Test Report



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

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Report No	EP3128-1
Client	Ideal Industries, Inc. Tim Tunnell
Address	Becker Place Sycamore, IL 60178
Phone	815-895-1295
Items tested FCC ID	SCLINE1000 2AAMXSCLINE1000
IC ID FRN	11250A-SCLINE1000 0002862225
Equipment Type	Part 15.247 Digitally Modulated, Mobile
Equipment Code Emission Designator	DTS 763KG1D
FCC/IC Rule Parts	47 CFR 15.247, RSS-247 Issue 1
Test Dates	October 26, 29 and November 2, 6 and 12, 2015
Results	As detailed within this report
Prepared by	Jason Haley- Test Engineer
Authorized by	Yunus Fazilogiu – Sr. EMC Engineer
Issue Date	2/9/2016
Conditions of Issue	This Test Report is issued subject to the conditions stated in the ' <i>Conditions of Testing</i> ' section on page 30 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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page 1 of 31

Contents

Contents	2
Summary	3
Test Methodology	4
Product Tested - Configuration Documentation	5
Statement of Conformity	6
Modifications Required for Compliance	6
Test Results	
Bandwidth	
Fundamental Emission Output Power	10
Radiated Spurious Emissions	
Conducted Spurious Emissions	17
Power Spectral Density	
AC Line Conducted Emissions	
Occupied Bandwidth	26
Measurement Uncertainty	
Conditions Of Testing	30

Form Final Report REV 12-07-15



Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.247 and RSS-247. The product is the SCLINE1000. It is a transmitter that operates in the range 902-928MHz.

We found that the product met the above requirements without modifications. Nobody from Ideal Industries, Inc. was present during the testing. The test samples were received in good condition.

Release Control Record

Issue No. Reason for change

1 Original Release

Date Issued February 9, 2016



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page 3 of 31

Test Methodology

All testing was performed according to the following rules/procedures/documents;

CFR 47 Part 15.247, RSS-247 Issue 1, RSS-Gen Issue 4, FCC KDB 558074 D01 DTS Measurement Guidance v03r04 and ANSI C63.10-2013.

Radiated emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. AC line conducted emissions testing was performed with a $50\Omega/50\mu$ H LISN. The EUT operating voltage was 120/277VAC at 60Hz. RF measurements were performed at the antenna port.

The environmental conditions were as shown below.

Date	Temperature	Humidity
10/26/15	21.9°C	35% RH
10/29/15	23°C	55% RH
11/02/15	21°C	38% RH
11/04/15	22.2°C	54% RH
11/12/15	22.2°C	31% RH
11/13/15	21.9°C	40% RH

Following bandwidths were used during radiated spurious and line conducted emissions tests.

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





page 4 of 31

Product Tested - Configuration Documentation

					E	UT Config	uration						
Work O	rder:	P3128											
Com	pany:	Ideal In	dustries, Inc										
Company Add	lress:	Becker	Place										
		Sycamo	ore, IL 60178	8									
Cor	ntact:	Tim Tu	nnell										
				MN				PN				SN	
]	EUT:		SCI	LINE1000			SCI	LINE1000			Samp	le 1 (integr	ated antenna)
			SCI	JNE1000			SCI	LINE1000			Sample 2	(modified	with antenna port
												connec	tor)
EUT Descrip	otion:	Smart C	Connector Li	ghting / Dimmir	ng Controlle	r							
EUT Tx Frequ	ency:	902.7 -	927.3 MHz										
Port Label	Port	Туре	# ports	# populated	cable ty	pe sh	nielded	ferrite s	length (m)	max length (m)	in/out	under test	comment
Power	Powe	r AC	1	1	Power AC	C No)	No	0.3		in	yes	
Software Operating N	Iode D	escription	n:										
EUT shall continuously	/ transn	nit on a si	ngle channe	l from 902 to 928	8 MHz rang	e when AC	power ap	oplied.					





page 5 of 31

Statement of Conformity

The SCLINE1000 has been found to conform to the following parts of 47 CFR and RSS 247 as detailed below:

RSS- GEN	RSP-100	RSS 247	Part 15	Comments
6.3			15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
	3.1		15.19	The label is shown in the label exhibit.
	4		15.21	Information to the user is shown in the instruction manual exhibit.
			15.27	No special accessories are required for compliance.
3, 6.1			15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13			15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
8.1			15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
8.3			15.203	The antenna for this device is integrated wired to the PCB with a gain of 4.55 dBi
8.10			15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209 or RSS-Gen as applicable
8.8			15.207	EUT meets the AC Line conducted emissions requirements of this section.
			15.247	The unit complies with the requirements of 15.247
		RSS 247		The unit complies with the requirements of RSS-247
6.6				Occupied Bandwidth measurements were made.

Modifications Required for Compliance

None





page 6 of 31

Test Results

Bandwidth

LIMIT

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

MEASUREMENTS / RESULTS

TH A#2078

Date: 02-Nov-15	Compar	ny: Ideal Industries	s, Inc.						Work Orde	r: P3128
Engineer: Tuyen Truong	EUT Des	sc: SCLINE1000				EUT O	perati	ng Voltage	/Frequency	120Vac/6
Temp: 21°C	Humidi	ty: 38%	Pr	essure: 1008mba	r					
Frequency I	Range: 902.7 - 9	927.3 MHz								
Notes:										
									6dB BW	
Frequency			Readin	g			Ē	Limit	Margin	Resul
(MHz)			(KHz)					(KHz)	(KHz)	(Pass/F
902.7			655.40	06				≥500	+155.400	B Pas
915.0			655.42	25				≥500	+155.42	5 Pas
927.3			656.14	19				≥500	+156.149	9 Pas
Test Site: CEMI1	Attennuatio	on: 791								
Analyzer: 1510										
10/19/2015										
Spectrum Analyzers / Receivers /P Brown	reselectors	Range 9kHz-26.5GHz	MN E4407B	Mfr Agilent	SR SG44210511	Asset 1510	Cat	Calibratio		Calibrated
		5KT 12-20.5CT 12				1010	1	6/30/2		6/30/2015
Preamps /Couplers Attenuators HF 20dB 50W Attenuator		Range 0.009-18 GHz	MN PE 7019-20	Mfr Pasternack	SN 1	Asset 791	Cat	6/30/2 Calibratio 7/31/2		Calibrated
		Range	MN	Mfr	SN	Asset	Cat	Calibratio	016 on Due	6/30/2015 Calibrated 7/31/2015 Calibrated N/A
HF 20dB 50W Attenuator Conducted Test Sites (Mains /	Telco)	Range 0.009-18 GHz FCC Code	MN	Mfr Pastemack VCCI Code	SN	Asset	Cat II Cat	Calibratio 7/31/2 Calibratio	on Due	Calibrated 7/31/201 Calibrated

HTC-1

HDE

2078 II

4/2/2016

4/2/2015

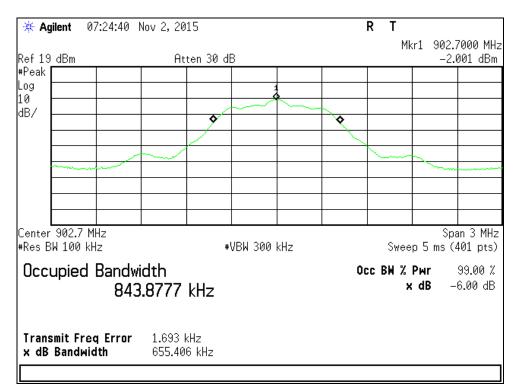
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



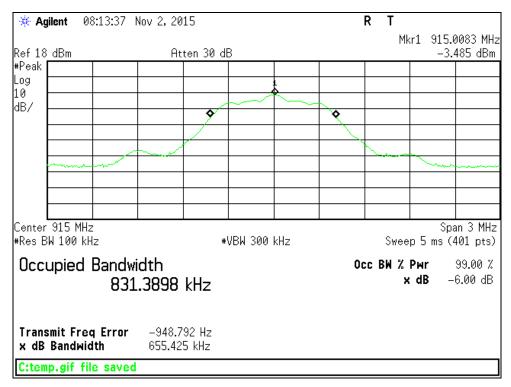


page 7 of 31





6dB Bandwidth Plot, Low Channel

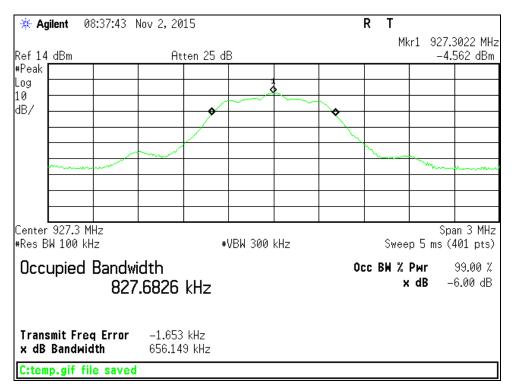


6dB Bandwidth Plot, Middle Channel





page 8 of 31



6dB Bandwidth Plot, High Channel





Fundamental Emission Output Power

LIMIT

Conducted Output Power 1W = 30dBm [15.247(b) (3)]

MEASUREMENTS / RESULTS

	Cc	mpany: Ideal Industries,	Inc.				١	Nork Order	: P3128		
Engineer: Tuyen Truong	EL	JT Desc: SCLINE1000			EUT Operating Voltage/Frequency: 120Vac/						
Temp: 21°C	H	umidity: 38%	Pressure: 1008m	bar							
Freque	ncy Range: 90	02.7 - 927.3 MHz									
Notes:											
								FCC 15.24	7		
Frequency	Reading	Attenuation		Adjusted Read	Adjusted Reading			Margin	Resu		
(MHz)	(dBm)	(dB)		(dBm)			(dBm)	(dB)	(Pass/F		
902.7	-2.17	19.55		17.38			30.0	-12.62	Pass		
915.0	-3.58	19.55	r i	15.97	15.97			-14.03	Pas		
927.3	-4.63	19.55	r	14.92			30.0	-15.08	Pas		
Table Result:	Pass	by -12.62 dB				Wo	rst Freq:	902.7	7 MHz		
Test Site: CEMI1	Atten	nuation: 791									
Analyzer: 1510											
0/19/2015	(B		1411 144 H			0 -1	O - 111				
	ers /Preselecto		MN Mfr E4407B Agilent	SN SG44210511	Asset 1510	Cat I	Calibratio 6/30/20				
Spectrum Analyzers / Receiv	uators / Filters		E4407B Agilent	SG44210511 SN				016	6/30/201		
Spectrum Analyzers / Receiv Brown Preamps /Couplers Attenu	uators / Filters enuator	9kHz-26.5GHz	E4407B Agilent	SG44210511 SN k 1	1510 Asset	l Cat	6/30/20	016 01 Due (016 01 Due (Calibrated 6/30/2019 Calibrated 7/31/2019 Calibrated N/A		

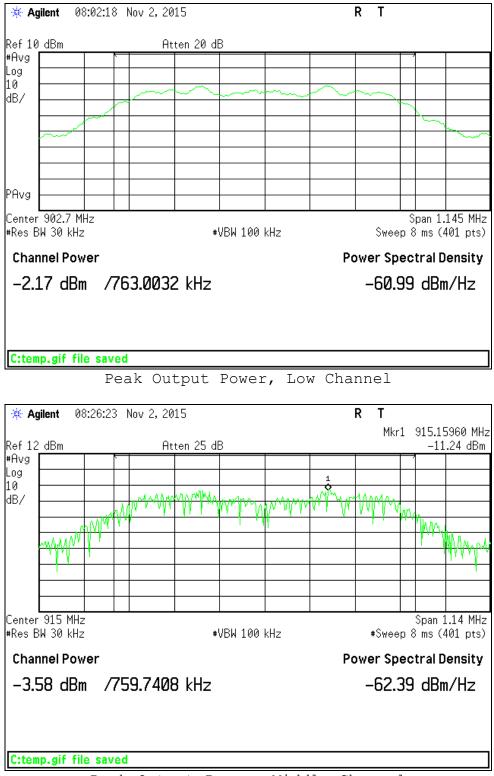
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.





page 10 of 31

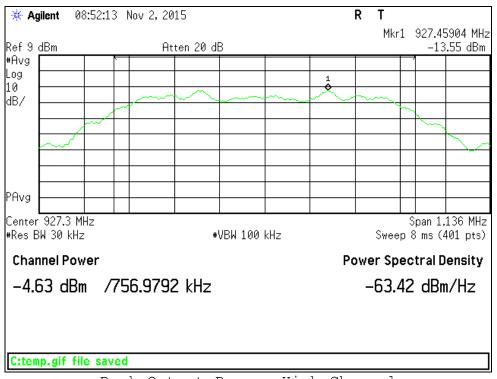
PLOTS



Peak Output Power, Middle Channel







Peak Output Power, High Channel





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

Radiatec	l Emissic	ons Tab	le									
Date:	06-Nov-15		Company:	Ideal Indus	tries, Inc.					١	Nork Order:	P3128
Engineer:	Jason Haley		EUT Desc:	SCLINE10	00			EL	JT Operati	ing Voltage	Frequency:	120V/60Hz
Temp:	22.2°C		Humidity:	54%		Pressure:	1006mBar					
	Freque	ncy Range:	30-1000MH	Ηz				Me	easuremei	nt Distance:	3 m	
Notes:	Low Channel 9	02.7MHz, E	UT in the Z-	axis (Wors	t case)				EUT	Max Freq:	928 MHz	
											FCC 15.209	
Antenna	_		Preamp	Antenna	Cable	Adjusted						
Polarization (H / V)	Frequency (MHz)	(dBµV)	Factor (dB)	Factor (dB/m)	Factor (dB)	Reading (dBµV/m)				Limit (dBµV/m)	(dB)	Result (Pass/Fail)
`´	42.02		(db) 25.3	12.4	0.4	22.6				(dbµv/m) 40.0	-17.4	
Vertical Vertical	42.02	35.1 37.7	25.3	8.0	0.4	22.6				40.0	-17.4	Pass Pass
Horizontal	117.34	41.5	25.3	13.7	0.5	30.5				43.5	-13.0	Pass
Horizontal	189.63	39.7	24.4	11.3	0.8	27.4				43.5	-16.1	Pass
Horizontal	243.81	41.0	25.3	11.7	0.0	28.3				46.0	-17.7	Pass
Horizontal	564.62	29.8	25.0	18.6	1.4	24.8				46.0	-21.2	Pass
Vertical	589.13	26.3	23.0	18.6	1.4	24.0				46.0	-24.7	Pass
Vertical	845.81	27.1	25.6	21.8	1.8	25.1				46.0	-20.9	Pass
						20.1						
	e Result:	Pass	by	-13.0						orst Freq:	117.34	
	EMI Chamber	1		Asset #20	51			Cable 2: As			Cable 3:	
Analyzer:			Preamp:					Antenna: Re	ed-Brown		Preselector:	
	ed Emissions C		v 1.017.148								Copyright Curti	s-Straus LLC 2000
Adjusted Read	ing = Reading ·	Preamp Fac	ctor + Anter	Ina Factor	+ Cable F	actor						
Radiated	l Emissic	ons Tab	le									
	06-Nov-15		Company:	Ideal Indus	tries. Inc.					١	Nork Order:	P3128
Engineer:	Jason Haley		EUT Desc:	SCLINE10	00			EL	JT Operati	ing Voltage	Frequency:	120V/60Hz
-	22.2°C		Humidity:	54%		Pressure:	1006mBar			3 3		
		ncy Range:						Me	asureme	nt Distance:	3 m	
Notes	Middle Channe				t caso ori	entation)				Max Freq:		
Notes.		, 515101112, L		axis (wors	1 0430 011	eritation			201	max rieq.	520 10112	
											FCC 15.209	
Antenna			Preamp	Antenna	Cable	Adjusted		r r				
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading				Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)				(dBµV/m)	(dB)	(Pass/Fail)
Vertical	41.66	37.0	25.3	12.7	0.4	24.8				40.0	-15.2	Pass
Vertical	65.41	36.7	25.4	7.9	0.5	19.7				40.0	-20.3	Pass
Horizontal	114.61	40.6	25.3	13.4	0.6	29.3				43.5	-14.2	Pass
Horizontal	185.55	37.6	24.3	11.0	0.8	25.1				43.5	-18.4	Pass
Horizontal	188.09	37.5	24.4	11.2	0.8	25.1				43.5	-18.4	Pass
Horizontal	248.73	37.5	25.2	11.7	0.9	24.9				46.0	-21.1	Pass
Horizontal	344.71	37.5	25.2	14.1	1.1	27.5				46.0	-18.5	Pass
Vertical	420.32	32.2	25.3	16.3	1.1	24.3				46.0	-21.7	Pass
Horizontal	564.56	29.5	25.0	18.6	1.4	24.5				46.0	-21.5	Pass
Vertical	589.07	26.3	24.9	18.6	1.3	21.3				46.0	-24.7	Pass
Table	e Result:	Pass	by	-14.2	dB				Wa	orst Freq:	114.61	MHz
Test Site:	EMI Chamber	1	Cable 1:	Asset #20	51			Cable 2: As	sset #20 <u>53</u>		Cable 3:	
Analyzer:	Gold		Preamp:					Antenna: Re	ed-Brown		Preselector:	
Analyzon.												
	ed Emissions C	alculator	v 1.017.148								Copyright Curti	s-Straus LLC 2000





	: 06-Nov-15		Company:	Ideal Indus	tries, Inc						W	/ork Orde	er: P3128		
Engineer	Jason Haley		EUT Desc:	SCLINE10	00			E	UT Ope	rating	y Voltage/I	Frequenc	y: 120V/60H		
Temp	: 22.2°C		Humidity:	54%		Pressur	e: 1006mBar		-	-		•	•		
		ncy Range:						Ν	leasure	ment	Distance:	3 m			
Notes	: High Channel 9	927.3MHz, E	UT in the X	axis (worst	t case or	ientation)	EUT Max Freq: 928 MHz								
			_	_								FCC 15.2	209		
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)					Limit (dBµV/m)	Margin (dB)	Result (Pass/Fa		
vertical	34.97	(овµv) 30.5	25.3	17.7	0.3	(dBμV/II) 23.2					40.0	-16.8	Pass		
vertical	42.85	35.3	25.3	11.9	0.3	22.3					40.0	-17.7	Pass		
vertical	54.22	37.0	25.4	7.3	0.5	19.4					40.0	-20.6	Pass		
horizontal	115.21	40.0	25.3	13.5	0.5	28.8					43.5	-20.0	Pass		
horizontal	187.86	34.7	24.4	11.2	0.8	22.3					43.5	-21.2	Pass		
horizontal	249.44	35.9	25.2	11.7	0.9	23.3					46.0	-22.7	Pass		
horizontal	347.91	35.3	25.1	14.2	1.1	25.5					46.0	-20.5	Pass		
vertical	352.94	31.7	25.0	14.4	1.0	22.1					46.0	-23.9	Pass		
norizontal	564.56	29.2	25.0	18.6	1.4	24.2					46.0	-21.8	Pass		
vertical	839.24	35.1	25.6	21.7	1.8	33.0					46.0	-13.0	Pass		
Tabl	e Result:	Pass	by	-13.0	dB					Wors	st Freq:	839.2	4 MHz		
Test Site:	EMI Chamber	1	Cable 1:	Asset #20	51			Cable 2: A	Asset #2	053		Cable	3:		
	EMI Chamber	1			51						P				
Analyzer			Cable 1: Preamp: v 1.017.148	Blue-Blk	51			Cable 2: A Antenna: F			Р	reselecto	or:		
Analyzer: soft Radiate	Gold	alculator	Preamp: v 1.017.148	Blue-Blk		- actor					P	reselecto			
Analyzer: soft Radiate justed Read	: Gold ed Emissions C	alculator	Preamp: v 1.017.148	Blue-Blk		actor					Ρ	reselecto	or:		
Analyzer: soft Radiate justed Read	: Gold ed Emissions C Jing = Reading -	alculator Preamp Fa	Preamp: v 1.017.148 stor + Anter	Blue-Blk nna Factor	+ Cable I		Mfr	Antenna: F	Red-Brov	vn		Preselecto Copyright C	or:		
Analyzer: soft Radiate justed Read	: Gold ed Emissions C	alculator Preamp Fac	Preamp: v 1.017.148 stor + Anter	Blue-Blk	+ Cable I	Factor MN E4407B	Mfr Agilent				P Calibrati 4/22/2	on Due	or:		
Analyzer: soft Radiate justed Read	: Gold ed Emissions C ding = Reading - n Analyzers / Re	alculator Preamp Far ceivers /Pre sions Sites	Preamp: v 1.017.148 stor + Anter	Blue-Blk nna Factor Rar	+ Cable I nge 6.5 GHz Code	MN		Antenna: F SN	Red-Brow	Vn Cat	Calibrati	on Due 2016 on Due	Calibrated		
Analyzer: soft Radiate usted Read :11/5/2015 Spectrum	: Gold ed Emissions C ding = Reading - n Analyzers / Re Gold Radiated Emis	alculator Preamp Far ceivers /Pre sions Sites nber 1 ttenuators / F	Preamp: v 1.017.148 ctor + Anter	Blue-Blk nna Factor Rar 100Hz-2 FCC 0 719 Rar	+ Cable I nge 6.5 GHz Code 150 nge	MN E4407B IC Code	Agilent VCCI Code	Antenna: F SN MY45113816 Range	Red-Brow	Cat I Cat	Calibrati 4/22/2 Calibrati	on Due 2016 on Due 2017 on Due	Calibrated 4/22/2015		
Analyzer: soft Radiate usted Read 11/5/2015 Spectrum	: Gold ed Emissions C ding = Reading - n Analyzers / Re Gold Radiated Emis EMI Charr nps /Couplers Al	alculator Preamp Fau ceivers /Pre- sions Sites aber 1 ttenuators / F ack nas	Preamp: v 1.017.148 ctor + Anter	Blue-Blk nna Factor Rar 100Hz-2 FCC 0 719 Rar	+ Cable I nge 6.5 GHz Code 150 nge 000MHz nge	MN E4407B IC Code 2762A-6 MN	Agilent VCCI Code A-0015 Mfr	SN MY45113816 Range 30-1000MHz SN	Asset 1284	Cat I Cat I Cat	Calibrati 4/22/2 Calibrati 3/21/2 Calibrati	on Due 2016 on Due 2017 on Due 2017 on Due 2015 on Due	Calibrated 4/22/2011 Calibrated 3/21/2011 Calibrated		

Meteorological Meters Weather Clock (Pressure Only) MN SN Asset Cat Calibrated on Mfr Calibration Due Oregon Scientific BA928 C3166-1 831 3/19/2016 3/19/2014 T. TH A#2080 HTC-1 HDE 2080 II 4/2/2016 4/2/2015





Date:	12-Nov-15			Company:	Ideal Indus	tries, Inc						١	Nork Order:	P3128									
•	Chris LoPicco	lo		EUT Desc:		00					EUT Operati	ing Voltage	Frequency:	120V/60H									
Temp:	22.2°C			Humidity:	31%			Pressure	: 1006mBar														
		Freque	ncy Range:	1-6 GHz							Measuremen	nt Distance:	3 m										
Notes:	EUT oriented : Lo channel (90		t case)								EUT	Max Freq:	928 MHz										
Antenna	Peak	Average	Preamp Antenna Cable		Antenna Cable Adjusted Adjuste								• • • •					• • • •		•			
Polarization	on Frequency Reading Reading Factor Factor Pea		Peak Reading	Avg Reading	Limit	Margin	Result	Limit	Margin	Result													
(H / V)	(MHz)	(dBµV)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fai									
V	1015.0	35.46	22.1	20.8	24.8	2.3	41.8	28.4	74.0	-32.2	Pass	54.0	-25.6	Pass									
V	1805.4	39.27	27.8	18.8	27.1	3.0	50.6	39.1	74.0	-23.4	Pass	54.0	-14.9	Pass									
н	1805.4	35.74	26.3	18.8	27.1	3.0	47.0	37.6	74.0	-27.0	Pass	54.0	-16.4	Pass									
V	2708.0	35.89	21.6	20.3	29.2	4.0	48.8	34.5	74.0	-25.2	Pass	54.0	-19.5	Pass									
н	2708.0	36.83	22.5	20.3	29.2	4.0	49.7	35.4	74.0	-24.3	Pass	54.0	-18.6	Pass									
Н	3001.0	35.95	20.5	19.9	30.5	4.0	50.6	35.1	74.0	-23.4	Pass	54.0	-18.9	Pass									
Table	e Result:		Pass	by	-14.9	dB					Wa	orst Freq:	1805.4	MHz									
Test Site:	EMI Chamber	2		Cable 1:	Asset #20	52				Cable 2:	Asset #1784		Cable 3:										
	Analyzer: Gold		_	Asset #15				Antenna: Black Horn Preselector:															

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

Date:	12-Nov-15			Company:	Ideal Indus	tries, Inc						v	/ork Order:	P3128
Engineer:	Chris LoPicco	lo		EUT Desc:	SCLINE10	00					EUT Operati	ing Voltage/I	Frequency:	120V/60Hz
Temp:	22.2°C			Humidity:	31%			Pressure	: 1006mBar					
		Freque	ncy Range:	1-6 GHz							Measureme	nt Distance:	3 m	
Notes:	EUT oriented : Mid Channel (t case)								EUT	Max Freq:	928 MHz	
									FCC 15.209	High Frequ	ency - Peak	FCC 15.2	09 High Fre	quency -
Antenna		Peak	Average	Preamp						Average				
olarization (H/V)	Frequency (MHz)	Reading (dBµV)	(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)	Resul (Pass/Fa
Н	1000.0	34.51	21.5	20.9	24.6	2.2	40.4	27.4	74.0	-33.6	Pass	54.0	-26.6	Pass
V	1830.0	36.06	26.4	18.8	27.2	3.0	47.5	37.8	74.0	-26.5	Pass	54.0	-16.2	Pass
н	1830.0	35.21	22.9	18.8	27.2	3.0	46.6	34.3	74.0	-27.4	Pass	54.0	-19.7	Pase
V	2745.0	36.04	22.1	20.2	29.1	4.1	49.0	35.1	74.0	-25.0	Pass	54.0	-18.9	Pass
H V	2745.0 3001.0	35.76 35.07	21.7 19.9	20.2 19.9	29.1 30.5	4.1 4.0	48.8 49.7	34.7 34.5	74.0 74.0	-25.2 -24.3	Pass Pass	54.0 54.0	-19.3 -19.5	Pase
Table	e Result:		Pass	by	-16.2	dB						orst Freq:	1830.0	MHz
Test Site:	EMI Chamber	2		Cable 1:	Asset #20	52				Cable 2:	Asset #1784		Cable 3:	
Analyzer:	Gold			Preamp:	Asset #15	17				Antenna:	Black Horn	P	reselector:	

Date:	12-Nov-15			Company:	Ideal Indus	tries, Inc.						V	/ork Order:	P3128
Engineer:	Chris LoPicco	lo		EUT Desc:	SCLINE10	00					EUT Operati	ng Voltage/	Frequency:	120V/60Hz
Temp:	22.2°C			Humidity:	31%			Pressure	: 1006mBar					
		Freque	ncy Range:	1-6 GHz							Measureme	nt Distance:	3 m	
	EUT oriented Hi Channel (92		t case)								EUT	Max Freq:	928 MHz	
Antenna		Peak	Average	Preamp	Antenna	Cable	Adjusted	Adjusted	FCC 15.209	High Frequ	ency - Peak	FCC 15.2	09 High Fre Average	equency -
olarization	Frequency	Reading	Reading	Factor	Factor	Factor	Peak Reading	Avg Reading	Limit	Margin	Result	Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fa
V	1855.0	35.15	23.9	18.8	27.3	3.1	46.8	35.5	74.0	-27.2	Pass	54.0	-18.5	Pass
н	1855.0	34.6	22.5	18.8	27.3	3.1	46.2	34.1	74.0	-27.8	Pass	54.0	-19.9	Pass
Н	2454.0	36.04	21.7	20.1	28.7	3.8	48.4	34.1	74.0	-25.6	Pass	54.0	-19.9	Pass
V	2975.0	36.55	20.2	20.0	30.2	4.1	50.9	34.5	74.0	-23.1	Pass	54.0	-19.5	Pass
н	3235.0	35.93	19.4	19.7	31.2	4.3	51.7	35.2	74.0	-22.3	Pass	54.0	-18.8	Pass
V	3697.0	34.33	19.9	19.1	32.1	4.2	51.5	37.1	74.0	-22.5	Pass	54.0	-16.9	Pass
Table	e Result:		Pass	by	-16.9	dB					Wa	orst Freq:	3697.0	MHz
Test Site: Analyzer:	EMI Chamber Gold	2			Asset #20 Asset #15						Asset #1784 Black Horn	P	Cable 3: reselector:	





Bev 11/5/2015

Rev. 11/5/2015								
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 2	719150	2762A-7	A-0015	1-18GHz		I.	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	Ш	8/6/2016	8/6/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I.	8/21/2016	8/21/2014
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
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1784	9kHz - 18GHz		Florida RF			11	3/20/2016	3/20/2015
Asset #2052	9kHz - 18GHz		Florida RF			Ш	3/8/2016	3/8/2015

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

Engineer: Temp:	Jason Haley			oompany.	Ideal Indus	1100, 110.								P3128
Temp:				EUT Desc:	SCLINE10	00					EUT Operat	ing Voltage/	Frequency:	120V/60H
	22.2°C			Humidity:	54%			Pressure	1006mBar					
		Freque	ncy Range:	6-10GHz							Measureme	nt Distance:	1 m	
Notes:	EUT in the X-a	ixis (worst c	ase orientatio	on). All Nois	e Floor rea	dings.					EUT	Г Max Freq:		
Antenna		Peak	Average	Preamp	Antenna	Cable	Adiusted	Adjusted	FCC 15.209	High Frequ	ency - Peak	FCC 15.2	209 High Fre Average	quency -
Polarization	Frequency	Reading	Reading	Factor	Factor	Factor	Peak Reading	Ava Reading	Limit	Margin	Besult	Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dB)	(Pass/Fail)	(dBµV/m)	(dB)	(Pass/Fai
/Low Channel	6314.0	29.23	16.7	16.2	35.6	5.8	54.4	41.9	83.5	-29.1	Pass	63.5	-21.6	Pass
H Mid Channel	6405.0	27.3	16.6	16.0	35.5	5.9	52.7	42.0	83.5	-30.8	Pass	63.5	-21.5	Pass
lorz hi channel	6496.0	27.85	16.3	16.1	35.5	5.9	53.2	41.6	83.5	-30.3	Pass	63.5	-21.9	Pass
Low Channel	7216.0	28.9	17.5	15.9	37.6	5.8	56.4	45.0	83.5	-27.1	Pass	63.5	-18.5	Pass
H Mid Channel	7320.0	27.6	17.2	15.9	37.9	5.8	55.4	45.0	83.5	-28.1	Pass	63.5	-18.5	Pass
/ert Hi channel	7424.0	28.7	16.7	15.9	37.9	5.7	56.4	44.4	83.5	-27.1	Pass	63.5	-19.1	Pass
Low Channel	8118.0	28.65	16.3	15.9	37.7	5.8	56.3	43.9	83.5	-27.2	Pass	63.5	-19.6	Pass
/Mid Channel	8235.0	27.16	16.5	16.0	37.8	5.8	54.8	44.1	83.5	-28.7	Pass	63.5	-19.4	Pass
lorz hi channel	8352.0	28.56	16.2	16.0	37.9	5.9	56.4	44.0	83.5	-27.1	Pass	63.5	-19.5	Pass
Low Channel	9020.0	30.08	16.6	15.8	38.5	6.0	58.8	45.3	83.5	-24.7	Pass	63.5	-18.2	Pass
Mid Channel	9150.0	27.0	16.5	15.7	38.3	6.1	55.7	45.2	83.5	-27.8	Pass	63.5	-18.3	Pass
/ert Hi channel	9280.0	28.79	15.9	15.6	38.3	6.1	57.6	44.7	83.5	-25.9	Pass	63.5	-18.8	Pass
Low Channel	9922.0	29.27	15.9	14.9	39.2	6.7	60.3	46.9	83.5	-23.2	Pass	63.5	-16.6	Pass
Table	e Result:		Pass	by	-16.6	dB					Wa	orst Freq:	9922.0	MHz
Test Site:	EMI Chamber	1		Cable 1:	Asset #20	51				Cable 2	Asset #2053		Cable 3:	

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

Rev.11/5/2015

Rev.11/5/2015								
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		11	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	Ш	4/9/2016	10/8/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2051	9kHz - 18GHz		Florida RF			11	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			Ш	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	I	3/19/2016	3/19/2014
TH A#2080		HTC-1	HDE		2080	П	4/2/2016	4/2/2015





Conducted Spurious Emissions

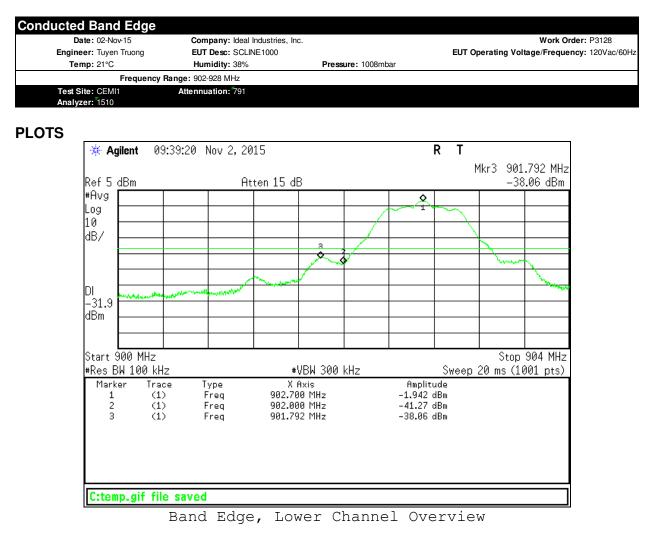
LIMITS

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

Band Edge Measurements

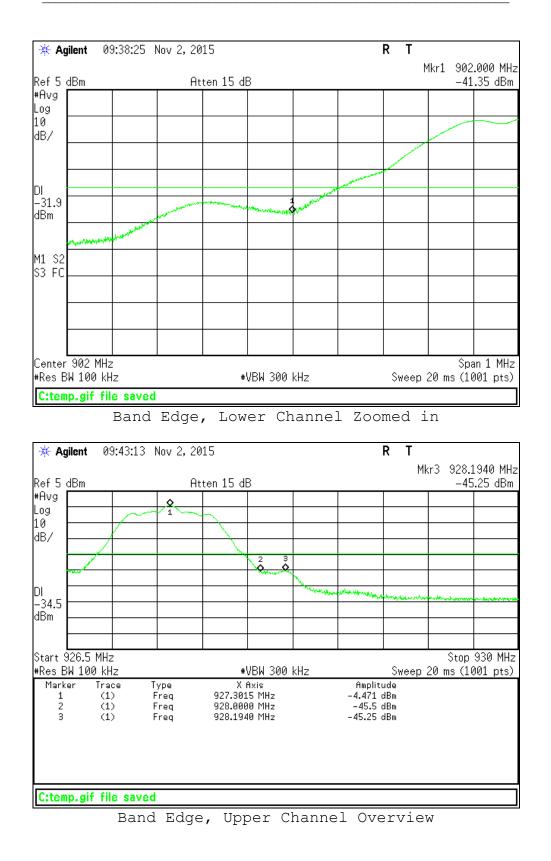




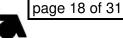
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page 17 of 31







ACCREDITED



Rev. 10/19/2015

Range 9kHz-26.5GHz	MN E4407B	Mfr Agilent	SN SG44210511	Asset 1510	Cat I	Calibration Due 6/30/2016	Calibrated on 6/30/2015
Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
0.009-18 GHz	PE 7019-20	Pasternack	1	791	П	7/31/2016	7/31/2015
FCC Code		VCCI Code			Cat	Calibration Due	Calibrated on
719150		A-0015			III	NA	N/A
	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
	BA928	Oregon Scientific	C3166-1	831	1	3/19/2016	3/19/2014
	HTC-1	HDE		2078	П	4/2/2016	4/2/2015
	9kHz-26.5GHz Range 0.009-18 GHz FCC Code	9kHz-26.5GHz E4407B Range MN 0.009-18 GHz PE 7019-20 FCC Code 719150 MN BA928	9kHz-26.5GHz E4407B Agilent Range MN Mfr 0.009-18 GHz PE 7019-20 Pasternack FCC Code VCCI Code 719150 MN Mfr BA928 Oregon Scientific	9kHz-26.5GHz E4407B Agilent SG44210511 Range MN Mfr SN 0.009-18 GHz PE 7019-20 Pasternack 1 FCC Code VCCI Code 719150 A-0015 MN Mfr SN BA928 Oregon Scientific C3166-1	9kHz-26.5GHz E4407B Agilent SG44210511 1510 Range MN Mfr SN Asset 0.009-18 GHz PE 7019-20 Pasternack 1 791 FCC Code VCCI Code A-0015 Asset MN Mfr SN Asset BA928 Oregon Scientific C3166-1 831	9kHz-26.5GHz E4407B Agilent SG44210511 1510 I Range MN Mfr SN Asset Cat 0.009-18 GHz PE 7019-20 Pasternack 1 791 II FCC Code VCCI Code Cat III 719150 A-0015 III III MN Mfr SN Asset Cat BA928 Oregon Scientific C3166-1 831 I	9kHz-26.5GHz E4407B Agilent SG44210511 1510 I 6/30/2016 Range 0.009-18 GHz MN PE 7019-20 Mfr Pasternack SN 1 Asset 791 Cat II Calibration Due 7/31/2016 FCC Code 719150 VCCI Code A-0015 Cat III Calibration Due NA MN BA928 Mfr Oregon Scientific SN C3166-1 Asset 831 Cat I Calibration Due 3/19/2016





Conducted Spurious Emission

Conducted Spurious En	nission at The Antenna I	Port	
Date: 29-Oct-15	Company: Ideal Industries, Inc.		Work Order: P3128
Engineer: Jason Haley	EUT Desc: SCLINE1000		EUT Operating Voltage/Frequency: 120Vac/60Hz
Temp: 22°C	Humidity: 56%	Pressure: 991mBar	
Frequency	Range: 9 KHz to 10000 MHz		
Test Site: CEMI1	Cable: 1522		
Analyzer: Brown			

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

Rev. 10/19/2015								
Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	Ι	6/30/2016	6/30/2015
Conducted Test Sites (Mains / Telco)	FCC Code		VCCI Code			Cat	Calibration Due	Calibrated on
CEMI 1	719150		A-0015			III	NA	N/A
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1522	9kHz - 18GHz		Florida RF			Ш	2/15/2016	2/15/2015
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	egon Scienti	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	11	4/2/2016	4/2/2015





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

TH A#2078

Date: 02-Nov-15	Co	ompany: Ideal Industries	s, Inc.					W	/ork Ord	er: P3128
Engineer: Tuyen Truong	EL	UT Desc: SCLINE1000				EUT O	peratir	ng Voltage/I	Frequenc	y: 120Vac/6
Temp: 21°C	н	umidity: 38%	Pr	ressure: 1008mbar						
Freque	ncy Range: 90	02.7 - 927.3 MHz								
Notes:										
									FCC 15.2	247
Frequency	Reading	Attenuatio	'n		Adjusted Read	ing	F	Limit	Margin	Resul
(MHz)	(dBm)	(dB)			(dBm)		_	(dBm)	(dB)	(Pass/F
902.7	-15.56	19.55		-	3.99			8.0	-4.01	Pase
915.0 927.3	-16.53 -18.23	19.55 19.55		r	3.02 1.32			8.0 8.0	-4.98 -6.68	Pase
Table Result:	Pass	by -4.01 dB		I	1.02		Wo	rst Freq:		.7 MHz
Test Site: CEMI1 Analyzer: 1510	Atten	nuation: ⁷ 91								
10/19/2015 Spectrum Angluzors / Possivo	re /Procolactor	e Pango	MN	Mfr	SN	Accot	Cat	Calibratio		Calibrated
	rs/Preselector	r s Range 9kHz-26.5GHz	MN E4407B	Mfr Agilent	SN SG44210511	Asset 1510	Cat	Calibratio 6/30/20		Calibrated 6/30/2015
Spectrum Analyzers / Receiver		•			-		Cat I Cat)16	6/30/2015
Spectrum Analyzers / Receiver Brown	tors / Filters	9kHz-26.5GHz	E4407B MN	Agilent Mfr	SG44210511	1510	Ι	6/30/20	016 n Due	
Spectrum Analyzers / Receiver Brown Preamps /Couplers Attenua HF 20dB 50W Attenu Conducted Test Sites (Mai	tors / Filters lator	9kHz-26.5GHz Range 0.009-18 GHz P FCC Code	E4407B MN	Agilent Mfr 0 Pasternack VCCI Code	SG44210511 SN	1510 Asset	। Cat ॥ Cat	6/30/20 Calibratio 7/31/20 Calibratio	016 n Due 016	6/30/2015 Calibrated 7/31/2015 Calibrated
Spectrum Analyzers / Receiver Brown Preamps /Couplers Attenua HF 20dB 50W Attenu	tors / Filters lator	9kHz-26.5GHz Range 0.009-18 GHz P	E4407B MN	Agilent Mfr 0 Pasternack	SG44210511 SN	1510 Asset	∣ Cat ∥	6/30/20 Calibratio 7/31/20	016 n Due 016	6/30/2015 Calibrated 7/31/2015
Spectrum Analyzers / Receiver Brown Preamps /Couplers Attenua HF 20dB 50W Attenu Conducted Test Sites (Mai	tors / Filters ^{lator} ins / Telco) ters	9kHz-26.5GHz Range 0.009-18 GHz P FCC Code	E4407B MN	Agilent Mfr 0 Pasternack VCCI Code	SG44210511 SN	1510 Asset	। Cat ॥ Cat	6/30/20 Calibratio 7/31/20 Calibratio	n Due n Due n Due n Due	6/30/2015 Calibrated 7/31/2015 Calibrated

HTC-1

HDF

2078 II

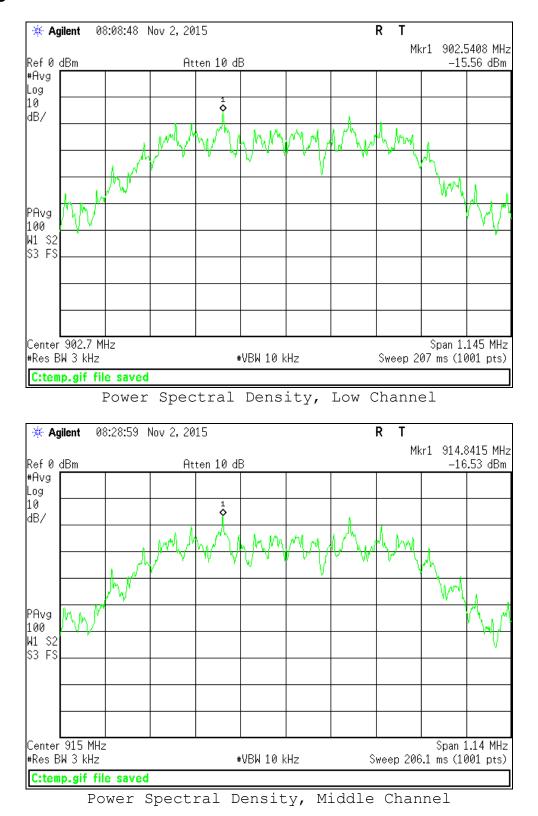
4/2/2016

4/2/2015

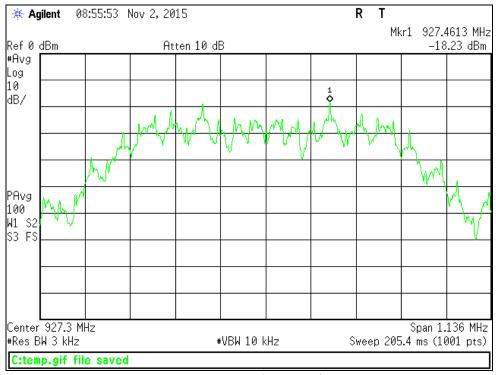




PLOTS







Power Spectral Density, High Channel





AC Line Conducted Emissions

LIMITS

Frequency of	Quasi-peak limit	Average limit
emission (MHz)	(dBµV)	(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

	te: 26-Oct-15 er: Tuyen Truong					Company: Id EUT Desc: S		es, Inc.			v	Vork Order:	P3128
	ip: 21.9 °C					Humidity: 35						Pressure	1021 mE
Note	es:												
	<u> </u>				LISN	requency Range: 0.	15 - 30 MH:	z	EUT	Input Voltage	/Frequency:	120 Vac / 60	IHz
	Quas	I-Peak dings		erage adings	Factors	Cable	ATTN		FCC 15.2	17		FCC 15.207	
Frequency	QP1	QP2	AVG1	AVG2	L1 L		Factor	QP Limit	Margin	Result	AVG Limit	Margin	Resu
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dBµV)	(dB) (dl		(dB)	(dBµV)	(dB)	(Pass/Fail)	(dBµV)	(dB)	(Pass/F
0.37	18.9	15.4	18.9	15.4	0.0 0.	0 -0.1	-20.3	58.4	-19.1	Pass	48.4	-9.2	Pas
0.77	16.8	13.5	16.8	13.5	0.0 0.	0 -0.1	-20.3	56.0	-18.7	Pass	46.0	-8.8	Pas
1.14	19.4	15.5	14.1	15.5	-0.1 -0	1 -0.1	-20.3	56.0	-16.2	Pass	46.0	-10.0	Pas
7.50	12.7	13.0	12.7	13.0	-0.1 -0	1 -0.2	-20.3	60.0	-26.4	Pass	50.0	-16.4	Pas
18.61	16.5	16.0	16.5	16.0	-0.2 -0		-20.3	60.0	-22.8	Pass	50.0	-12.7	Pas
21.44	12.9	11.7	12.9	11.7	-0.2 -0	2 -0.3	-20.3	60.0	-26.4	Pass	50.0	-16.4	Pas
Resul	t: Pass					Worst M	argin:	-8.8	8 dB	Freq	uency:	0.766	MHz
surement Devic	e. I ISN Asset	2002				Cable: C	EMI-01			Spectrum	Analyzer	Rental SA	#5
	C. LION / 10001	2032											110
10/0015		2002				Attenuator: 2		า-4				CEMI6	10
/19/2015				D		Attenuator: 2	0dB Atter				Site:	CEMI6	
Spectrum Analyz	ers/Receivers			Range	MN	Attenuator: 2 Mfr	0dB Atter	N		Cat Calib	Site:	CEMI6 Calibr	ated or
Spectrum Analyz				Range 9kHz-26.5 GHz		Attenuator: 2	0dB Atter		Asset 1860	Cat Calib	Site:	CEMI6 Calibr	
Spectrum Analyz	ers/Receivers	s/Preselecto				Attenuator: 2 Mfr	0dB Atter	N 104916	1860	Cat Calib I 7/	Site:	CEMI6 Calibr 7/30	ated o ı √2015
Spectrum Analyz	ers / Receiver SA #2 (1860)	s/Preselecto		9kHz-26.5 GHz	E7405A MN	Attenuator: 2 Mfr Agilent	0dB Atter S MY45 S	N 104916	1860	Cat Calib I 7/ Cat Calib	Site: pration Due 30/2016	CEMI6 Calibr 7/30 Calibr	ated or
Spectrum Analyz Stister LISNs/Mu	ers / Receivers SA #2 (1860) easurement Pr	s/Preselecto robes		9kHz-26.5 GHz Range	E7405A MN	Attenuator: 2 Mfr Agilent Mfr	0dB Atter S MY45 S	n 104916 N	1860 Asset 2092	Cat Calib I 7/ Cat Calib I 6/	Site: aration Due 30/2016 aration Due	CEMI6 Calibr 7/30 Calibr 6/30	ated or /2015 ated or /2015
Spectrum Analyz Stister LISNs/Mu	ers / Receivers SA #2 (1860) easurement Pf SN Asset 2092	s/Preselecto robes		9kHz-26.5 GHz Range 9KHz-30MHz	E7405A MN	Attenuator: 2 Mfr Agilent Mfr Schwarzbeck	0dB Atter S MY45 S	n 104916 N	1860 Asset 2092	Cat Calib I 7/ Cat Calib I 6/	Site: oration Due 30/2016 oration Due 30/2016	CEMI6 Calibr 7/30 Calibr 6/30 Calibr	ated or /2015 ated or
Spectrum Analyz Stister LISNs/Mu	ers / Receivers SA #2 (1860) easurement Pi SN Asset 2092 est Sites (Mair	s/Preselecto robes		9kHz-26.5 GHz Range 9KHz-30MHz FCC Code	E7405A MN	Attenuator: 2 Mfr Agilent Mfr Schwarzbeck VCCI Code	0dB Atter S MY45 S	n 104916 N	1860 Asset 2092	Cat Calib I 7/ Cat Calib I 6/ Cat Calib III	Site: ration Due 30/2016 ration Due 30/2016 ration Due	CEMI6 Calibr 7/30 Calibr 6/30 Calibr	ated or /2015 ated or /2015 ated or
Spectrum Analyz Stister LISNs/Mu	ers / Receivers SA #2 (1860) easurement Pr SN Asset 2092 est Sites (Mair CEMI 6	s/Preselecto robes		9kHz-26.5 GHz Range 9KHz-30MHz FCC Code 719150	E7405A MN	Attenuator: 2 Mfr Agilent Mfr Schwarzbeck VCCI Code A-0015	0dB Atter S MY45 S	n 104916 N	1860 Asset 2092	Cat Calib I 7/ Cat Calib I 6/ Cat Calib III Cat Calib	Site: aration Due 30/2016 aration Due 30/2016 aration Due NA	CEMI6 Calibr 7/30 Calibr 6/30 Calibr N Calibr	ated or /2015 ated or /2015 ated or I/A
Spectrum Analyz LISNs/M LIS Conducted T	ers / Receivers SA #2 (1860) easurement Pi SN Asset 2092 est Sites (Mair CEMI 6 Cables	s/Preselecto robes		9kHz-26.5 GHz Range 9KHz-30MHz FCC Code 719150 Range	E7405A MN	Attenuator: 2 Mfr Agilent Mfr Schwarzbeck VCCI Code A-0015 Mfr	0dB Atter S MY45 S	5 N 104916 5 N 5121-662	1860 Asset 2092	Cat Calib I 7/ Cat Calib I 6/ Cat Calib III Cat Calib II 9/	Site: aration Due 30/2016 aration Due 30/2016 aration Due NA aration Due	CEMI6 Calibr 7/3C Calibr 6/3C Calibr N Calibr 9/11	ated or /2015 ated or /2015 ated or I/A ated or
Spectrum Analyz LISNs/M LIS Conducted T	ers / Receivers SA #2 (1860) easurement Pr SN Asset 2092 est Sites (Mair CEMI 6 Cables CEMI-01	s/Preselecto robes ns/Telco)		9kHz-26.5 GHz Range 9KHz-30MHz FCC Code 719150 Range 9kHz - 2GHz	E7405A MN NNLK 8121	Attenuator: 2 Mfr Agilent Mfr Schwarzbeck VCCI Code A-0015 Mfr C-S	0dB Atter S MY45 S NNLK 8	N 104916 IN 1121-662 IN	1860 Asset 2092	Cat Calib I 7/ Cat Calib I 6/ Cat Calib III Cat Calib II 9/ Cat Calib	Site: aration Due 30/2016 aration Due 30/2016 aration Due NA aration Due 11/2016	CEMI6 Calibr 7/3C Calibr 6/3C Calibr 9/11 Calibr 9/11	ated or /2015 ated or /2015 ated or //A ated or /2015
Spectrum Analyz	ers / Receivers GA #2 (1860) easurement Pi SN Asset 2092 est Sites (Mair CEMI 6 Cables CEMI-01 Attenuators	s/Preselecto robes ns/Telco)		9kHz-26.5 GHz Range 9KHz-30MHz FCC Code 719150 Range 9kHz - 2GHz Range	E7405A MN NNLK 8121	Attenuator: 2 Mfr Agilent Mfr Schwarzbeck VCCI Code A-0015 Mfr C-S	0dB Atter S MY45 S NNLK 8	N 104916 N 1121-662 N N	1860 Asset 2092 Asset	Cat Calib I 7/ Cat Calib I 6/ Cat Calib II Cat Calib II 9/ Cat Calib II 7	Site: • oration Due 30/2016 oration Due 30/2016 oration Due NA oration Due 11/2016 oration Due	CEMI6 Calibr 7/30 Calibr 6/30 Calibr N Calibr 9/11 Calibr 7/2	ated o /2015 ated o /2015 ated o //A ated o /2015 ated o
Spectrum Analyz LISNs/M LIS Conducted T Conducted T 20d	ers / Receiver: SA #2 (1860) easurement P easurement P N Asset 2092 est Sites (Mair CEMI 6 CEMI 6 Cables CEMI-01 Attenuators B Attenuator-04	s /Preselecto robes ns / Telco)		9kHz-26.5 GHz Range 9KHz-30MHz FCC Code 719150 Range 9kHz - 2GHz Range	E7405A MN NNLK 8121 MN	Attenuator: 2 Mfr Agilent Mfr Schwarzbeck VCCI Code A-0015 Mfr C-S Mfr	0dB Atter S MY45 S NNLK 8 S N	N 104916 N 1121-662 N A A	1860 Asset 2092 Asset	Cat Calib I 7/ Cat Calib I 6/ Cat Calib II 9/ Cat Calib II 9/ Cat Calib II 7 Cat Calib	Site: ration Due 30/2016 ration Due 30/2016 ration Due 11/2016 ration Due (2/2016	CEMI6 Calibr 7/30 Calibr 6/30 Calibr 9/11 Calibr 7/2 Calibr	ated o /2015 ated o /2015 ated o /2015 ated o /2015





February 9, 2016

Engineer: Tuyen Truong Temp: 21.9 °C Notes:	EUT Desc: S	deal Industrie	s, Inc			v	Vork Order	P3128
Notes:							-	
	Humidity: 3	15%					Pressure	: 1021 mB
	Frequency Range: 0	. 15 - 30 MHz		EUT	Input Voltage	/Frequency: 2	277 Vac / 60)Hz
Quasi-Peak Average LISN								
Readings Readings Factors	Cable	ATTN		FCC 15.2	07		FCC 15.207	
	2 Factor	Factor	QP Limit	Margin	Result	AVG Limit	Margin	Resul
(MHz) (dBµV) (dBµV) (dBµV) (dBµV) (dB) (d	B) (dB)	(dB)	(dBµV)	(dB)	(Pass/Fail)	(dBµV)	(dB)	(Pass/Fa
0.40 23.9 17.4 16.5 17.3 0.0 0	.0 -0.1	-20.3	57.8	-13.5	Pass	47.8	-10.9	Pass
0.78 14.1 8.9 14.1 8.9 0.0 0		-20.3	56.0	-21.4	Pass	46.0	-11.4	Pass
	.1 -0.1	-20.3	56.0	-17.7	Pass	46.0	-14.9	Pass
	.1 -0.2	-20.3	60.0	-24.3	Pass	50.0	-14.3	Pass
	.2 -0.2	-20.3	60.0	-23.2	Pass	50.0	-13.2	Pass
21.30 13.8 12.1 13.8 12.1 -0.2 -0	.2 -0.3	-20.3	60.0	-25.5	Pass	50.0	-15.5	Pass
Result: Pass	Worst M	largin:	-10.9	dB	Freq	uency:	0.402	MHz
asurement Device: LISN Asset 2092 0/19/2015	Cable: 0 Attenuator: 2	20dB Atten					CEMI6	
Spectrum Analyzers / Receivers / Preselectors Range MN SA #2 (1860) 9kHz-26.5 GHz E7405A	Mfr Agilent	SI MY451		Asset 1860		ration Due 30/2016		ated on //2015
LISNs/Measurement Probes Range MN	Mfr	S	N	Asset	Cat Calib	ration Due	Calibr	ated on
LISN Asset 2092 9KHz-30MHz NNLK 8121	Schwarzbeck	NNLK 8	121-662	2092	I 6/	30/2016	6/30	
LIDIN ASSUL 2092 SKHZ-DUIVIHZ ININLK 0121								/2015
Conducted Test Sites (Mains / Telco) FCC Code CEMI 6 719150	VCCI Code A-0015				Cat Calib	ration Due		ated on
Conducted Test Sites (Mains / Telco) FCC Code CEMI 6 719150	A-0015				III	NA	١	ated on ∜A
Conducted Test Sites (Mains / Telco) FCC Code					III Cat Calib		Calibr	ated on
Conducted Test Sites (Mains / Telco) CEMI 6 Cables Range	A-0015	SI N/			III Cat Calib II 9/ Cat Calib	NA ration Due	Calibr 9/11 Calibr	ated on √A ated on
Conducted Test Sites (Mains / Telco) CEMI 6 FCC Code 719150 Cables CEMI-01 Range 9kHz - 2GHz Attenuators Range	A-0015 Mfr C-S	N/	A	Asset	III Cat Calib II 9/ Cat Calib II 7. Cat Calib	NA ration Due 11/2016 ration Due	Calibr 9/11 Calibr 7/2 Calibr	ated or VA ated or /2015 ated or





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 4.6.1]

MEASUREMENTS / RESULTS

Date: 02-Nov-15	Compan	y: Ideal Industries,	Inc.					Work Or	der: P3128
Engineer: Tuyen Truong	EUT Des	: SCLINE1000				EUT O	peratir	ng Voltage/Freque	ncy: 120Vac/6
Temp: 21°C	Humidit	y: 38%	Pre	e ssure: 1008mba	r				
Frequency	Range: 902.7 - 9	27.3 MHz							
Notes:									
Frequency				Occupied Band	width Reading				
(MHz)				(KH					
902.7				763.0	032				
915.0				759.7	7408				
927.3				756.9	9792				
Test Site: CEMI1 Analyzer: ⁷ 1510	Attennuatio	1: 791							
10/19/2015		_					_		
10/19/2015	/Preselectors	Range 9kHz-26.5GHz	MN E4407B	Mfr Agilent	SN SG44210511	Asset 1510	Cat	Calibration Due 6/30/2016	Calibrated 6/30/2015
10/19/2015 Spectrum Analyzers / Receivers /	rs / Filters	•	E4407B				Cat I Cat		6/30/2018 Calibrated
10/19/2015 Spectrum Analyzers / Receivers / Brown Preamps /Couplers Attenuator	rs / Filters or	9kHz-26.5GHz Range	E4407B	Agilent Mfr	SG44210511	1510 Asset	l Cat	6/30/2016 Calibration Due	

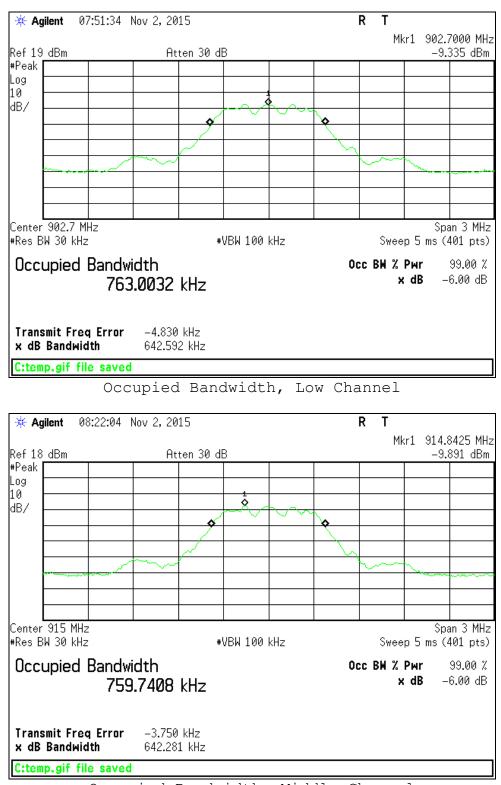
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.





page 26 of 31

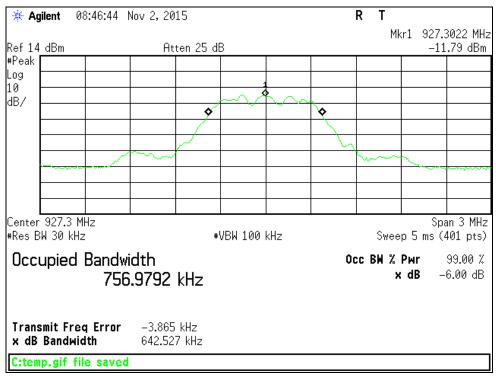




Occupied Bandwidth, Middle Channel







Occupied Bandwidth, High Channel





Measurement Uncertainty

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

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





page 29 of 31

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.

The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
 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.
 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 if a party with a party with

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

To: Client shail, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform to perform to perform the company to perform its 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 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.





page 30 of 31

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





page 31 of 31