

# TEST REPORT

**FCC Part 15 Subpart C Section 15.207, 15.107**

**FCC Part 15 Subpart C Section 15.209**

**IC RSS-210 Issue 8**

**IC RSS-Gen Issue 3**

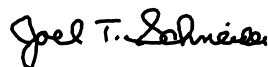
MANUFACTURER'S NAME	Carestream Health Incorporated 150 Verona Street Rochester NY 14608
PRODUCT NAME	DRYVIEW 5950 Laser Imaging System
MODEL NUMBER(S) TESTED	DRYVIEW 5950 Laser Imaging System
SERIAL NUMBER(S) TESTED	EM7
PRODUCT DESCRIPTION	Laser Imaging System
TEST REPORT NUMBER	WC1204476.1
TEST DATE(S)	10 July - 14 August 2012

TÜV SÜD America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the applicable EMC requirements of FCC Part 15 Subpart C Sections 15.207 "Conducted Limits" and 15.209 "Radiated emission limits; general requirements" and IC RSS-210 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment" and IC RSS-Gen "General Requirements and Information for the Certification of Radiocommunication Equipment".

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

Date: 16 August 2012

Location: Taylors Falls MN  
USA



Joel T Schneider  
Senior EMC Engineer



Robert J Behringer  
EMC Engineer

Not Transferable

# EMC TEST REPORT

Test Report No. WC1204476.1 Date of issue: 16 August 2012

Product Name DRYVIEW 5950 Laser Imaging System

Model(s) Tested DRYVIEW 5950 Laser Imaging System

Serial No(s) Tested EM7

Product Description Laser Imaging System

Manufacturer Carestream Health Incorporated  
150 Verona Street  
Oakdale MN 55128-344

Test Result  **Positive**  **Negative**

*TÜV SÜD America Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV SÜD America Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD America Inc issued reports.*

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## REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	25	16 August 2012	Initial Release



## DIRECTORY

### Contents

Revision Record		2
Directory		3
Test Regulations		4
Environmental Conditions		4
Power Supply		4
Test Equipment Traceability		4
Test Information		
General Field Strength Limits 0.009 – 30 MHz	FCC 15.209(a), (c). IC RSS-210 2.5, RSS-GEN 7.2.5	5
Radiated Emissions 30 - 1000 MHz	FCC 15.209(c), (f). IC RSS-210 2.5	6 - 7
Occupied Bandwidth	RSS-Gen 4.6.1	8 - 10
Conducted limits - AC Power Lines	15.207(a), 15.107(b), IC RSS-Gen 7.2.4	11 - 12
Test-setup Photos		13 - 15
Equipment Under Test Information		16
General Remarks, Deviations, Summary		17
<b>Appendix A</b>		
Carestream Health Incorporated EMC Test Plan, Document Part Number #: 9J5174		18 - 25

### EMC TEST REGULATIONS:

The tests were performed according to the following regulations:

FCC Part 15 Subpart C §15.209  
FCC Part 15 Subpart C Section 15.207 Paragraph (a)  
IC RSS-210 Issue 8  
IC RSS-Gen Issue 3

### ENVIRONMENTAL CONDITIONS IN THE LAB

	<u>Actual</u>
Temperature:	: 21-23°C
Atmospheric pressure	: 99kPa
Relative Humidity	: 62-63%

### POWER SUPPLY UTILIZED

Power supply system : 60 Hz – 110/220 VAC

### TEST EQUIPMENT

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.

### MEASUREMENT UNCERTAINTY

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of  $\pm 1.8$  dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of  $\pm 4.8$  dB. All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.

### SIGN EXPLANATIONS

- not applicable
- applicable

**General field strength limits 0.009 – 30 MHz**  
**FCC 15.209(a), FCC 15.209(c), IC RSS-210 2.5, RSS-Gen 7.2.5**

**Test summary**

The requirements are:  - MET  - NOT MET

Testing was performed in accordance with the test procedure of ANSI C63.4 2009, clause 8.2.2.

Maximum field strength of the fundamental is 15 dB $\mu$ V/m\* or 5.62  $\mu$ V/m at 30 meters at 13.56 MHz.

Minimum margin of compliance of the fundamental is 14.5 dB.

Maximum field strength of spurious emissions is 6 dB $\mu$ V/m or 2  $\mu$ V/m at 30 meters at 27.12 MHz. Minimum margin of compliance of the spurious emission is 23.5 dB.

No unwanted emissions exceed the level of the fundamental.

**Test location**

- Wild River Lab Large Test Site (Open Area Test Site)

- Wild River Lab Small Test Site (Open Area Test Site)

**Test distance**

- 0.3 meters

- 1 meter

- 3 meters

**Test equipment**

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE02418	6502	Electro-Mechanics (EMCO)	Loop Antenna	2215	06-Aug-13
WRLE02534	ESHS-20	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	837055/003	06-Jul-13
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code B 07-Oct-12

Code B = Calibration verification performed internally. Code Y = Calibration not required when used with other calibrated equipment

**Test limit**

Frequency (MHz)	Field strength $\mu$ V/m	Measurement distance (m)
0.009-0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30	30	30

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

**Test Data**

Frequency (MHz)	Detector	Distance			dB $\mu$ V/m 30 m	$\mu$ V/m 30 m	Limit dB $\mu$ V/m 30 m	Limit $\mu$ V/m 30 m	Delta (dB)
		0.3 m	1.0 m	3.0 m					
13.56	QP	69	56	42	15*	5.62*	29.5	30	-14.5
27.12	QP			33	6*	2*	29.5	30	-23.5

\* Extrapolated value using 27 dB per decade fall off as indicated by measurements

nf = noise floor

No other signals detected up to 30 MHz.

Maximum field strength was recorded from the “lower” antenna vs. the “upper” antenna.

Radiated emissions in the frequency range of 10 kHz to 30 MHz, including the fundamental transmit signal, are measured using a receiver capable of quasi-peak/average/peak measurements and a magnetic loop antenna. The transmitter and loop antenna are rotated through 3 orthogonal axes in order to determine the maximum emission levels. If the signal cannot be measured at the specified limit distance, measurements are recorded at multiple distances nearer to the device and the final level mathematically extrapolated. Measurements between 150 kHz and 30 MHz are made with a 9 kHz resolution bandwidth. Measurements between 9 kHz and 150 kHz are made with a 200 Hz resolution bandwidth.

**Radiated Emissions 30 - 1000 MHz**  
**FCC 15.209(c), FCC 15.209(f), IC RSS-210 2.5, RSS-Gen 7.2.5**

**Test summary**

The requirements are: ■ - MET □ - NOT MET

Testing was performed in accordance with the test procedure of ANSI C63.4 2009, clause 8.3.

Maximum spurious emission is 37.77 dB $\mu$ V/m (77.4  $\mu$ V/m) at 3 meters at 33.37 MHz. Minimum margin of compliance is 2.23 dB. No radiated emissions were detected from the receiver. Maximum spurious emission of incorporated digital device above 1000 MHz is 49.43 dB $\mu$ V/m (296  $\mu$ V/m) in average detection mode at 3 meters at 1.694 GHz vs. the average limit. Minimum margin of compliance is 10.5 dB.

**Test location**

Wild River Lab Large Test Site (Open Area Test Site)

**Test distance**

3 meters

**Test Equipment**

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE03995	EM-6917B	Electro-Metrics	Biconicalog Periodic	151	07-Jun-13
NBLE02683	85650A	Hewlett-Packard	Quasi-peak Adapter	2430A00495	17-Apr-13
WRLE02674	85662A	Hewlett-Packard	Analyzer Display	2050A02007	07-Dec-12
WRLE02690	8568B	Hewlett-Packard	Spectrum Analyzer	2430A00930	07-Dec-12
WRLE02670	8447D	Hewlett-Packard	Preamplifier	2443A03954	Code B 06-Feb-13
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code B 07-Oct-12

Cal Code B = Calibration verification performed internally.

**Limit**

Frequency (MHz)	Field strength ( $\mu$ V/m)	Field strength (dB $\mu$ V/m)	Measurement distance (m)
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

**Incorporated digital device/Receiver – Class A device**

Frequency (MHz)	Field strength ( $\mu$ V/m)	Field strength (dB $\mu$ V/m)	Measurement distance (m)	Field strength @ 3 m ( $\mu$ V/m)
30 - 88	90	39	10	300
88 - 216	150	43.5	10	500
216 - 960	210	46.4	10	700
Above 960	300	49.5	10	1000

The emission limits shown in the above tables are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.255, and 15.509–15.519, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Radiated emissions from the EUT are measured in the frequency range of 30 to 1000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with a 120 kHz / 6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz RBW/VBW / 6 dB bandwidth and peak detection, 1 MHz RBW / 10 Hz VBW for average detection. Table top equipment is placed on a non-conductive support 80 cm above the ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT is rotated 360 degrees. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB / decade (inverse linear-distance for field strength measurements).

**Test data**

**Measurement summary for limit1: FCC 15.209 <1GHz 3m (Qp)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC 15.209 <1GHz 3m
33.37 MHz	45.83 Qp	0.42 / 19.12 / 27.59 / 0.0	37.77	V / 1.00 / 0	-2.23
47.98 MHz	47.18 Qp	0.49 / 14.3 / 27.5 / 0.0	34.47	V / 1.00 / 217	-5.53
47.04 MHz	46.75 Qp	0.49 / 14.49 / 27.55 / 0.0	34.18	V / 1.00 / 0	-5.82
201.416 MHz	52.03 Qp	1.3 / 10.57 / 27.34 / 0.0	36.57	H / 1.50 / 185	-6.93
46.33 MHz	45.35 Qp	0.48 / 14.63 / 27.59 / 0.0	32.88	V / 1.00 / 0	-7.12
176.3 MHz	51.0 Qp	1.21 / 9.45 / 27.41 / 0.0	34.24	H / 1.50 / 185	-9.26
203.324 MHz	49.45 Qp	1.31 / 10.53 / 27.33 / 0.0	33.96	H / 1.50 / 185	-9.54
288.004 MHz	49.35 Qp	1.56 / 12.81 / 27.32 / 0.0	36.41	V / 1.80 / 90	-9.59

**Measurement summary for limit2: FCC-A >1GHz 3m av (Av)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA2 FCC-A >1GHz 3m av
1.694 GHz	59.7 Av	4.21 / 26.58 / 41.05 / 0.0	49.43	V / 1.00 / 73	-10.57
6.0 GHz	46.07 Av	9.88 / 34.07 / 41.55 / 0.0	48.47	V / 1.00 / 178	-11.53
2.5 GHz	54.59 Av	5.13 / 28.34 / 42.35 / 0.0	45.72	V / 3.00 / 0	-14.28
1.271 GHz	55.83 Av	3.61 / 25.72 / 39.82 / 0.0	45.34	H / 1.00 / 90	-14.66
1.44 GHz	53.68 Av	3.85 / 25.56 / 39.41 / 0.0	43.67	V / 1.00 / 90	-16.33
3.0 GHz	49.38 Av	5.81 / 29.49 / 42.38 / 0.0	42.29	H / 1.00 / 0	-17.71
1.695 GHz	52.12 Av	4.21 / 26.58 / 41.05 / 0.0	41.86	V / 1.00 / 90	-18.14
1.248 GHz	52.35 Av	3.57 / 25.78 / 40.03 / 0.0	41.68	V / 3.00 / 90	-18.32

**Measurement summary for limit1: FCC A >1G 3 M pk (Pk)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC A >1G 3 M pk
6.0 GHz	52.05 Pk	9.88 / 34.07 / 41.55 / 0.0	54.45	V / 1.00 / 178	-25.55
1.694 GHz	62.15 Pk	4.21 / 26.58 / 41.05 / 0.0	51.88	V / 1.00 / 73	-28.12
2.5 GHz	57.65 Pk	5.13 / 28.34 / 42.35 / 0.0	48.78	V / 3.00 / 0	-31.22
3.0 GHz	55.8 Pk	5.81 / 29.49 / 42.38 / 0.0	48.71	H / 1.00 / 0	-31.29
1.271 GHz	58.85 Pk	3.61 / 25.72 / 39.82 / 0.0	48.36	H / 1.00 / 90	-31.64
1.44 GHz	58.3 Pk	3.85 / 25.56 / 39.41 / 0.0	48.29	V / 1.00 / 90	-31.71
1.695 GHz	57.1 Pk	4.21 / 26.58 / 41.05 / 0.0	46.84	V / 1.00 / 90	-33.16
1.248 GHz	56.7 Pk	3.57 / 25.78 / 40.03 / 0.0	46.03	V / 3.00 / 90	-33.97



## Occupied bandwidth RSS-Gen 4.6.1

### Test summary

The requirements are:  - MET  - NOT MET

Test was performed in accordance with the article "The Measurement of Occupied Bandwidth" by Industry Canada's certification bureau.

Occupied bandwidth = 2.845 kHz

### Test location

- Wild River Lab Large Test Site (Open Area Test Site)
- Wild River Lab Small Test Site (Open Area Test Site)

### Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
NBLE03367	E4440A	Agilent	Spectrum Analyzer	MY42510439	17-May-13
WRLE02418	6502	Electro-Mechanics (EMCO)	Loop Antenna	2215	08-Aug-13
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code B 07-Oct-12

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

### Test limit

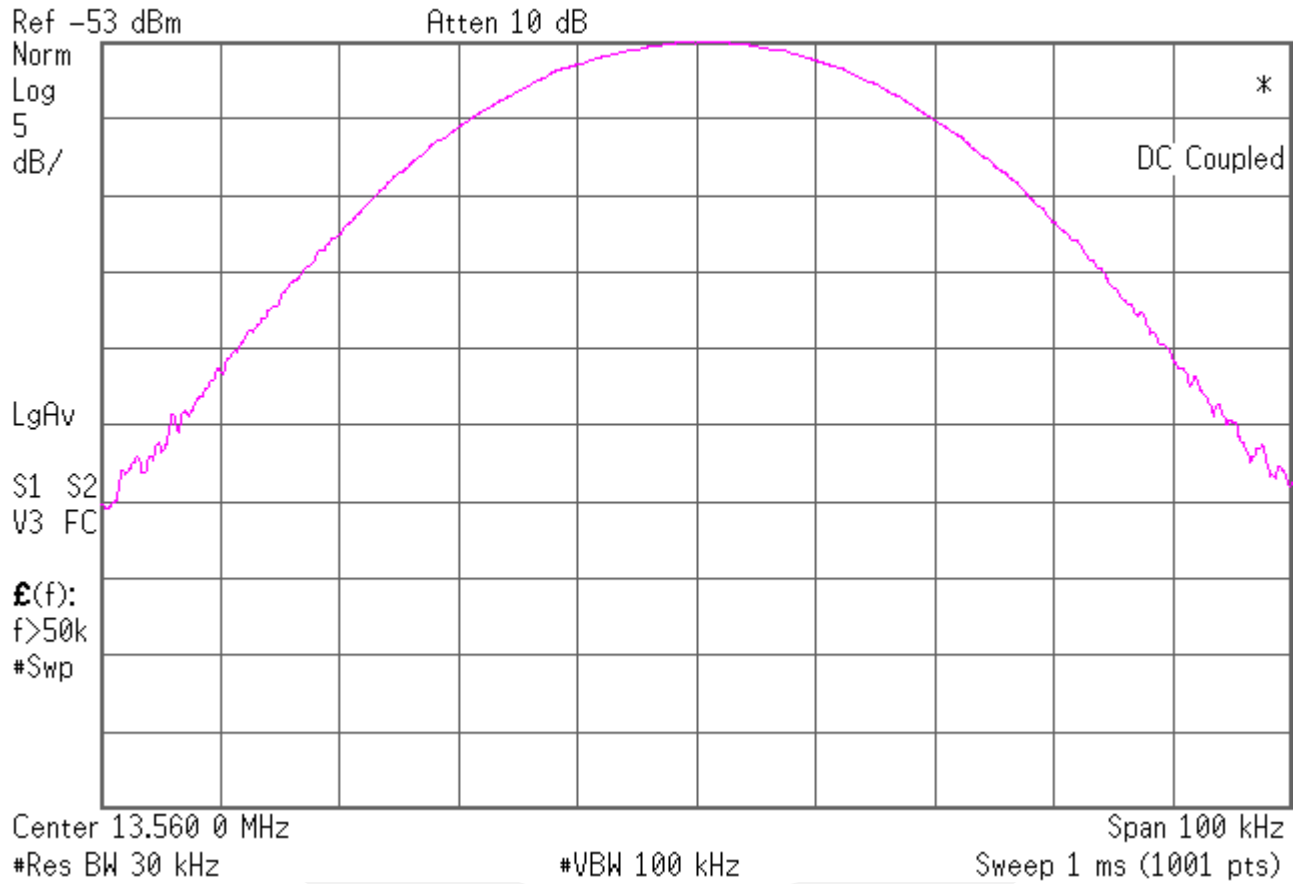
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### Test data

See following pages

99% Occupied bandwidth  
1 of 2

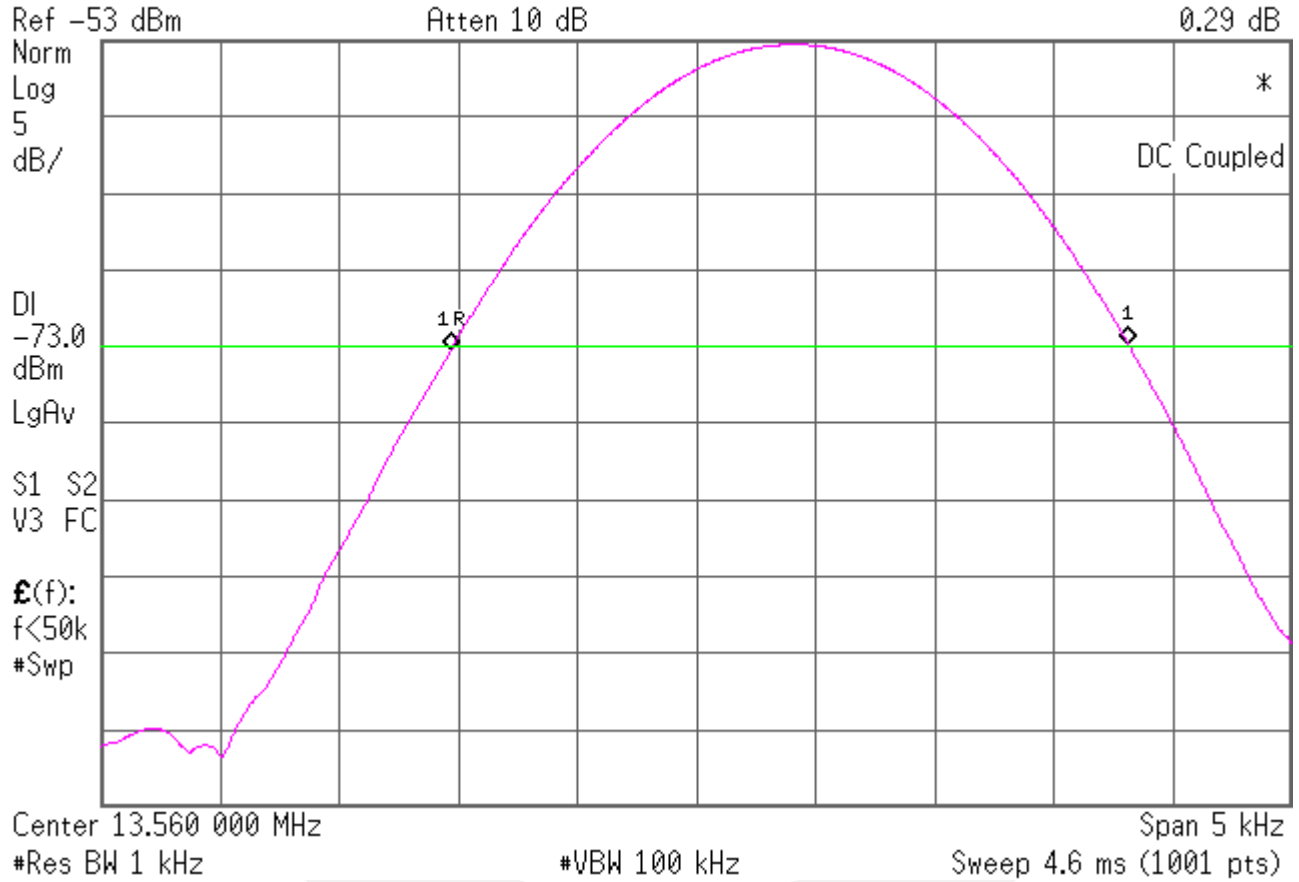
Agilent 13:55:07 Jul 10, 2012



99% Occupied bandwidth  
2 of 2

Agilent 14:05:45 Jul 10, 2012

▲ Mkr1 2.845 kHz  
0.29 dB



## Conducted Emissions - AC Power Lines FCC 15.207(a), 15.107(b), IC RSS-Gen 7.2.4

### Test summary

The requirements are:  - MET  - NOT MET

Testing was performed in accordance with the test procedure of ANSI C63.4 2003, clause 7.2

Minimum margin of compliance is 16.6 dB at 705 kHz – quasi-peak

Minimum margin of compliance is 12.8 dB at 10.206 MHz – average

### Test location

- Wild River Lab Large Test Site (Open Area Test Site)

- Wild River Lab Small Test Site (Open Area Test Site)

### Test equipment used:

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE02417	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1439	Code B 11-Apr-13
WRLE02534	ESHS-20	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	837055/003	06-Jul-13
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code B 07-Oct-12

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

### Test limits, dBµV – Class B

Frequency (MHz)	Quasi Peak	Average
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

\*Decreases with the logarithm of the frequency

### Test limits – Class A for incorporated digital device

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15–0.5	79	66
0.5–30	73	60

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth (9 kHz resolution bandwidth) and quasi-peak/average detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 µH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions.

### Test data

See following pages

### Measurement summary for limit1: CISPR 22 B (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 CISPR 22 B Qp
705.0 kHz	55.98 Qp	0.16 / 0.19 / 0.0 / 0.0	56.32	L1	0.32
555.0 kHz	55.3 Qp	0.14 / 0.14 / 0.0 / 0.0	55.57	L1	-0.43
639.0 kHz	54.02 Qp	0.15 / 0.16 / 0.0 / 0.0	54.33	L1	-1.67
1.05 MHz	52.58 Qp	0.2 / 0.19 / 0.0 / 0.0	52.97	L1	-3.03
453.0 kHz	52.18 Qp	0.12 / 0.1 / 0.0 / 0.0	52.4	L1	-4.42
417.0 kHz	52.28 Qp	0.12 / 0.1 / 0.0 / 0.0	52.5	L1	-5.01
330.0 kHz	54.1 Qp	0.11 / 0.1 / 0.0 / 0.0	54.31	L1	-5.14
978.0 kHz	49.74 Qp	0.19 / 0.2 / 0.0 / 0.0	50.13	L1	-5.87
258.0 kHz	52.1 Qp	0.09 / 0.1 / 0.0 / 0.0	52.29	L1	-9.2

### Measurement summary for limit2: CISPR 22 B (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 CISPR 22 B Avg
10.206 MHz	46.15 Av	0.68 / 0.31 / 0.0 / 0.0	47.15	N	-2.85
417.0 kHz	43.7 Av	0.12 / 0.1 / 0.0 / 0.0	43.92	N	-3.59
705.0 kHz	40.72 Av	0.16 / 0.19 / 0.0 / 0.0	41.06	N	-4.94
13.56 MHz	41.43 Av	0.81 / 0.48 / 0.0 / 0.0	42.72	L1	-7.28
258.0 kHz	43.25 Av	0.09 / 0.1 / 0.0 / 0.0	43.44	N	-8.05
555.0 kHz	36.91 Av	0.14 / 0.14 / 0.0 / 0.0	37.18	N	-8.82
192.0 kHz	44.62 Av	0.07 / 0.14 / 0.0 / 0.0	44.83	N	-9.12
978.0 kHz	35.69 Av	0.19 / 0.2 / 0.0 / 0.0	36.08	L1	-9.92

All of the above frequencies are still present with the transmitter powered off, so will be compared to the Class A limit appropriate for the incorporated digital device.

### Measurement summary for limit1: CISPR 22 A (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 CISPR 22 A Qp
705.0 kHz	55.98 Qp	0.16 / 0.19 / 0.0 / 0.0	56.32	L1	-16.68
555.0 kHz	55.3 Qp	0.14 / 0.14 / 0.0 / 0.0	55.57	L1	-17.43
639.0 kHz	54.02 Qp	0.15 / 0.16 / 0.0 / 0.0	54.33	L1	-18.67
1.05 MHz	52.58 Qp	0.2 / 0.19 / 0.0 / 0.0	52.97	L1	-20.03
978.0 kHz	49.74 Qp	0.19 / 0.2 / 0.0 / 0.0	50.13	L1	-22.87
330.0 kHz	54.1 Qp	0.11 / 0.1 / 0.0 / 0.0	54.31	L1	-24.69

### Measurement summary for limit2: CISPR 22 A (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 CISPR 22 A Avg
10.206 MHz	46.15 Av	0.68 / 0.31 / 0.0 / 0.0	47.15	N	-12.85
13.56 MHz	41.43 Av	0.81 / 0.48 / 0.0 / 0.0	42.72	L1	-17.28
705.0 kHz	40.72 Av	0.16 / 0.19 / 0.0 / 0.0	41.06	N	-18.94
192.0 kHz	44.62 Av	0.07 / 0.14 / 0.0 / 0.0	44.83	N	-21.17
417.0 kHz	43.7 Av	0.12 / 0.1 / 0.0 / 0.0	43.92	N	-22.08
258.0 kHz	43.25 Av	0.09 / 0.1 / 0.0 / 0.0	43.44	N	-22.56

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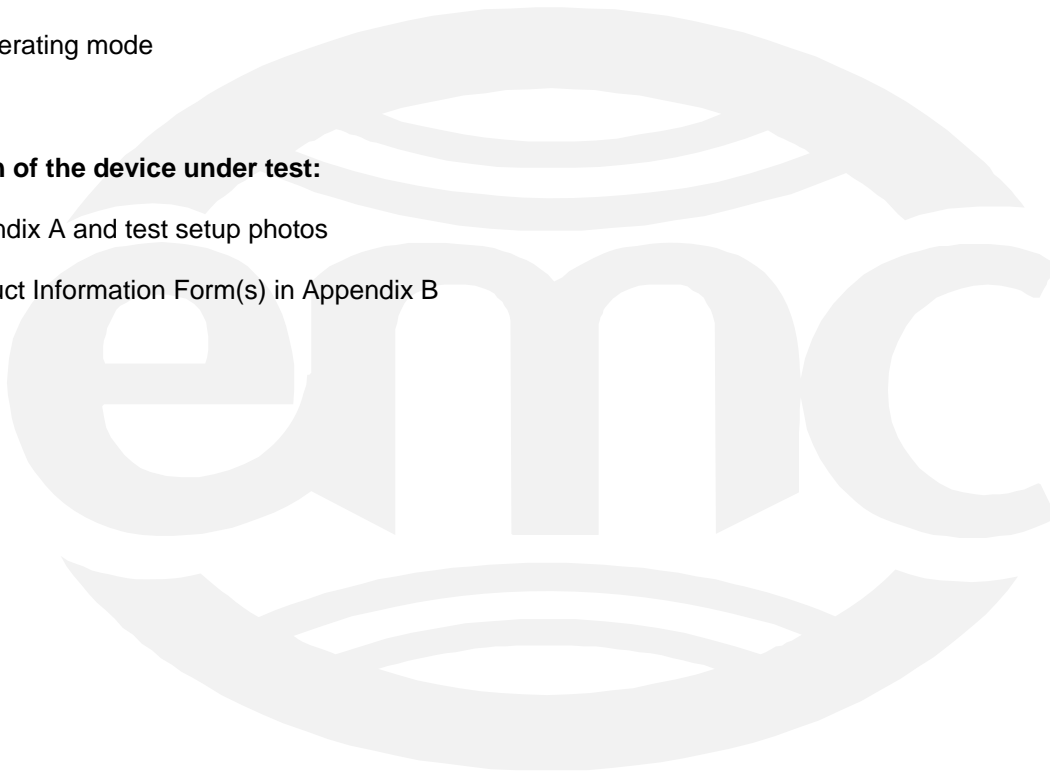
### **Equipment Under Test (EUT) Test Operation Mode:**

**The device under test was operated under the following conditions during immunity testing :**

- Standby
- Test program (H - Pattern)
- Test program (color bar)
- Test program (customer specific)
- Practice operation
- Normal operating mode

### **Configuration of the device under test:**

- See Appendix A and test setup photos
- See Product Information Form(s) in Appendix B



**DEVIATIONS FROM STANDARD:**

None.

**GENERAL REMARKS:**

None

Modifications required to pass:

Changed to a different laser cable from what was used during initial testing in order to meet the Class A radiated emission requirements above 1 GHz – not related to transmitter.

Test Specification Deviations: Additions to or Exclusions from:

- None
- As indicated in the Test Plan

**SUMMARY:**

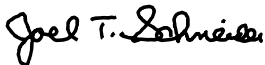
The requirements according to the technical regulations are

- met and the device under test does fulfill the general approval requirements.
- **not** met and the device under test does **not** fulfill the general approval requirements..

EUT Received Date: 10 July 2012  
Condition of EUT: Normal  
Testing Start Date: 10 July 2012  
Testing End Date: 14 August 2012

**TÜV SÜD AMERICA INC**

Tested by:



Joel T Schneider  
Senior EMC Engineer

Approved by:



Robert J Behringer  
EMC Engineer



## Appendix A

Carestream EMC Test Plan, DV5950 and TRIMAX TX55 Part #: 9J5174, Version # 1.0





**EMC Test Plan for  
DRYVIEW 5950 Laser Imaging System  
&  
TRIMAX TX55 Laser Imaging System**

**Author: Robert Pettitt - EHS Manager**

All printed copies of this document are "Uncontrolled."

## TABLE OF CONTENTS

1.	PURPOSE .....	3
2.	SCOPE .....	3
3.	REFERENCES .....	3
4.	ACRONYMS.....	3
5.	RESPONSIBILITIES .....	3
6.	ACCESSORIES .....	3
7.	TEST SPACE AND POWER REQUIREMENTS .....	4
8.	TEST SET UP AND CHANGE-OVER TIMES .....	4
9.	TEST SUPPORT EQUIPMENT .....	4
10.	TEST SET-UP SHOWING EUT, TEST SUPPORT EQUIPMENT AND CABLING.....	4
11.	EMC REQUIREMENTS TABLE .....	5
12.	SUMMARY TEST TABLE WITH POWER - VOLTAGES AND FREQUENCIES.....	6
13.	PASS/FAIL CRITERIA.....	7
14.	SUPPLIES.....	7
15.	REPORTS .....	7

## 1. Purpose

This document will detail the EMC Test requirements for the DRYVIEW 5950 Laser Imaging System and TRIMAX TX55 Laser Imaging System (collectively called the DV5950 in the rest of this document).

This document will define the following:

- Define who is responsible for what under this plan.
- Summarize the tests that will be executed.
- List the support equipment and software required to execute the testing.

## 2. Scope

This document is limited to providing the framework for testing the DRYVIEW 5950 Laser Imaging System and TRIMAX TX55 Laser Imaging System. From an EMC Standpoint the models are identical. The differences are cosmetic (Identification Labels) and in a software forced delay between images for the TRIMAX TX55 making the throughput slightly slower.

## 3. References

9J5072      Product Requirement Spec (PRS) – DRYVIEW 5950

## 4. Acronyms

EMC            Electro Magnetic Compatibility  
Ethernet       A standard communications link defined in IEE 802  
TUV-AM       Technischer Überwachungs Verein - America or  
                  Technical Surveillance Organization – America

## 5. Responsibilities

EHS Oakdale is responsible for the EMC Testing.

The DV5950 - Hardware and Software Design Teams are responsible to support the EMC testing.

The testing will be executed by a 3<sup>rd</sup> party test house, TUV. Testing will be at two TUV sites. TUV Wild River Lab, Taylor’s Falls, MN, will conduct Emissions testing July 10 – 12. TUV New Brighton Lab, New Brighton, MN will conduct Immunity testing, July 16 – 19. Both sites are qualified to certify the equipment as compliant. The order of testing will be which ever order is most advantageous to TUV, at each site.

## 6. Accessories

The DV5950 can be configured with the following accessory.

<b>Cable:</b>		
<b>Catalog Number</b>	<b>Description</b>	<b>Usage</b>
Any	Cat 6 Ethernet Cable	Communication with the Ethernet system.

## 7. Test Space and Power Requirements

### Space and Power for EUT

The DV5950 requires ~ 5 square feet of area.  
 (~ 2 feet X ~2.5 feet).

Any table supporting imager must be able to easily withstand 200 lbs.

Circuit amperage capacity for 60 Cycle 100/120 V must be  $\geq$  8Amps  
 Circuit amperage capacity for 50 Cycle, 230/240 V must be  $\geq$  4 Amps.

### Space and Power for Test Support Equipment

The test support equipment and operator, used for sending images to the EUT requires a minimum of 8 square feet of area. (2 feet X 4 feet). This includes a platform, table or shelf, for the equipment and a chair for the operator.

The test support equipment requires a standard USA 120 Volt 15 Amp outlet. This outlet must be within 6 feet of the test support equipment.

## 8. Test Set Up and Change-Over Times

### Initial Equipment Set Up Time

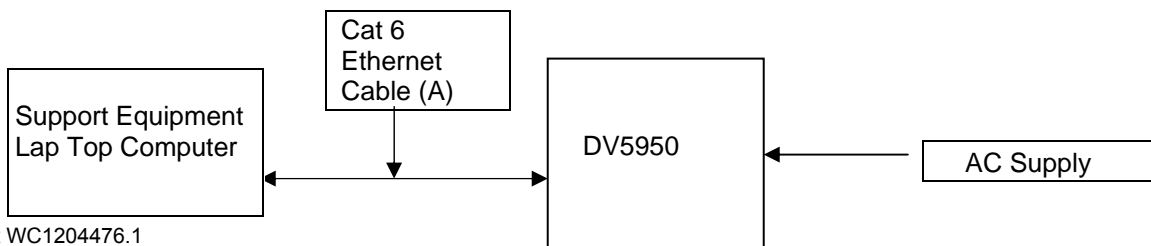
The equipment can be set up for testing in approximately 1 hour. This time includes unpacking the equipment, setting up the EUT, setting up and connecting the support equipment.

Another 25 minutes should be allowed for warming and testing the EUT for proper operation before any EMC testing commences.

## 9. Test Support Equipment

<u>Description</u>	<u>Manufacturer</u>	<u>Model / Serial #</u>	<u>FCC ID #</u>
Lap Top Computer	Compaq	6510b	
Cat 6 Ethernet Cable - 30 Ft	Any		

## 10. Test Set-up Showing EUT, Test Support Equipment and Cabling



## 11. EMC Requirements Table

	USA	EU	Canada	AS/NZS	ROW
<b>EMISSIONS</b>		EN 60601-1-2: 2007 [Med. Dev. Dir.]	CAN/CSA -C22.2 NO. 60601-1-2- 08		IEC 60601-1-2: 2007 (Modified)
Radiated Electric Field Emissions	47 CFR [FCC] Part 15 Subpart B Class A	EN 55011:2009 Group 1 Class A [EMC Dir.]	ICES-003, Issue 4: 2004	AS/NZS CISPR 11: 2009	CISPR 11: 2009
Harmonic Current	*	EN 61000-3-2:2006 / A2:2009 [EMC Dir.]		AS/NZS 61000-3- 2:2007 (Modified)	IEC 61000-3-2:2005 / A2:2009
Voltage Flicker	*	EN 61000-3-3 :2008 [EMC Dir.]			IEC 61000-3-3:2008
<b>IMMUNITY</b>		EN 60601-1-2: 2007 [Med. Dev, Dir.]			IEC 60601-1-2: 2007 (Modified)
Electro-Static Discharge Immunity	#	EN 61000-4-2:		#	IEC 61000-4-2
Radiated RF, RF Electromagnetic Field Imm.	#	EN 61000-4-3:		#	IEC 61000-4-3
Electrical Fast Transients Immunity	#	EN 61000-4-4:		#	IEC 61000-4-4
Surge Immunity	#	EN 61000-4-5:		#	IEC 61000-4-5
Conducted RF Immunity	#	EN 61000-4-6:		#	IEC 61000-4-6
Power Frequency Magnetic Field Imm.	#	EN 61000-4-8:		#	IEC 61000-4-8
Voltage Dips, Interrupts and Var. Immunity	#	EN 61000-4-11:		#	IEC 61000-4-11
Telecomm- unications Standard	FCC Part 15 Subpart C Sections 15.207 & 15.209	EN 300 330-2 V1.5.1 [RTTE Dir.]	IC RSS- 210 Issue 7  IC RSS- Gen Issue 2		

## 12. Summary Test Table with Power - Voltages and Frequencies

Test Type	Requirement	Mains Voltage
Radiated Emissions	47 CFR [FCC] Part 15 Subpart B Class A  ICES-003 Issue 4  EN/IEC 60601-1-2  [CAN/CSA –C22.2 NO. 60601-1-2-08]  EN 55011 Class A	230 V 50 Hz  Possible 100 V 50 Hz
Conducted Emissions	47 CFR Part 15 Subpart B  ICES-0003 Issue 4  EN/IEC 60601-1-2  [CAN/CSA –C22.2 NO. 60601-1-2-08]  EN 55011 Class A	120 V 60 Hz   230 V 50 Hz   100 V 50 Hz (Japan)
RFTag Emissions	EN 300 330  47 CFR Part 15 Subpart C  IC-RSS-210 Issue 7 IC-RSS-Gen Issue 2	230 V 50 Hz  120 V 60 Hz
Harmonic Current	EN/IEC 61000-3-2	230 V, 50 Hz
Voltage Flicker	EN/IEC 61000-3-3	230 V, 50 Hz
<b>Immunity</b>	EN/IEC 60601-1-2	<b>See Tests Below.</b>
Electro Static Discharge	EN/IEC 61000-4-2	230 V, 50 Hz
Radiated RF Immunity	EN/IEC 61000-4-3	230 V, 50 Hz
Electrical Fast Transients	EN/IEC 61000-4-4	100V, 50 Hz 240 V, 50Hz
Surge	EN/IEC 61000-4-5	100 V, 50 Hz 240 V, 50Hz
Conducted Immunity Tests	EN/IEC 61000-4-6	230 V, 50 Hz
Power Frequency Magnetic Tests	EN/IEC 61000-4-8	230 V at BOTH 50Hz & 60 Hz
Voltage Dip Tests	IEC 61000-4-11	100 V, 50 Hz 240 V, 50Hz

### 13. Pass/Fail Criteria

- The DV5950 shall pass the Emissions tests if all emissions are below the standards' limit lines
- The DV5950 shall pass the Immunity tests if there are no Image aberrations visible on the films printed during the tests.

### 14. Supplies

DryView Imaging - Film 7 Cases

### 15. Reports

**Two sets of reports and TRS** will be produced by TUV and provided electronically to Carestream Health Inc. at robert.pettitt@carestream.com

One set specifying the **DRYVIEW 5950 Laser Imaging System** as the tested system, a second set, identical to the first set, except that it specifies the **TRIMAX TX55** as the tested system.

Both sets of reports and TRS will be provided within two weeks of the conclusion of testing.

In addition, TUV will file all necessary documents with their FCB to secure an FCC Grant and a IC license for the **DRYVIEW 5950 Laser Imaging System**.