kHz - 18GHz	Florida RF	II	3/14/2015	3/14/2014			
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#1832	35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013	

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

Radiated Emissions Table												
Date: 02-Jan-15			Company: Powercast Corporation				Work Order: O3616					
Engineer: Tuyen Truong			EUT Desc: Smart Connector RS1800				EUT Operating Voltage/Frequency: 120Vac/60Hz					
Temp: 23°C			Humidity: 2%				Pressure: 1010 mBar					
Frequency Range: 30 to 1000MHz							Measurement Distance: 3 m					
Notes: High Channel TX							EUT Max Freq: 902.7-927.3MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBuV/m)	---			FCC 15.209		
							Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
v	40.5	38.8	25.5	13.3	0.4	27.0	---	---	---	40.0	-13.0	Pass
v	108.75	40.8	25.5	12.3	0.8	28.4	---	---	---	43.5	-15.1	Pass
h	275.0	42.9	25.7	13.3	1.2	31.7	---	---	---	46.0	-14.3	Pass
v	278.85	47.7	25.7	13.4	1.2	36.6	---	---	---	46.0	-9.4	Pass
v	409.05	44.2	25.9	16.0	1.6	35.9	---	---	---	46.0	-10.1	Pass
h	413.0	42.5	25.9	16.2	1.6	34.4	---	---	---	46.0	-11.6	Pass
h	864.0	39.3	25.6	22.0	2.3	38.0	---	---	---	46.0	-8.0	Pass
Table Result: Pass by -8.0 dB							Worst Freq: 864.0 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #1505				Cable 2: Asset #1787			Cable 3: ---		
Analyzer: Gold			Preamp: Green				Antenna: Red-Black			Preselector: ---		



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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	3/28/2015	3/28/2014
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	3/15/2015	3/15/2014
Preamps / Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Green		0.009-2000MHz	ZFL-1000-LN	CS	N/A	802	II	9/14/2015	9/14/2014
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Black Bilog		30-2000MHz	JB1	Sunol	A091604-2	1106	I	1/28/2015	1/28/2013
Cables		Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1505		9kHz - 18GHz		Florida RF			II	3/7/2015	3/7/2014
Asset #1787		9kHz - 18GHz		Florida RF			II	3/14/2015	3/14/2014
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#1832			35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013

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

Radiated Emissions Table														
Date: 02-Jan-15			Company: Powercast Corporation				Work Order: O3616							
Engineer: Tuyen Truong			EUT Desc: Smart Connector RS1800				EUT Operating Voltage/Frequency: 120Vac/60Hz							
Temp: 23°C			Humidity: 2%				Pressure: 1010 mBar							
Frequency Range: 1-10GHz						Measurement Distance: 3 m								
Notes: EUT Max Freq: 902.7-927.3MHz														
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBuV)	Average Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBuV/m)	Adjusted Avg Reading (dBuV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
v	2706.0	46.16	26.1	18.7	28.8	4.2	60.5	40.4	74.0	-13.5	Pass	54.0	-13.6	Pass
v	2745.0	45.93	28.9	18.6	28.8	4.2	60.3	43.3	74.0	-13.7	Pass	54.0	-10.7	Pass
h	2781.0	44.26	26.9	18.5	28.9	4.3	59.0	41.6	74.0	-15.0	Pass	54.0	-12.4	Pass
Table Result: Pass by -10.7 dB										Worst Freq: 2745.0 MHz				
Test Site: EMI Chamber 1			Cable 1: Asset #1505			Cable 2: Asset #1787			Cable 3: --					
Analyzer: Gold			Preamp: Brown			Antenna: Orange Horn			Preselector: --					

Rev.12/26/2014

Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold		100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/28/2015	3/28/2014
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	3/15/2015	3/15/2014
Preamps / Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown		1-10GHz	CS	CS	N/A	1523	II	4/10/2015	4/10/2014
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Orange Horn		1-18GHz	3115	EMCO	0004-6123	390	I	10/13/2015	10/13/2014
Cables		Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1505		9kHz - 18GHz		Florida RF			II	3/7/2015	3/7/2014
Asset #1787		9kHz - 18GHz		Florida RF			II	3/14/2015	3/14/2014
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#1832			35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013

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



Conducted Spurious Emissions

LIMITS

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

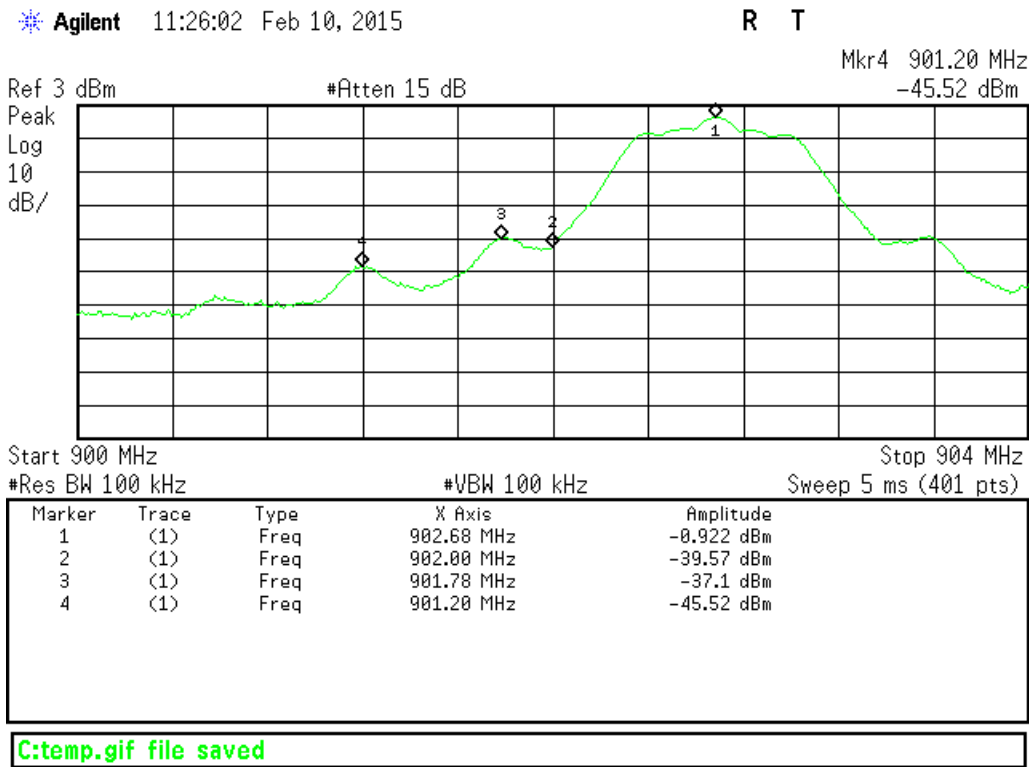
[15.247(d)]

MEASUREMENTS / RESULTS

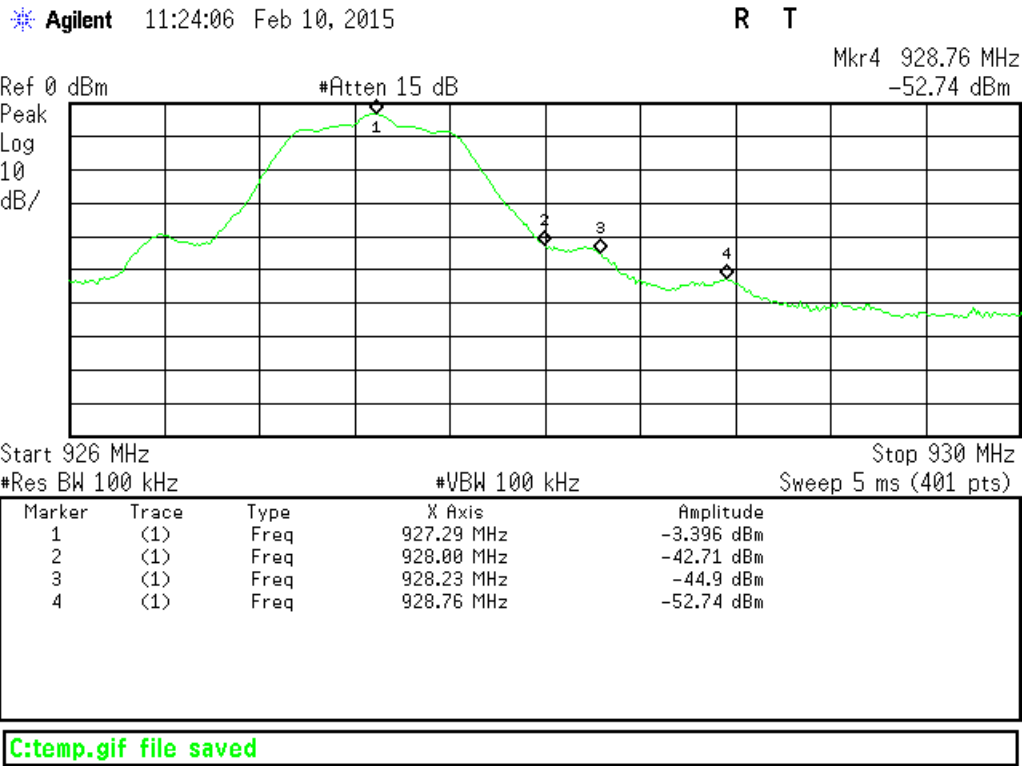
Engineer	Tuyen Truong
Date	1/7/2015 and 2/10/2015
Site	Chamber 2
Environmental Conditions	20°C, 23%, 1017mBar 20°C, 3%, 1011mbBar (2/10/2015)

Plots

Conducted Band Edge



Lower Channel – Band-edge (<-30dBm)



Upper Channel – Band-edge (<-30dBm)

Conducted Spurious Emission

Conducted Spurious Emissions at the Antenna Port:

For these scans, the spectrum analyzer was set to the following:

- Span: 400MHz or less
- Resolution Bandwidth: 100 KHz
- Video Bandwidth: 300 KHz
- Points per sweep: 8192

The frequency range 30MHz-10GHz was tested at EUT antenna port and no emissions were found within 10dB of the limit, which was set at 30dB below the power of the transmit frequency. The low, mid, and high channels were tested.

Rev. 2/6/2015

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/20/2016	1/20/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on	
1DCC-OATS-3M-I	719150	2762A-8	A-0015	30-1000MHz	II	5/17/2015	5/17/2013	
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Weather Clock (Pressure Only) TH A#1830	BA928 35519-044	Oregon Scientific Control Company	C3166-1 130320003	831 1830	I II	3/19/2016 6/13/2015	3/19/2014 6/13/2013	
Preamps/Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/14/2015	7/14/2014

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Power Spectral Density

LIMIT

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

MEASUREMENTS / RESULTS

Engineer	Chris Bramley
Date	12/31/2014
Site	Chamber 2
Environmental Conditions	20°C, 23%, 1017mb

DTS Method 10.3 AVGPS-1 (trace averaging with EUT transmitting at full power throughout each sweep)

15.247 (e) Maximum Power Spectral Density								
Tested by: Chris Bramley								
Date: 12/31/2014			Analyzer: Brown SA					
Company: Powercast Corporation			Attenuation: PE7019-20 #791		RBW = 3KHz		Span = 1.5MHz	
EUT: RS1800					VBW = 10KHz		Sweep = 1001 pts	
channel (MHz)	mode	measured PSD (dBm)	attenuator factor (dB)	adjusted power measurement	bandwidth correction factor adjustment	limit (dBm)	margin (dB)	result
902.7	DMSS	-13.60	19.57	5.97	0	8	-2.03	Pass
915	DMSS	-15.25	19.57	4.32	0	8	-3.68	Pass
927.3	DMSS	-15.47	19.57	4.10	0	8	-3.9	Pass

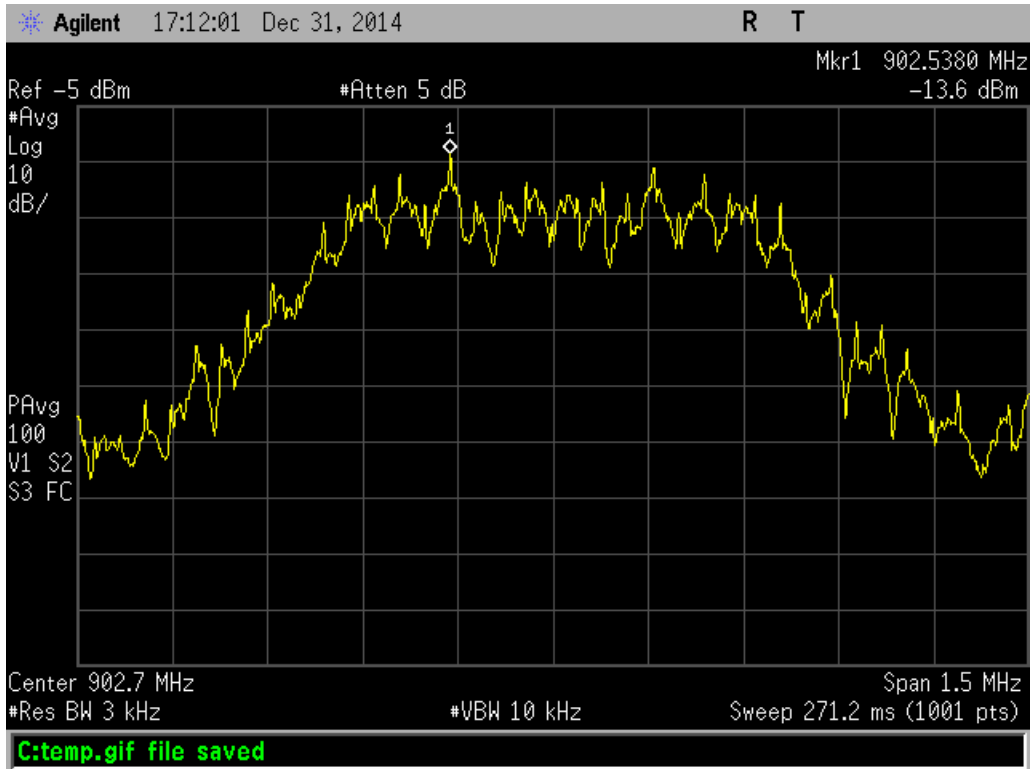
Rev. 12/26/2014

Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown		9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	5/12/2015	5/12/2014
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	3/9/2015	3/9/2014
Preamps / Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator		0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/14/2015	7/14/2014
Meteorological Meters			MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only) TH A#1833			BA928 35519-044	Oregon Scientific Control Company	C3166-1 130318278	831 1833	I II	3/19/2016 6/13/2015	3/19/2014 6/13/2013

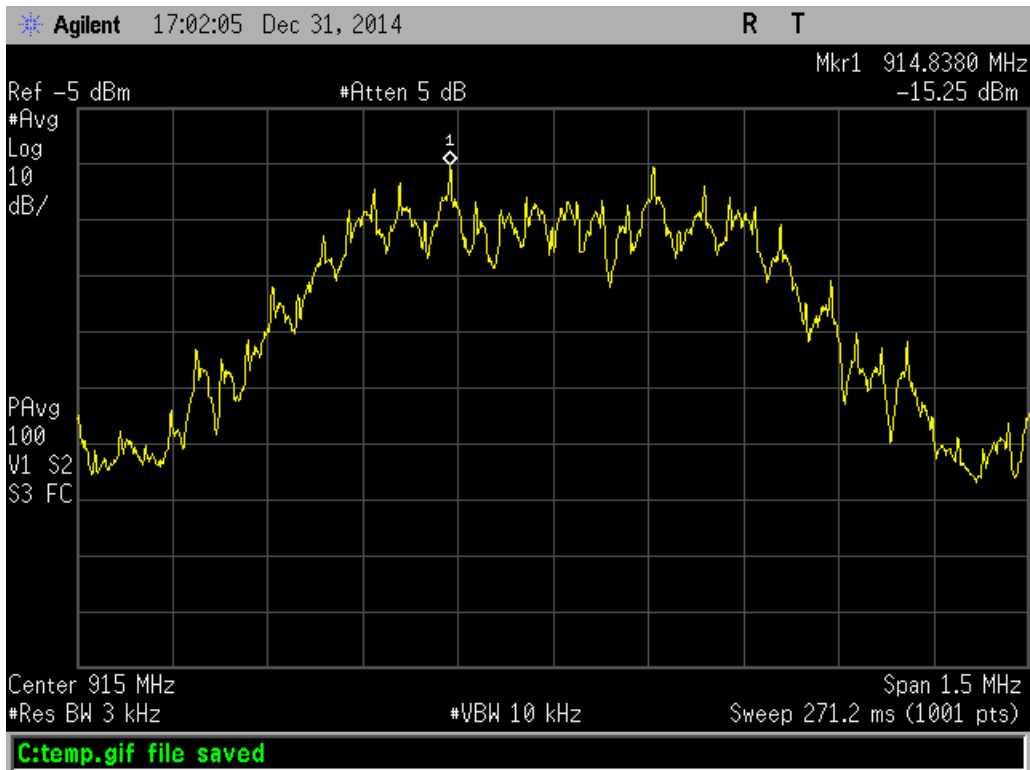
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOTS

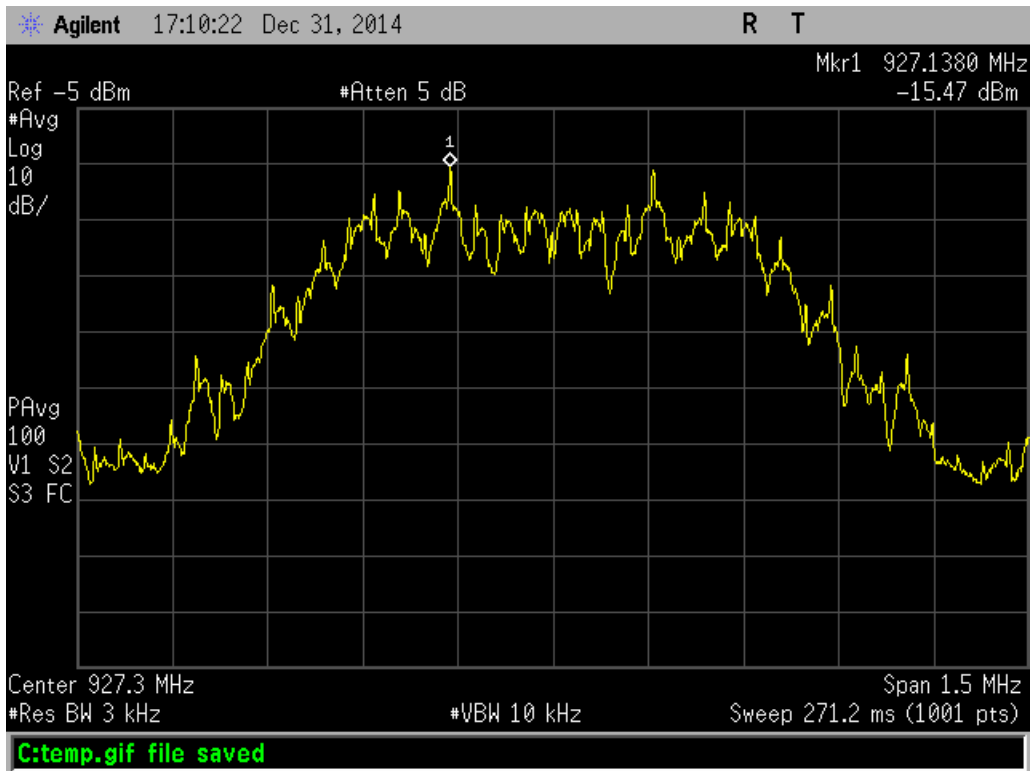


Channel Low – PSD



Channel Mid – PSD





Channel High – PSD

AC Line Conducted Emissions LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dBµV)	Average limit (dBµV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

AC Conducted Emissions Data Table														
Date: 05-Jan-15			Company: PowerCast Corporation				Work Order: O3616							
Engineer: Tuyen Truong			EUT Desc: RS1800				Pressure: 1015 mBar							
Temp: 20.0 °C			Humidity: 27%											
Notes: Peak readings														
Frequency Range: 0.15-30MHz EUT Input Voltage/Frequency: 120Vac/60Hz														
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	FCC 15.207			FCC 15.207		
	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)			QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.33	16.9	17.0	16.9	17.0	0.0	0.0	-0.1	-20.4	59.5	-22.1	Pass	49.5	-12.1	Pass
1.19	14.7	13.1	14.7	13.1	0.0	0.0	-0.1	-20.4	56.0	-20.8	Pass	46.0	-10.8	Pass
3.51	14.8	12.6	14.8	12.6	0.0	0.0	-0.1	-20.4	56.0	-20.7	Pass	46.0	-10.7	Pass
4.18	15.6	13.7	15.6	13.7	0.0	0.0	-0.1	-20.4	56.0	-19.9	Pass	46.0	-9.9	Pass
6.19	14.0	14.0	14.0	14.0	-0.1	-0.1	-0.1	-20.4	60.0	-25.5	Pass	50.0	-15.5	Pass
9.40	13.3	12.6	13.3	12.6	-0.1	-0.1	-0.2	-20.3	60.0	-26.2	Pass	50.0	-16.2	Pass
20.97	12.9	12.8	12.9	12.8	-0.1	-0.1	-0.3	-20.4	60.0	-26.3	Pass	50.0	-16.3	Pass
Result: Pass			Worst Margin: -9.9 dB				Frequency: 4.180 MHz							
Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2)					Cable: CEMI-10			Spectrum Analyzer: Yellow						
					Attenuator: 20dB Atten-4			Site: CEMI 6						

Rev. 12/26/2014

Spectrum Analyzers / Receivers/Preselectors									
Yellow	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
	9kHz-2.9GHz	8594E	Agilent	3523A01958	100	I	6/10/2015	6/10/2014	
LISNs/Measurement Probes									
LISN Asset 1726	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
LISN Asset 1727	150kHz-30MHz	LI-150A	Com-Power	201092	1726	I	1/15/2015	1/15/2014	
	150kHz-30MHz	LI-150A	Com-Power	201093	1727	I	1/15/2015	1/15/2014	
Conducted Test Sites (Mains / Telco)									
CEMI 6	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on				
	719150	A-0015	III	NA	N/A				
Cables									
CEMI-10	Range	Mfr	Cat	Calibration Due	Calibrated on				
	9kHz - 2GHz	C-S	II	5/3/2015	5/3/2014				
Attenuators									
20dB Attenuator-04	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
	9kHz-2GHz			N/A		II	6/30/2015		
Meteorological Meters									
Weather Clock (Pressure Only)	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on		
TH A#1830	BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014		
	35519-04	Control Company	130320003	1830	II	6/13/2015	6/13/2013		

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Occupied Bandwidth

REQUIREMENT

When an occupied bandwidth is no 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 4.6.1]

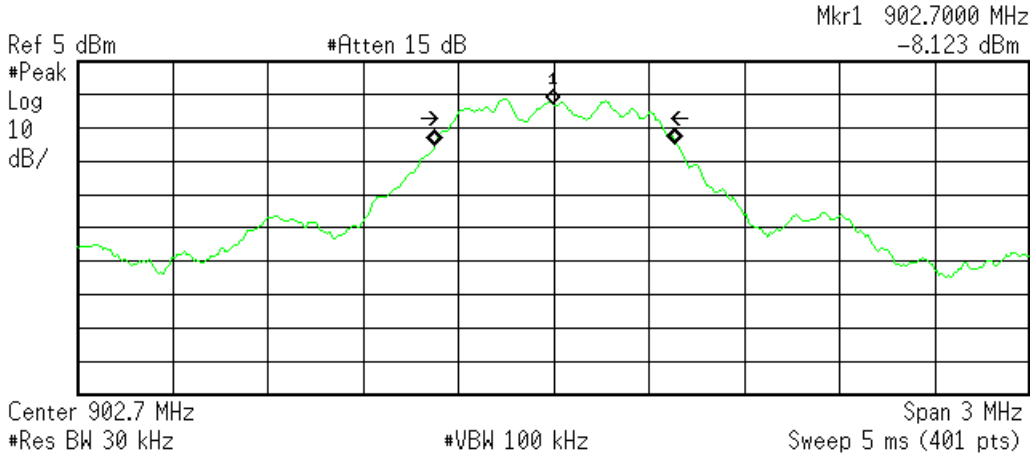
Engineer	Tuyen Truong
Date	2/10/2015
Site	3m Indoor
Environmental Conditions	20°C, 3%, 1011mb

99% Occupied Bandwidth				
Frequency (MHz)	Mode	99% Occupied Bandwidth (KHz)		
902.7	DMSS	759.2943		
915	DMSS	757.0971		
927.3	DMSS	756.3676		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> Tested by: Tuyen Truong Date: 2/10/2015 Company: Powercast Corporation EUT: RS1800 </td> <td style="width: 50%; border: none;"> RBW = 30KHz VBW = 100KHz Analyzer: Gold SA Attenuator: PE7019-20 #791 Temp/Humidity/Pressure: 20° Celcius, 3% and 1011mBar </td> </tr> </table>			Tested by: Tuyen Truong Date: 2/10/2015 Company: Powercast Corporation EUT: RS1800	RBW = 30KHz VBW = 100KHz Analyzer: Gold SA Attenuator: PE7019-20 #791 Temp/Humidity/Pressure: 20° Celcius, 3% and 1011mBar
Tested by: Tuyen Truong Date: 2/10/2015 Company: Powercast Corporation EUT: RS1800	RBW = 30KHz VBW = 100KHz Analyzer: Gold SA Attenuator: PE7019-20 #791 Temp/Humidity/Pressure: 20° Celcius, 3% and 1011mBar			



Agilent 10:55:29 Feb 10, 2015

R T



Occupied Bandwidth
759.2943 kHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

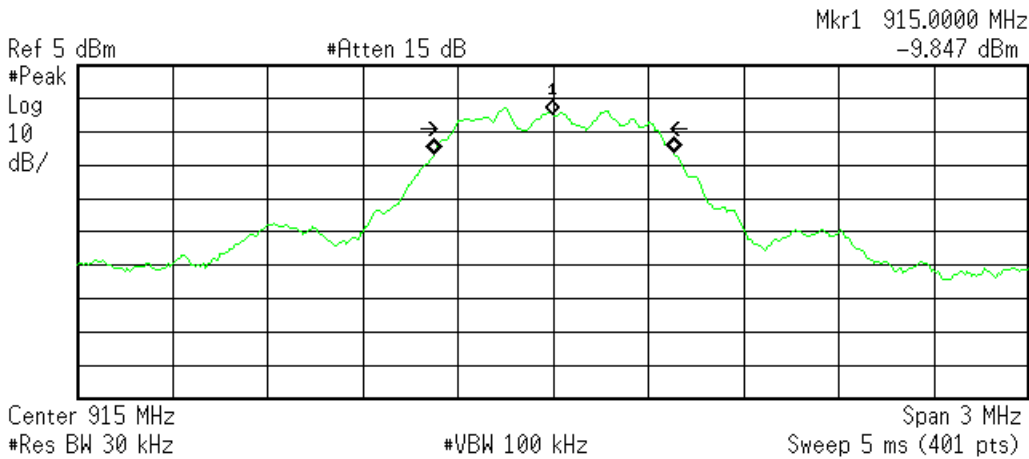
Transmit Freq Error 5.615 kHz
x dB Bandwidth 633.793 kHz

Plot(s)

Low Channel – Occupied Bandwidth

Agilent 11:08:32 Feb 10, 2015

R T



Occupied Bandwidth
757.0971 kHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 2.803 kHz
x dB Bandwidth 633.976 kHz

C:temp.gif file saved

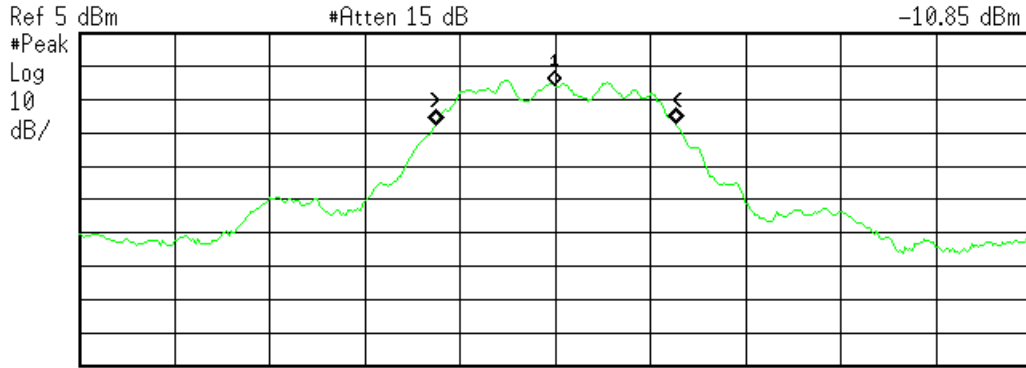
Mid Channel – Occupied Bandwidth



Agilent 11:14:10 Feb 10, 2015

R T

Mkr1 927.3000 MHz
-10.85 dBm



Center 927.3 MHz Span 3 MHz
#Res BW 30 kHz #VBW 100 kHz Sweep 5 ms (401 pts)

Occupied Bandwidth
756.3676 kHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 901.991 Hz
x dB Bandwidth 633.646 kHz

C:\temp.gif file saved

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	5.6dB	N/A
CISPR	4.6dB	5.2dB (Ucisprr)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisprr)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-7}
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation:		
• Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	3.4% 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 where such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.
13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.



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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.
Rev.160009121(2)_#684340 v14CS

