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VERITAS**

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

# Test Report

Report No	EN3358-1
Client	Lightlab Imaging (St. Jude Medical) Jeffrey Roberts
Address	4 Robbins Road Westford MA, 01886
Phone	(978) 577 - 3451
Items tested	C408652
Standards	47 CFR 15.225, RSS-210 Issue 8, RSS GEN Issue 3
Test Dates	March 1 – 3, 24 and 31, 2014
Results	As detailed within this report
Prepared by	 _____ Tuyen Truong – Test Engineer
Authorized by	 _____ Christopher Reynolds – EMC Supervisor
Issue Date	<u>5/9/14</u>
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 23 of this report.



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## ***Regulatory Information***

FRN number	0022489843
FCC ID	SB6C408652
IC	10934A-IOI1



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## Summary

This test report supports an application for certification pursuant to 47 CFR 15.225.

Product tested is a radio device (RFID transceiver) which operates at 13.56MHz. The radio device is part of the C408652 unit. Testing was performed according to procedures outlined in ANCI c63.4 (2003) Emissions were maximized by rotating the device 360°, varying the test antenna height.

EUT antenna could not be maximized because EUT has an on board fixed antenna. Device was also tested in 3 orthogonal axes.

EUT was AC powered and EUT AC mains conducted emissions were performed using 50Ω/5µH LISN.

## Frequency Range Investigated

9 KHz – 30MHz AC mains conducted missions (RBW 9 KHz, VBW 30 KHz)

30 KHz – 140MHz Radiated emissions (RBW 120 KHz, VBW 1 MHz) at 3m distance.

All readings are peak unless otherwise specified.

Issue No.	Reason for change	Date Issued
1	Original Release	May 1, 2014

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## EUT Configuration

EUT Configuration												
<b>Work Order:</b> N3358 <b>Company:</b> LightLab Imaging <b>Company Address:</b> 4 Robbins Road Westford MA 01886 <b>Contact:</b> Escipion Baez <b>Person Present:</b> Escipion Baez, Darin Ursuliak												
MN						SN						
<b>EUT:</b> C408652  <b>EUT Description:</b> OPTIS™ Integrated System (internally known as C8i) <b>EUT Max Frequency:</b> 2.8GHz <b>EUT Min Frequency:</b> 8MHz <b>EUT TX Frequency:</b> 13.56MHz						Sample 1						
Support Equipment:	MN						SN					
Fan	test fixture						--					
Wi Box	201106						--					
Aeris	--						--					
Curtis Straus Laptop	Lenovo T60						--					
<b>EUT Ports:</b>												
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out	NEBS Type	Unpopulated Reason	
<b>C8i system cabinet:</b>												
AC Mains	Power Input	1	1	3-wires	No	No	6m	>3m	indoor			
Fiber Optic	Fiber Optics	2	2	Fiber Optics	No	No	30m	30m	indoor			
Ethernet	RJ45	1	1	cat.5e	No	No	2m	>3m	indoor			
HDMI	HDMI	1	1	HDMI	Yes	No	2m	2m	indoor			
USB	USB	1	1	USB	Yes	No	2m	2m	indoor			
Power	Power Output	1	1	2-wires	No	No	2m	2m	indoor			
DVI loopback	DVI	2	2	DVI	Yes	Yes, both ends	2m	2m	indoor			
Remoting	Fiber Optics/Power	1	1	FO/ Copper	No	No	30m	30m	indoor			
<b>C8i Control Room Monitor:</b>												
AC Mains	Power Input	1	1	3-wires	No	No	3m	>3m	indoor			
DVI adapter	AC/DC power	1	1	2-wires	No	No	1.5m	1.5m	indoor			
DVI to Fiber Optics	DVI/FO	1	1	Fiber Optics	No	No	30m	30m	indoor			
<b>Icron USB extender:</b>												
Fiber Optic	Fiber Optics	1	1	Fiber Optics	No	No	30m	30m	indoor			
Power	AC/DC	1	1	2-wires	No	No	3m	3m	indoor			
USB	USB	3	2	USB	Yes	No	2m	2m	indoor		redundant	
<b>C8i Tableside Controller: Hardwired to USB or Bluetooth Module (Blue Giga MN#WT12A module)</b>												
USB	USB	1	1	USB	Yes	No	2m	2m	indoor			
<b>C8i DOC Holster: Hardwired to USB or Bluetooth Module (Toshiba MN:100091551 module)</b>												
USB	USB	1	1	USB	Yes	No	2m	2m	indoor			
PIU	Fiber Optics/Power	1	1	FO/ Copper	No	No	>3m	>3m	indoor			
Remoting	Fiber Optics/Power	1	1	FO/ Copper	No	No	30m	30m	indoor			
<b>C8i PIU 2.2:</b>												
PIU	Fiber Optics/Power	1	1	FO/ Copper	No	No	>3m	>3m	indoor			
<b>Software / Operating Mode Description:</b>												
EUT is running RFI tag at 13.56MHz, continuous PIU, FFR test, laser viewer, IDEA demo. Tableside controller can be run hardwire to USB or over bluetooth. Pinging ethernet port at 192.168.2.199												

## Compliance Statement

RSS-GEN	RSS 210	FCC §15.225		Compliant (Yes) / (No) / (NA)
		15.225(a)	The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.	Yes
		15.225(b)	Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.	Yes
		15.225(c)	Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.	Yes
		15.225(d)	The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.	Yes
4.7		15.225(e)	The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.	Yes
		15.225(f)	In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.	<sup>1</sup> NA
5.3		15.15(b)	There are no controls accessible to the user that varies the output power above specified limits.	Yes
5.2		15.19	The label is shown in the label exhibit.	Yes

7.1.5		15.21	Information to the user is shown in the instruction manual.	Yes
		15.27	No special accessories are required for compliance.	Yes
		15.31	The EUT was tested in accordance with the measurement standards in this section.	Yes
		15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.	Yes
		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.	Yes
7.1.4		15.203	EUT employs an integral antenna.	Yes
	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.	Yes
7.22		15.207	EUT meets the AC Line conducted emissions requirements of	yes
4.6.1			Occupied Bandwidth measurement was made	yes

<sup>1</sup>The EUT is only the RFID read/write transceiver.

## Test Data

### AC Mains Conducted Emissions

#### Test Method

Per ANSI c63.4 (2009)

### Test Data

#### AC Conducted Emissions Data Table

Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	Frequency Range: 0.15 to 80MHz			EUT Input Voltage/Frequency: 100Vac, 60Hz		
	QP1 (dB $\mu$ V)	QP2 (dB $\mu$ V)	AVG1 (dB $\mu$ V)	AVG2 (dB $\mu$ V)	L1 (dB)	L2 (dB)			QP Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)
0.15	29.0	28.0	18.0	19.0	-0.1	-0.1	-0.1	-19.2	66.0	-17.7	Pass	56.0	-17.7	Pass
0.25	31.7	31.6	18.0	17.0	-0.1	-0.1	-0.1	-19.1	61.8	-10.8	Pass	51.8	-14.5	Pass
0.33	29.0	19.0	25.0	24.0	0.0	0.0	-0.1	-19.1	59.5	-11.3	Pass	49.5	-5.3	Pass
0.48	32.1	27.0	24.0	25.0	0.0	0.0	-0.1	-19.1	56.3	-5.0	Pass	46.3	-2.2	Pass
1.75	27.3	25.0	15.0	13.0	0.0	0.0	-0.1	-18.9	56.0	-9.7	Pass	46.0	-12.0	Pass
26.25	17.2	20.0	17.0	15.0	-0.1	-0.1	-0.4	-18.6	60.0	-21.0	Pass	50.0	-14.0	Pass
<b>Result:</b> Pass		<b>Worst Margin:</b> -2.2 dB		<b>Frequency:</b> 0.481 MHz										
Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2)				Cable: CEMI-05				Spectrum Analyzer: Black				Site: CEMI 5		

#### AC Conducted Emissions Data Table

Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	Frequency Range: 0.15 to 80MHz			EUT Input Voltage/Frequency: 100Vac, 60Hz		
	QP1 (dB $\mu$ V)	QP2 (dB $\mu$ V)	AVG1 (dB $\mu$ V)	AVG2 (dB $\mu$ V)	L1 (dB)	L2 (dB)			QP Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)
0.15	26.2	29.4	26.0	29.0	-0.1	-0.1	-0.1	-19.2	66.0	-17.3	Pass	56.0	-7.7	Pass
1.14	22.2	22.3	22.0	21.0	0.0	0.0	-0.1	-19.0	56.0	-14.6	Pass	46.0	-4.9	Pass
4.35	22.4	24.5	22.0	21.0	0.0	0.0	-0.1	-18.8	56.0	-12.5	Pass	46.0	-5.0	Pass
7.46	24.3	24.3	24.0	24.0	-0.1	0.0	-0.2	-18.8	60.0	-16.7	Pass	50.0	-7.0	Pass
13.58	20.3	20.1	20.0	19.0	-0.1	-0.1	-0.3	-18.7	60.0	-20.6	Pass	50.0	-10.9	Pass
26.58	21.3	21.2	21.0	21.0	-0.1	-0.1	-0.4	-18.6	60.0	-19.7	Pass	50.0	-10.0	Pass
<b>Result:</b> Pass		<b>Worst Margin:</b> -4.9 dB		<b>Frequency:</b> 1.135 MHz										
Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2)				Cable: CEMI-05				Spectrum Analyzer: Black				Site: CEMI 5		

C-S CEMI Calculator Version 3.0.13

Equipment Factor Sheet rev: 4/2/2014

#### AC Conducted Emissions Data Table

Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	Frequency Range: 0.15 to 80MHz			EUT Input Voltage/Frequency: 100Vac, 60Hz		
	QP1 (dB $\mu$ V)	QP2 (dB $\mu$ V)	AVG1 (dB $\mu$ V)	AVG2 (dB $\mu$ V)	L1 (dB)	L2 (dB)			QP Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)
0.15	18.5	18.0	13.2	12.8	-0.1	-0.1	-0.1	-19.2	66.0	-28.2	Pass	56.0	-23.5	Pass
0.16	21.0	21.8	15.2	14.6	-0.1	-0.1	-0.1	-19.2	65.7	-24.6	Pass	55.7	-21.2	Pass
0.19	19.2	18.9	14.0	12.8	-0.1	-0.1	-0.1	-19.2	64.3	-25.7	Pass	54.3	-21.0	Pass
0.20	18.9	18.3	13.6	12.7	-0.1	-0.1	-0.1	-19.2	63.5	-25.4	Pass	53.5	-20.7	Pass
0.40	20.0	18.4	14.8	13.0	0.0	0.0	-0.1	-19.1	57.8	-18.6	Pass	47.8	-13.8	Pass
0.39	21.2	19.1	16.1	13.4	0.0	0.0	-0.1	-19.1	58.0	-17.6	Pass	48.0	-12.7	Pass
<b>Result:</b> Pass		<b>Worst Margin:</b> -12.7 dB		<b>Frequency:</b> 0.392 MHz										
Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2)				Cable: CEMI-05				Spectrum Analyzer: Black				Site: CEMI 5		

**AC Conducted Emissions Data Table**

Date: 23-Mar-14 Engineer: Patrick Crozier Temp: 21.1 °C Notes: Icron USB Extender		Company: LightLab Imaging (St. Jude Medical) EUT Desc: C8i Humidity: 19%		Work Order: N3358 Pressure: 1007 mBar										
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors	Cable Factor	ATTN Factor	Frequency Range: 0.15 to 80MHz			EUT Input Voltage/Frequency: 100Vac, 60Hz			
	QP1 (dB $\mu$ V)	QP2 (dB $\mu$ V)	AVG1 (dB $\mu$ V)	AVG2 (dB $\mu$ V)				QP Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)	
0.15	20.8	22.7	13.3	13.6	-0.1	-0.1	-0.1	-19.2	66.0	-24.0	Pass	56.0	-23.1	Pass
0.16	21.1	22.8	14.6	14.8	-0.1	-0.1	-0.1	-19.2	65.6	-23.5	Pass	55.6	-21.5	Pass
0.18	19.3	20.8	13.0	13.7	-0.1	-0.1	-0.1	-19.2	64.3	-24.2	Pass	54.3	-21.3	Pass
0.21	17.6	18.7	11.9	12.2	-0.1	-0.1	-0.1	-19.2	63.2	-25.2	Pass	53.2	-21.7	Pass
0.47	19.4	20.3	13.3	14.2	0.0	0.0	-0.1	-19.1	56.5	-17.0	Pass	46.5	-13.2	Pass
0.50	20.5	21.6	14.3	15.2	0.0	0.0	-0.1	-19.1	56.1	-15.3	Pass	46.1	-11.7	Pass

**Result:** Pass**Worst Margin:** -11.7 dB**Frequency:** 0.496 MHz

Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2)

Cable: CEMI-05

Spectrum Analyzer: Black

Attenuator: 20dB Attenuator-100

Site: CEMI 5

**AC Conducted Emissions Data Table**

Date: 23-Mar-14 Engineer: Patrick Crozier Temp: 21.1 °C Notes: C8i Tableside Controller		Company: LightLab Imaging (St. Jude Medical)		Work Order: N3358 Pressure: 1007 mBar										
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors	Cable Factor	ATTN Factor	Frequency Range: 0.15 to 80MHz			EUT Input Voltage/Frequency: 100Vac, 60Hz			
	QP1 (dB $\mu$ V)	QP2 (dB $\mu$ V)	AVG1 (dB $\mu$ V)	AVG2 (dB $\mu$ V)				QP Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dB $\mu$ V)	Margin (dB)	Result (Pass/Fail)	
0.15	18.4	18.0	13.1	12.9	-0.1	-0.1	-0.1	-19.2	66.0	-28.3	Pass	56.0	-23.6	Pass
0.16	19.1	19.1	13.6	13.6	-0.1	-0.1	-0.1	-19.2	65.7	-27.3	Pass	55.7	-22.8	Pass
0.18	18.0	17.8	12.2	11.9	-0.1	-0.1	-0.1	-19.2	64.3	-27.1	Pass	54.3	-22.9	Pass
0.49	25.3	25.5	14.9	14.8	0.0	0.0	-0.1	-19.1	56.1	-11.5	Pass	46.1	-12.1	Pass
1.60	16.3	15.6	8.9	8.3	0.0	0.0	-0.1	-18.9	56.0	-20.7	Pass	46.0	-18.1	Pass
1.68	15.7	15.2	8.8	9.0	0.0	0.0	-0.1	-18.9	56.0	-21.3	Pass	46.0	-18.0	Pass

**Result:** Pass**Worst Margin:** -11.5 dB**Frequency:** 0.494 MHz

Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2)

Cable: CEMI-05

Spectrum Analyzer: Black

Attenuator: 20dB Attenuator-100

Site: CEMI 5

Rev. 3/9/2014

Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Black		9kHz-12.8GHz	8596E	Agilent	3710A00944	337	I	1/29/2015	1/29/2014
LISNs/Measurement Probes		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
LISN Asset 1726		150kHz-30MHz	LI-150A	Com-Power	201092	1726	I	1/15/2015	1/15/2014
LISN Asset 1727		150kHz-30MHz	LI-150A	Com-Power	201093	1727	I	1/15/2015	1/15/2014
Conducted Test Sites (Mains / Telco)		FCC Code	VCCI Code			Cat	Calibration Due	Calibrated on	
CEMI 5		719150	A-0015			III	NA	N/A	
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Temp./Humidity/Atm. Pressure Gauge		7400 Perceptio	Davis	N/A	965	I	5/29/2014	5/29/2013	
TH A#1825		35519-044	Control Company	130319990	1825	II	6/13/2015	6/13/2013	
Cables		Range	Mfr			Cat	Calibration Due	Calibrated on	
CEMI-05		9kHz - 2GHz	C-S			II	5/3/2014	5/3/2013	
Attenuators		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
20dB Attenuator-100		9kHz-2GHz	N/A			II	7/12/2014	7/12/2013	

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

**AC Mains Setup Pictures**

See exhibit for test setup pictures.



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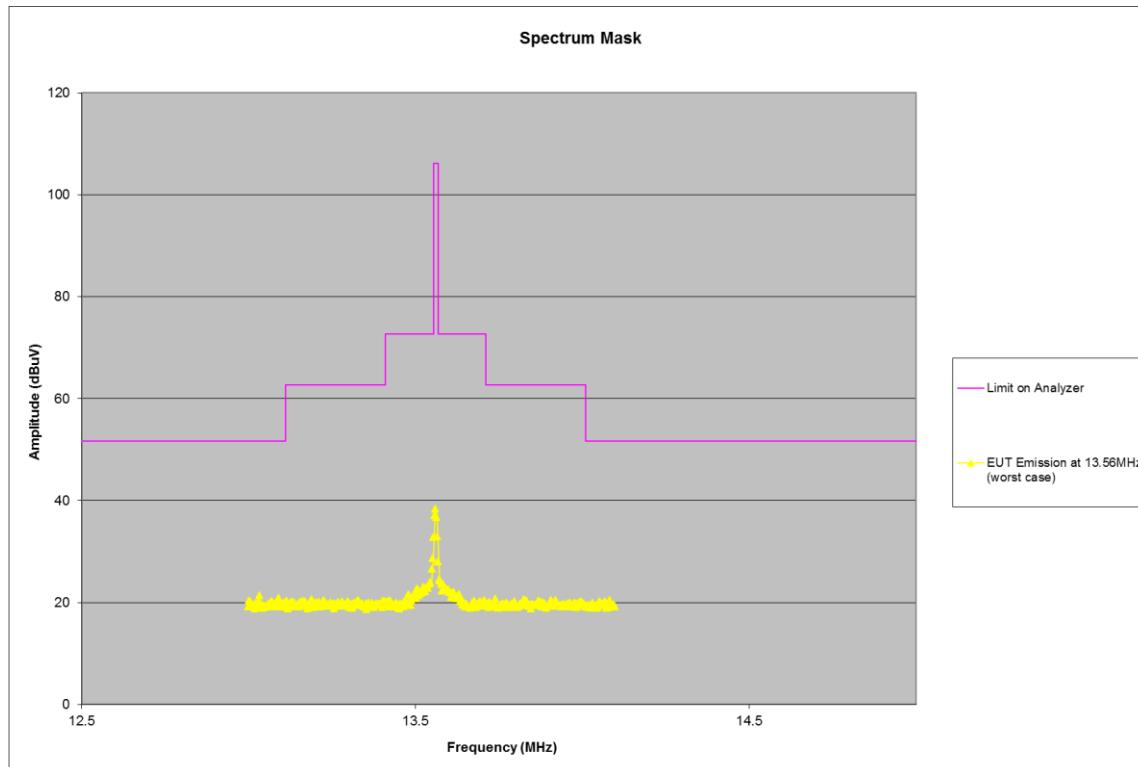


## 15.225

### Test Method

Per ANSI C63.10 & C63.4

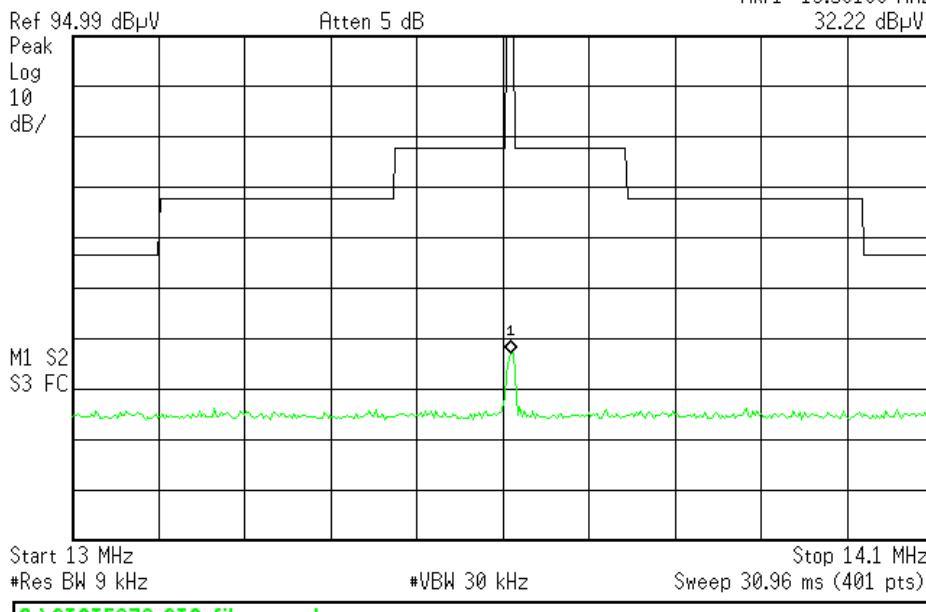
### Emissions Mask



Note: Limit on the graph is adjusted for antenna, cable, pre amp, and distance factors.

Agilent 17:31:32 Mar 3, 2014

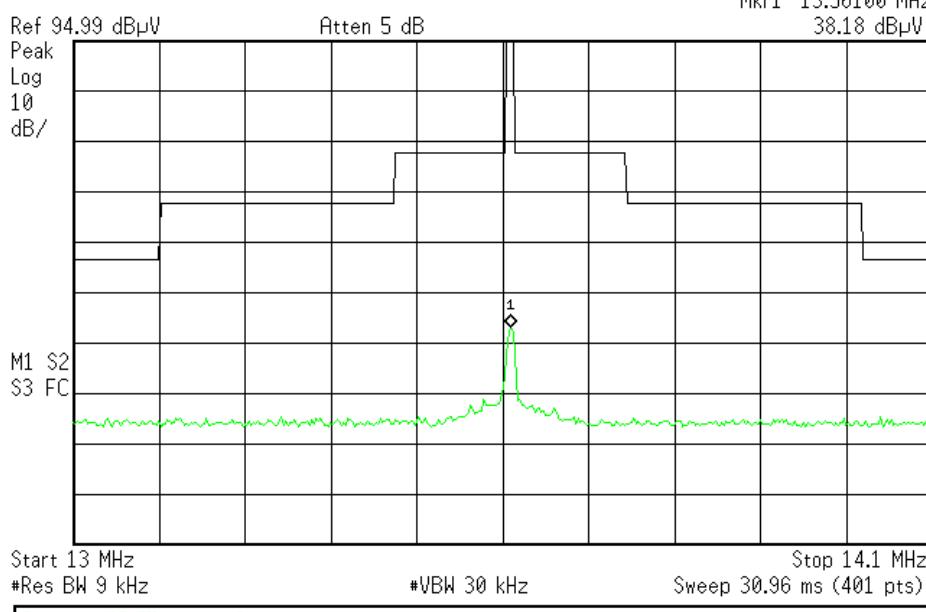
R T

Mkr1 13.56100 MHz  
32.22 dB $\mu$ V

## Fundamental Reading – 90 degree

Agilent 17:41:20 Mar 3, 2014

R T

Mkr1 13.56100 MHz  
38.18 dB $\mu$ V

## Fundamental Reading – 0 degree

## Test Data

### Radiated Emissions Table

Date: 03-Mar-14		Company: LightLab Imaging		Work Order: N3358								
Engineer: Tuyen Truong		EUT Desc: C8i		EUT Operating Voltage/Frequency: 120Vac/60Hz								
Temp: 23°C		Humidity: 2%		Pressure: 1001mBar								
<b>Frequency Range:</b> Fundamental Reading					<b>Measurement Distance:</b> 3 m							
<b>Notes:</b>					EUT Max Freq: 2.8GHz EUT TX Freq: 13.56MHz							
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	---			FCC 15.225		
							Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)

**Table Result:** Pass by -68.9 dB      **Worst Freq:** 13.56 MHz

Test Site: EMI Chamber 1	Cable 1: Asset #1781	Cable 2: Asset #1787	Cable 3: ---
Analyzer: Gold	Preamp: Blue	Antenna: Sm Loop (high)	Preselector: ---

Rev. 2/16/2014

<b>Spectrum Analyzers / Receivers /Preselectors</b> Gold	<b>Range</b> 100Hz-26.5 GHz	<b>MN</b> E4407B	<b>Mfr</b> Agilent	<b>SN</b> MY45113816	<b>Asset</b> 1284	<b>Cat</b> I	<b>Calibration Due</b> 3/18/2014	<b>Calibrated on</b> 3/18/2013
<b>Radiated Emissions Sites</b> EMI Chamber 1	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-6	<b>VCCI Code</b> A-0015	<b>Range</b> 30-1000MHz		<b>Cat</b> II	<b>Calibration Due</b> 3/16/2014	<b>Calibrated on</b> 2/16/2012
<b>Preamps /Couplers Attenuators / Filters</b> Blue	<b>Range</b> 0.009-2000MHz	<b>MN</b> ZFL-1000-LN	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 759	<b>Cat</b> II	<b>Calibration Due</b> 5/31/2014	<b>Calibrated on</b> 5/31/2013
<b>Antennas</b> Small Loop	<b>Range</b> 10kHz-30MHz	<b>MN</b> PLA-130/A	<b>Mfr</b> ARA	<b>SN</b> 1024	<b>Asset</b> 755	<b>Cat</b> I	<b>Calibration Due</b> 4/27/2014	<b>Calibrated on</b> 4/27/2012
<b>Meteorological Meters</b> Weather Clock (Pressure Only) TH A#1832		<b>MN</b> BA928 35519-044	<b>Mfr</b> Oregon Scientific Control Company	<b>SN</b> C3166-1 130318277	<b>Asset</b> 831 1832	<b>Cat</b> I II	<b>Calibration Due</b> 3/20/2014 6/13/2015	<b>Calibrated on</b> 3/20/2013 6/13/2013
<b>Cables</b> Asset #1781 Asset #1787	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			<b>Cat</b> II II	<b>Calibration Due</b> 3/6/2014 3/14/2014	<b>Calibrated on</b> 3/6/2013 3/14/2013

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

## Spurious Emissions (9 KHz – 140MHz)

### Radiated Emissions Table

Date: 03-Mar-14	Company: LightLab Imaging	Work Order: N3358										
Engineer: Tuyen Truong	EUT Desc: C8i	EUT Operating Voltage/Frequency: 120Vac/60Hz										
Temp: 23°C	Humidity: 2%	Pressure: 1001mBar										
Frequency Range: 9KHz to 1MHz		Measurement Distance: 3 m										
Notes:		EUT Max Freq: 2.8GHz EUT TX Freq: 13.56MHz										
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	---			FCC 15.225(d) or FCC 15.209		
							Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)
NO EMISSIONS FOUND from Radio in this frequency range												
Test Site: EMI Chamber 1	Cable 1: Asset #1781			Cable 2: Asset #1787			Cable 3: ---			Preselector: ---		
Analyzer: Gold	Preamp: Blue			Antenna: Sm Loop (low)			Antenna: Sm Loop (low)			Preselector: ---		

### Radiated Emissions Table

Date: 03-Mar-14	Company: LightLab Imaging	Work Order: N3358										
Engineer: Tuyen Truong	EUT Desc: C8i	EUT Operating Voltage/Frequency: 120Vac/60Hz										
Temp: 23°C	Humidity: 2%	Pressure: 1001mBar										
Frequency Range: 1-30MHz		Measurement Distance: 3 m										
Notes:		EUT Max Freq: 2.8GHz EUT TX Freq: 13.56MHz										
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	---			FCC 15.225(d) or FCC 15.209		
							Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)
NO EMISSIONS FOUND from Radio in this frequency range												
Test Site: EMI Chamber 1	Cable 1: Asset #1781			Cable 2: Asset #1787			Cable 3: ---			Preselector: ---		
Analyzer: Gold	Preamp: Blue			Antenna: Sm Loop (high)			Antenna: Sm Loop (high)			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	3/18/2014	3/18/2013
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	3/16/2014	2/16/2012	
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/31/2014	5/31/2013
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Small Loop	10kHz-30MHz	PLA-130/A	ARA	1024	755	I	4/27/2014	4/27/2012
Meteorological Meters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/20/2014	3/20/2013	
TH A#1832	35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013	
Cables	Range	Mfr		Cat	Calibration Due	Calibrated on		
Asset #1781	9kHz - 18GHz	Florida RF		II	3/6/2014	3/6/2013		
Asset #1787	9kHz - 18GHz	Florida RF		II	3/14/2014	3/14/2013		

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

**Radiated Emissions Table**

Date: 03-Mar-14	Company: LightLab Imaging	Work Order: N3358										
Engineer: Tuyen Truong	EUT Desc: C8i	EUT Operating Voltage/Frequency: 120Vac/60Hz										
Temp: 23°C	Humidity: 2%	Pressure: 1001mBar										
Frequency Range: 30-140MHz		Measurement Distance: 3 m										
Notes:		EUT Max Freq: 2.8GHz EUT TX Freq: 13.56MHz										
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB $\mu$ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB $\mu$ V/m)	---	FCC 15.225(d) or FCC 15.209				
							Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB $\mu$ V/m)	Margin (dB)	Result (Pass/Fail)
NO EMISSIONS FOUND from Radio in this frequency range												
Test Site: EMI Chamber 1		Cable 1: Asset #1781		Cable 2: Asset #1787		Cable 3: ---		Antenna: Red-White				
Analyzer: Gold		Preamp: Blue		Preamp: Blue		Preamp: Blue		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	3/18/2014	3/18/2013
<b>Radiated Emissions Sites</b>	<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>		<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	3/16/2014	2/16/2012
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/31/2014	5/31/2013
<b>Antennas</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	7/24/2015	7/24/2013
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Weather Clock (Pressure Only) TH A#1832	BA928 35519-044	Oregon Scientific Control Company	C3166-1 130318277	831 1832	I II	3/20/2014 6/13/2015	3/20/2013 6/13/2013	
Cables	Range	Mfr			Cat	Calibration Due	Calibrated on	
Asset #1781	9kHz - 18GHz	Florida RF			II	3/6/2014	3/6/2013	
Asset #1787	9kHz - 18GHz	Florida RF			II	3/14/2014	3/14/2013	

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

**Emissions Setup Pictures**

See exhibit for test set up pictures.



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## Frequency Stability

### Limit

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

### Test Data

Frequency Stability						
Date: 31-Mar-14	Company: Lightlab Imaging			Work Order: N3358		
Engineer: Tuyen Truong / Ryan Brown / AZ	EUT Desc: C8i		EUT Operating Voltage: 120Vac/60Hz			
Temp: 24°C	Humidity: 14%		Pressure: 1019mBar			
Note:						
Temperature (°C)	Voltage	Measured Frequency (MHz)	Delta (MHz)	Tolerance $\pm 0.01\%$ (MHz)	Margin (MHz)	Pass/Fail
Initial Reading	20	Nominal	13.560050			
Temperature Variation	10	Nominal	13.560100	-0.000050	$\pm 0.001356$	$\pm 0.001356$ Pass
	0	Nominal	13.560100	-0.000050	$\pm 0.001356$	$\pm 0.001356$ Pass
	-10	Nominal	13.560100	-0.000050	$\pm 0.001356$	$\pm 0.001356$ Pass
	-20	Nominal	13.560100	-0.000050	$\pm 0.001356$	$\pm 0.001356$ Pass
	+30	Nominal	13.560050	0.000000	$\pm 0.001356$	$\pm 0.001356$ Pass
	+40	Nominal	13.560000	0.000050	$\pm 0.001356$	$\pm 0.001356$ Pass
	+50	Nominal	13.560000	0.000050	$\pm 0.001356$	$\pm 0.001356$ Pass
Initial Reading	20	120Vac	13.560000			
Voltage Variation	20	102Vac	13.560000	0.000000	$\pm 0.001356$	$\pm 0.001356$ Pass
	20	138Vac	13.560000	0.000000	$\pm 0.001356$	$\pm 0.001356$ Pass
Chamber: ENV#17		Antenna: Small loop (high)				
Cable: 22 (EMI High)		SA: 1327				

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Spectrum Analyzers / Receivers /Preselectors SA EMI Chamber (1327)	Range 9kHz-13.2 GHz	MN E4405B	Mfr Agilent	SN MY45103416	Asset 1327	Cat I	Calibration Due 5/30/2014	Calibrated on 5/30/2013
Preamps/Couplers Attenuators / Filters Red	Range 0.009-2000MHz	MN ZFL-1000-LN	Mfr CS	SN N/A	Asset 798	Cat II	Calibration Due 2/4/2015	Calibrated on 2/4/2014
Antennas Small Loop	Range 10kHz-30MHz	MN PLA-130/A	Mfr ARA	SN 1024	Asset 755	Cat I	Calibration Due 4/27/2014	Calibrated on 4/27/2012
Cables REMI-High-22	Range 9kHz - 18GHz	Mfr C-S			Cat II	Calibration Due 2/12/2015	Calibrated on 2/12/2014	

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## Occupied Bandwidth

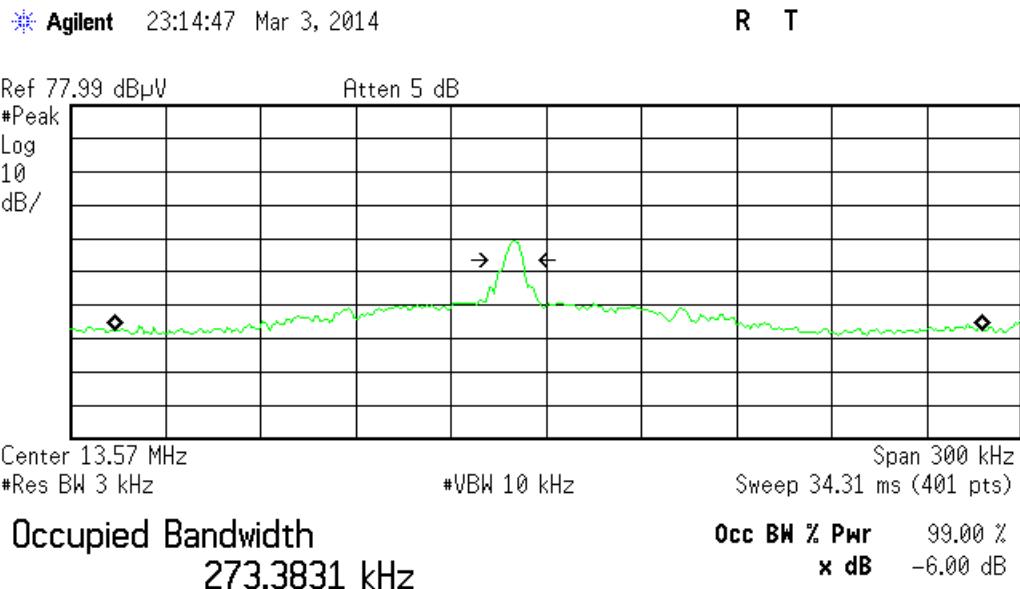
### REQUIREMENT

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	03/03/2014
Site	Chamber 1
Environmental Conditions	22.1°C, 3%, 1001mb

### Plots



Transmit Freq Error 864.261 Hz  
x dB Bandwidth 5.893 kHz

C:\temp.gif file saved

# Occupied Bandwidth

Frequency (MHz)	Mode	6dB Bandwidth (KHz)	99% Occupied Bandwidth (KHz)
13.56	Modulation (Normal Operation)	5.893	273.3831
<b>Tested by:</b> Tuyen Truong		<b>RBW</b> = 3KHz <b>VBW</b> = 10KHz	
<b>Date:</b> 3/3/2014		<b>Analyzer:</b> GOLD SA	
<b>Company:</b> Lightlab Imaging		<b>PreAmp:</b> Blue	
<b>EUT:</b> C8i		<b>Cables:</b> 1781+1787	

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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	3/18/2014	3/18/2013
<b>Radiated Emissions Sites</b> EMI Chamber 1	<b>FCC Code</b> 719150	<b>IC Code</b> 2762A-6	<b>VCCI Code</b> A-0015	<b>Range</b> 30-1000MHz		<b>Cat</b> II	<b>Calibration Due</b> 3/16/2014	<b>Calibrated on</b> 2/16/2012
<b>Preamps /Couplers Attenuators / Filters</b> Blue	<b>Range</b> 0.009-2000MHz	<b>MN</b> ZFL-1000-LN	<b>Mfr</b> CS	<b>SN</b> N/A	<b>Asset</b> 759	<b>Cat</b> II	<b>Calibration Due</b> 5/31/2014	<b>Calibrated on</b> 5/31/2013
<b>Antennas</b> Small Loop	<b>Range</b> 10kHz-30MHz	<b>MN</b> PLA-130/A	<b>Mfr</b> ARA	<b>SN</b> 1024	<b>Asset</b> 755	<b>Cat</b> I	<b>Calibration Due</b> 4/27/2014	<b>Calibrated on</b> 4/27/2012
<b>Meteorological Meters</b> Weather Clock (Pressure Only) TH A#1832		<b>MN</b> BA928 35519-044	<b>Mfr</b> Oregon Scientific Control Company	<b>SN</b> C3166-1 130318277	<b>Asset</b> 831 1832	<b>Cat</b> I II	<b>Calibration Due</b> 3/20/2014 6/13/2015	<b>Calibrated on</b> 3/20/2013 6/13/2013
<b>Cables</b> Asset #1781 Asset #1787	<b>Range</b> 9kHz - 18GHz 9kHz - 18GHz		<b>Mfr</b> Florida RF Florida RF			<b>Cat</b> II II	<b>Calibration Due</b> 3/6/2014 3/14/2014	<b>Calibrated on</b> 3/6/2013 3/14/2013

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

## FCC Requirements

### Required Equipment Authorization for Device Type

Type of Device	Equipment Authorization Required
TV broadcast receiver	Verification
FM broadcast receiver	Verification
CB receiver	Declaration of Conformity or Certification
Superregenerative receiver	Declaration of Conformity or Certification
Scanning receiver	Certification
Radar detector	Certification
All other receivers subject to part 15	Declaration of Conformity or Certification
TV interface device	Declaration of Conformity or Certification
Cable system terminal device	Declaration of Conformity
Stand-alone cable input selector switch	Verification
Class B personal computers and peripherals	Declaration of Conformity or Certification
CPU boards and internal power supplies used with Class B personal computers	Declaration of Conformity or Certification
Class B personal computers assembled using authorized CPU boards or power supplies	Declaration of Conformity
Class B external switching power supplies	Verification
Other Class B digital devices & peripherals	Verification
Class A digital devices, peripherals & external switching power supplies	Verification
Access Broadband over Power Line (Access BPL)	Certification
All other devices	Verification

## FCC Required labeling for Verified Devices 47 CFR Part 15.19

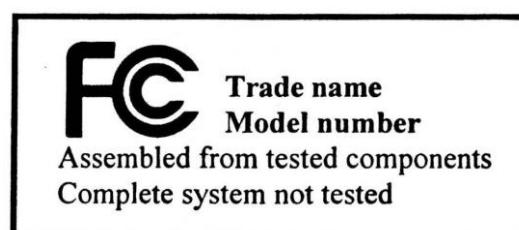
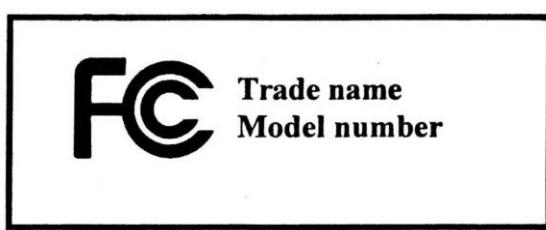
The specific labeling requirements for a device subject to the Verification or Certification procedure are contained in Section 15.19(a). These labelling requirements are:

- One of three compliance statements specified in Section 15.19(a);
- If the device is subject only to Verification include a label bearing a unique identifier - Section 2.954;
- If the device is subject to Certification (1) Section 2.925 contains information on identification of the equipment; (2) include a label bearing an FCC Identifier (FCC ID) - Section 2.926.

If the labeling area for the device is so small, and / or it is not practical to place the required statement on the device, then the statement can be placed in the user manual or product packaging - Section 15.19(a)(5). Generally, devices smaller than the palm of the hand are considered small. However, the device must still be labeled with the unique identifier (Verification) or the FCC ID (Certification).

## Declaration of Conformity (DoC):

The labeling requirements for a device subject to the Declaration of Conformity (DoC) procedure are specified in Section 15.19(b). The label should include the FCC logo along with the Trade Name and Model Number, which satisfies the unique identifier requirement of Section 2.1074 if it represents the identical equipment tested for DoC compliance. For personal computers assembled from authorized components, the following additional text must also be included: "Assembled from tested components," "Complete system not tested." When the device is so small and / or when it is not practical to place the required additional text on the device, the text may be placed in the user manual or pamphlet supplied to the user. However, the FCC logo, Trade Name, and Model Number must still be displayed on the device - Section 15.19(b)(3).



Part 15 Declaration of Conformity (DoC) Label Examples

## FCC Required Instruction Manual Inserts

In most cases, the manual will require one of the following statements due to the associated digital circuitry in the device (unrelated to the RF circuitry):

*“This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:*

- Reorient or relocate the receiving antenna.*
- Increase the separation between the equipment and receiver.*
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- Consult the dealer or an experienced radio/TV technician for help.”*

*“This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.”*

## **Canadian Labeling /Manual Requirements**

User manuals for transmitters shall display the following notice in a conspicuous location:

*Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.*

The above notice may be affixed to the device instead of displayed in the user manual.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

*This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.*

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi) and required impedance for each.

## **User Manual Notice for Licence-Exempt Radio Apparatus**

User manuals for licence-exempt radio apparatus shall contain the following or equivalent notice in a conspicuous location in the user manual or alternatively on the device or both.

*This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.*

## **Model Number and IC**

The model number is assigned by the applicant and shall be unique to each model of radio apparatus under that applicant's responsibility. The model number shall be displayed on the label preceded by the text: "Model:", so it appears as follows:

Model: model number assigned by applicant

The certification number is made up of a Company Number (CN) assigned by Industry Canada's Certification and Engineering Bureau followed by the Unique Product Number (UPN), assigned by the applicant. The certification number shall appear as follows:



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IC: XXXXXX-YYYYYYYYYYYY

where:

- XXXXXX-YYYYYYYYYYYY is the certification number;
- XXXXXX is the Company Number (CN) assigned by Industry Canada, made of at most 6 alphanumeric characters (A-Z, 0-9), including a letter at the end of the CN to distinguish between different company addresses;
- YYYYYYYYYYYY is the Unique Product Number (UPN) assigned by the applicant, made of at most 11 alphanumeric characters (A-Z, 0-9); and the letters "IC" (Industry Canada) are to indicate the Industry Canada certification number, but are not part of the certification number.

Permitted alphanumeric characters used in the CN and UPN are limited to capital letters (A-Z) and numerals (0-9). **Example:** A company has been assigned a CN of "21A" and wishes to use a UPN of "WILAN3" for one of its products. The full Industry Canada certification number of this product would thus be: IC: 21A-WILAN3.

**All Canadian user manual statements must also include a French version as well.**

## Conditions Of Testing

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

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS", "MTL", "ACTS", "MTL-ACTS" and CURTIS-STRaus (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery



of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.

13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B) NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.\$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

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.