

# TEST REPORT

**FCC Part 15 Subpart C Section 15.207**

**FCC Part 15 Subpart C Section 15.209**

**IC RSS-210 Issue 8**

**IC RSS-Gen Issue 3**

MANUFACTURER'S NAME	Carestream Health Incorporated 1049 W Ridge Road Rochester NY 14615
PRODUCT NAME	TRIMAX TX65 Laser Imaging System with 13.56 MHz RFID
MODEL NUMBER(S) TESTED	TRIMAX TX65
SERIAL NUMBER(S) TESTED	6950EM7
PRODUCT DESCRIPTION	TRIMAX TX65 Laser Imaging System with 13.56 MHz RFID
TEST REPORT NUMBER	NC1401722.5
TEST DATE(S)	07-09 May 2014

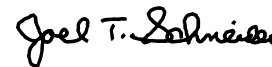
TÜV SÜD America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the applicable EMC requirements of FCC Part 15 Subpart C Sections 15.207 "Conducted Limits" and 15.209 "Radiated emission limits; general requirements" and IC RSS-210 "Low-power 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: 04 June 2014



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Senior EMC Technician



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Senior EMC Engineer

Not Transferable

# EMC TEST REPORT

Test Report No. NC1401722.5 Date of issue: 04 June 2014

Product Name TRIMAX TX65 Laser Imaging System with 13.56 MHz RFID

Model(s) Tested TRIMAX TX65

Serial No(s) Tested 6950EM7

Product Description TRIMAX TX65 Laser Imaging System with 13.56 MHz RFID

Manufacturer Carestream Health Incorporated  
1049 W Ridge Road  
Rochester NY 14615

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
	30	04 June 2014	Initial Release



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**EMC TEST REGULATIONS:**

The tests were performed according to the following regulations:

FCC Part 15 Subpart C Section 15.207 Paragraph (a)

FCC Part 15 Subpart C Section 15.209 Paragraphs (a), (c), (f)

IC RSS-210 Issue 8 Section 2.5

IC RSS-Gen Issue 3 Sections 4.6.1, 7.2.5

**ENVIRONMENTAL CONDITIONS IN THE LAB**

	<u>Actual</u>
Temperature:	: 22-23°C
Atmospheric pressure	: 98-99kPa
Relative Humidity	: 35-41%

**POWER SUPPLY UTILIZED**

Power supply system : 110/230 V / 60/50 Hz

**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.

#### Test location

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

#### Test distance

- 1 meter  
 - 3 meters  
 - 10 meters

#### Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Date	Cal Due
WRLE02534	ESHS-20	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	837055/003	15-Jul-13	15-Jul-14
WRLE02418	6502	Electro-Mechanics (EMCO)	Loop Antenna	2215	16-Aug-13	16-Aug-14
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Version 3.4.71	Software N/A	Code Y	Code Y

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

#### Test limit

Frequency (MHz)	Field strength $\mu\text{V}/\text{m}$	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, dB $\mu\text{V}/\text{m}$

Frequency (MHz)	Detector	Distance			dB $\mu\text{V}/\text{m}$ 30 m	$\mu\text{V}/\text{m}$ 30 m	Limit dB $\mu\text{V}/\text{m}$ 30 m	Limit $\mu\text{V}/\text{m}$ 30 m
		1 m	3 m	10 m				
13.56	QP	64.12	48.6	32.24	16*	6.31*	29.5	30

\* Extrapolated value using 32 dB per decade fall off as indicated by measurements

nf = noise floor

No other signals detected up to 30 MHz.

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 - 2000 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.

#### Test limits

##### Transmitter and 15.205 restricted bands

Frequency (MHz)	Field strength ( $\mu\text{V}/\text{m}$ )	Field strength ( $\text{dB}\mu\text{V}/\text{m}$ )	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 ( $\mu\text{V}/\text{m}$ )	Field strength ( $\text{dB}\mu\text{V}/\text{m}$ )	Measurement distance (m)
30 - 88	90	39	10
88 - 216	150	43.5	10
216 - 960	210	46.4	10
Above 960	300	49.5	10

All measurements made at 3 meters – the 15.109 Class A limit above is extrapolated to 3 meters on data sheets.

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 location**

■ - Oakwood Lab Test Site (Open Area Test Site)

**Test distance**

■ - 3 meters

**Test Equipment**

TUV ID	Model	Manufacturer	Description	Serial	Cal Date	Cal Due
WRLE03995	EM-6917B	Electro-Metrics	Biconicalog Periodic	151	17-Jun-13	17-Jun-14
NBLE03196	8566B	Hewlett-Packard	Spectrum Analyzer	2240A01856	31-Jan-14	31-Jan-15
NBLE03195	85662A	Hewlett-Packard	Analyzer Display	2648A13518	31-Jan-14	31-Jan-15
OWLE02682	85650A	Hewlett-Packard	Quasi-Peak Adapter	2811A01127	08-Apr-14	08-Apr-15
OWLE02671	8447D	Hewlett-Packard	Preamplifier	2648A04942	Code B 24-Feb-14	Code B 24-Feb-15
WRLE03958	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0002	Code B 21-Jan-14	Code B 21-Jan-15
OWLE02074	3115	Electro-Mechanics (EMCO)	Ridge Guide Antenna	2504	20-Mar-14	20-Mar-15
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code Y	Code Y

Cal Code B = Calibration verification performed internally.

**Test data**

### Measurement summary for limit1: FCC 15.209 to 135.6MHz (Qp) – 3 meters

FREQ	LEVEL (dB $\mu$ V)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dB $\mu$ V / m)	POL / HGT / AZ (m)(DEG)	FINAL ( $\mu$ V / m)	LIMIT ( $\mu$ V / m)
48.0 MHz	42.86 Qp	0.54 / 20.4 / 24.4 / 0.0	39.4	V / 1.00 / 20	93.3	100
36.0 MHz	37.54 Qp	0.5 / 24.05 / 24.4 / 0.0	37.69	V / 1.00 / 5	76.6	100
60.0 MHz	41.36 Qp	0.58 / 17.3 / 24.4 / 0.0	34.84	V / 1.00 / 68	55.2	100
72.0 MHz	33.05 Qp	0.63 / 14.35 / 24.4 / 0.0	23.63	V / 1.00 / 90	15.2	100

For incorporated digital device

### Measurement summary for limit1: FCC 15.109 class A - (3m) (Qp)

FREQ	LEVEL (dB $\mu$ V)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dB $\mu$ V / m)	POL / HGT / AZ (m)(DEG)	FINAL ( $\mu$ V / m)	LIMIT ( $\mu$ V / m) 3m extrapolation
528.0 MHz	37.2 Qp	2.25 / 24.04 / 24.17 / 0.0	39.32	V / 1.00 / 0	92.5	700
240.0 MHz	43.8 Qp	1.24 / 17.2 / 24.3 / 0.0	37.94	H / 1.00 / 90	78.9	700
336.0 MHz	40.1 Qp	1.6 / 20.18 / 24.3 / 0.0	37.58	H / 1.00 / 90	75.7	700
288.0 MHz	41.7 Qp	1.42 / 18.72 / 24.3 / 0.0	37.54	H / 1.00 / 90	75.3	700
257.616 MHz	42.25 Qp	1.31 / 18.2 / 24.3 / 0.0	37.46	H / 1.00 / 90	74.6	700
420.336 MHz	36.4 Qp	1.91 / 21.91 / 24.3 / 0.0	35.92	V / 1.00 / 90	62.5	700
480.0 MHz	34.6 Qp	2.13 / 22.75 / 24.25 / 0.0	35.23	V / 1.00 / 0	57.7	700
384.0 MHz	36.05 Qp	1.77 / 21.23 / 24.3 / 0.0	34.75	V / 1.00 / 270	54.6	700
203.376 MHz	37.75 Qp	1.11 / 16.35 / 24.36 / 0.0	30.85	V / 1.00 / 90	34.9	500
338.976 MHz	35.55 Qp	1.61 / 20.27 / 24.3 / 0.0	33.13	H / 1.80 / 270	45.3	700
732.216 MHz	27.55 Qp	2.61 / 26.63 / 24.25 / 0.0	32.55	V / 1.00 / 0	42.4	700
300.0 MHz	35.85 Qp	1.47 / 19.1 / 24.3 / 0.0	32.12	H / 1.00 / 180	40.4	700
432.0 MHz	32.25 Qp	1.95 / 22.18 / 24.3 / 0.0	32.08	V / 1.00 / 90	40.2	700
433.896 MHz	32.2 Qp	1.96 / 22.16 / 24.3 / 0.0	32.02	V / 1.00 / 0	39.9	700
542.376 MHz	28.78 Qp	2.28 / 24.05 / 24.15 / 0.0	30.96	H / 1.20 / 276	35.3	700
576.0 MHz	28.15 Qp	2.34 / 24.5 / 24.11 / 0.0	30.88	V / 1.00 / 0	35	700
447.456 MHz	30.85 Qp	2.01 / 22.25 / 24.3 / 0.0	30.81	V / 1.00 / 0	34.7	700



**Measurement summary for limit1: FCC 15.109 class A - (3m) (Qp)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	FINAL ( $\mu$ V / m)	LIMIT ( $\mu$ V / m) 3m extrapolation
637.296 MHz	26.95 Qp	2.44 / 25.61 / 24.21 / 0.0	30.79	V / 1.00 / 0	34.6	700
264.0 MHz	35.25 Qp	1.33 / 18.46 / 24.3 / 0.0	30.74	H / 1.00 / 90	34.4	700
501.696 MHz	28.85 Qp	2.2 / 23.26 / 24.21 / 0.0	30.1	H / 1.00 / 90	32	700
216.936 MHz	35.75 Qp	1.16 / 16.61 / 24.32 / 0.0	29.19	V / 1.00 / 90	28.8	700

**Measurement summary for limit1: FCC-A >1GHz 3m av (Av)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	FINAL ( $\mu$ V / m)	LIMIT ( $\mu$ V / m) 3m extrapolation
1.2 GHz	65.51 Av	3.44 / 25.9 / 50.33 / 0.0	44.52	V / 1.10 / 0	168	1000
1.152 GHz	63.49 Av	3.36 / 25.71 / 50.42 / 0.0	42.14	V / 1.22 / 0	78.9	1000

**Measurement summary for limit2: FCC A >1G 3 M pk (Pk)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	FINAL ( $\mu$ V / m)	LIMIT ( $\mu$ V / m) 3m extrapolation
1.2 GHz	69.9 Pk	3.44 / 25.9 / 50.33 / 0.0	48.91	V / 1.10 / 0	279	10000
1.152 GHz	69.3 Pk	3.36 / 25.71 / 50.42 / 0.0	47.95	V / 1.22 / 0	250	10000

## 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 = 178 Hz

#### Test location

- Oakwood Lab Test Site (Open Area Test Site)

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

#### Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Date	Cal Due
WRLE02534	ESHS-20	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	837055/003	15-Jul-13	15-Jul-14
WRLE02418	6502	Electro-Mechanics (EMCO)	Loop Antenna	2215	16-Aug-13	16-Aug-14
WRLE10863	N/A	TÜV SÜD America Test Inc	Companion Software Version 3.4.71	N/A	Code Y	Code Y

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

#### Test limit

No limit specified

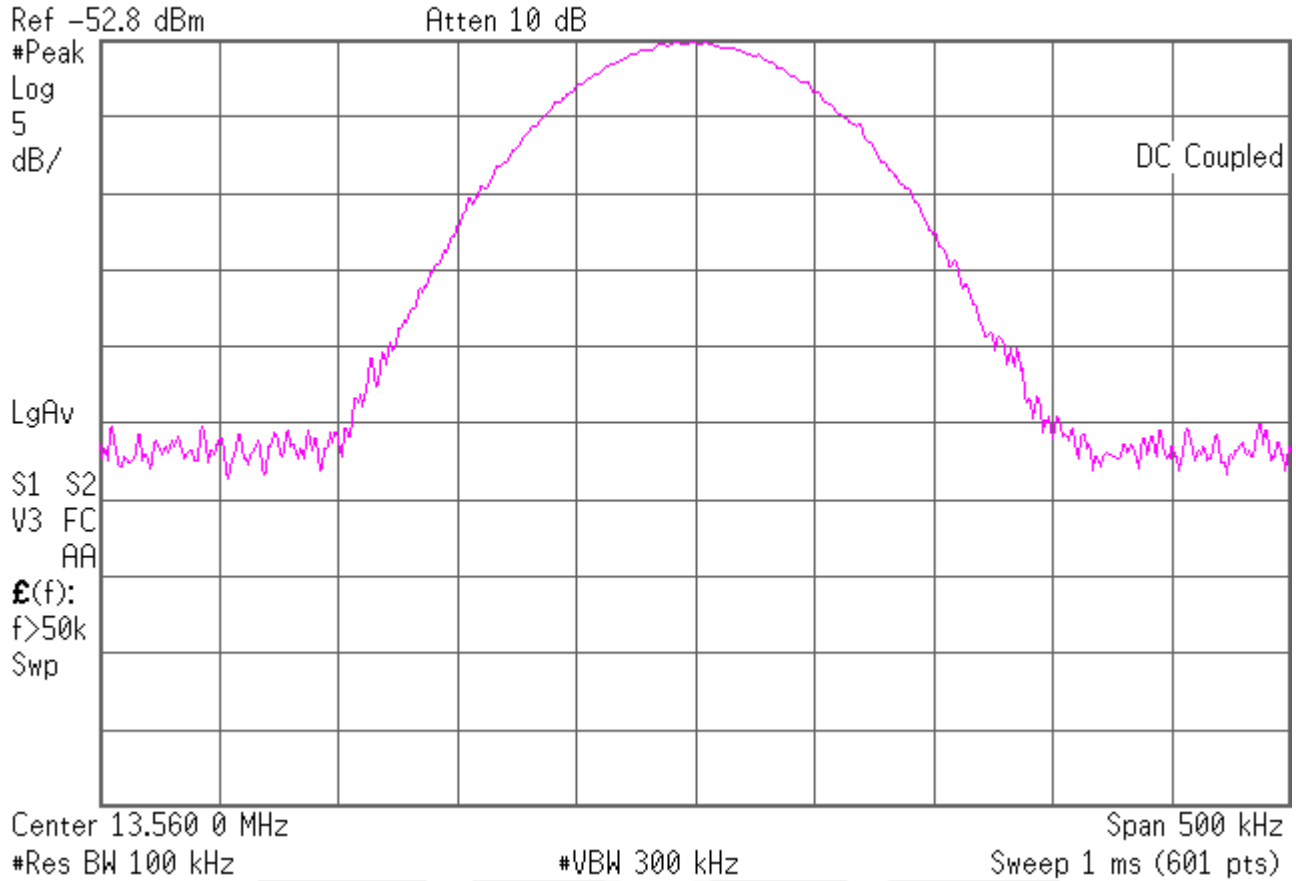
#### Test data

See following pages

99% Occupied bandwidth  
1 of 2

Agilent 10:18:10 9 May 2014

R T



99% Occupied bandwidth  
2 of 2

Agilent 10:25:32 9 May 2014

R T

Mkr1 178 Hz  
0.22 dB

Ref -52.8 dBm

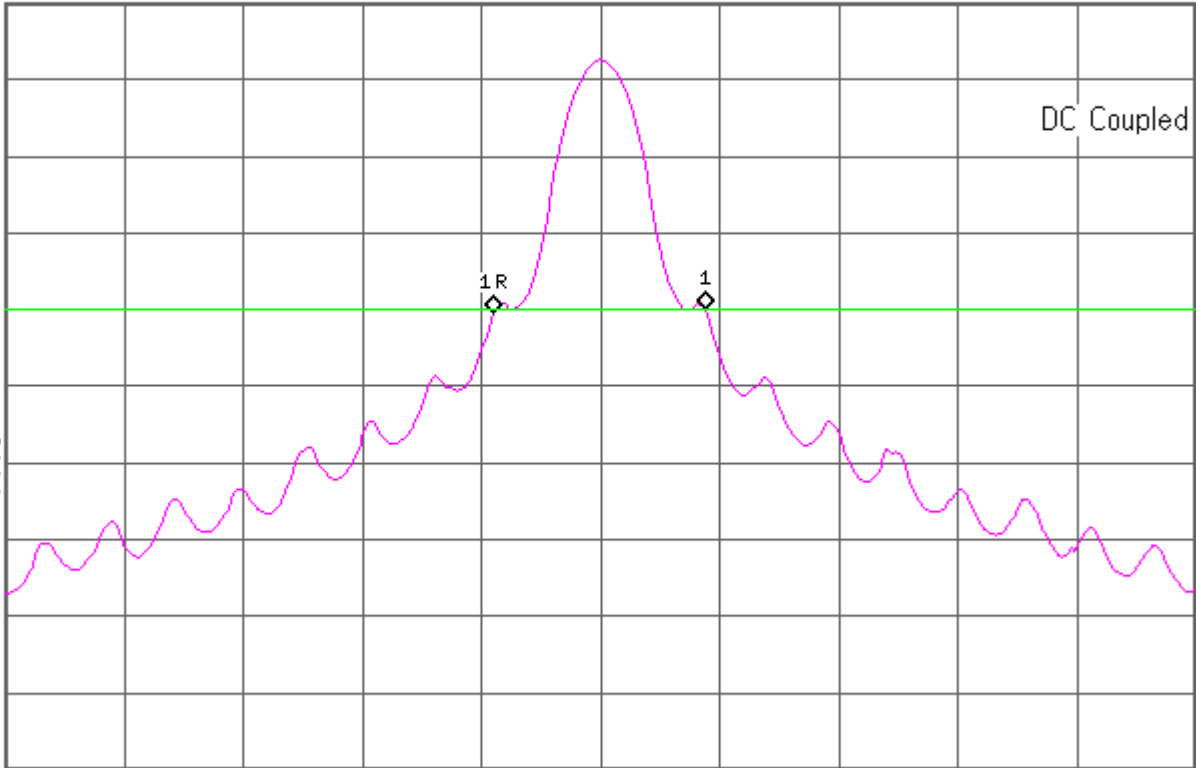
Atten 10 dB

#Peak  
Log  
5  
dB/

DI  
-72.8  
dBm  
LgAv

S1 S2  
M3 FC

f(f):  
f<50k  
FFT



Center 13.560 175 MHz

#Res BW 30 Hz

VBW 91 Hz

Span 1 kHz  
Sweep 62.16 ms (601 pts)

## Conducted Emissions - AC Power Lines

### FCC 15.207(a), 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 2009, clause 7.2

#### Test location

- Oakwood Lab 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 Date	Cal Due
WRLE10946	FCC-LISN-50-25-2-10	Fischer Custom Comm	LISN	120310	16-Jul-13	16-Jul -14
WRLE02534	ESHS-20	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	837055/003	15-Jul-13	15-Jul-14
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code Y	Code Y

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

#### Test limits, dB $\mu$ V

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

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  $\Omega$ /50  $\mu$ H (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 – conducted emissions from incorporated digital device are listed in a separate report.

**Measurement summary for limit1: 15.207 Qp (Qp)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 FCC 15.207 Qp
383.64 kHz	55.85 Qp	0.22 / -0.18 / 0.0 / 0.0	55.89	L1	-2.31
321.0 kHz	57.13 Qp	0.21 / -0.2 / 0.0 / 0.0	57.14	L2	-2.54
255.0 kHz	55.99 Qp	0.2 / -0.22 / 0.0 / 0.0	55.97	L2	-5.62
471.0 kHz	48.93 Qp	0.24 / -0.16 / 0.0 / 0.0	49.01	L2	-7.48
575.98 kHz	47.99 Qp	0.26 / -0.12 / 0.0 / 0.0	48.13	L1	-7.87
12.714 MHz	49.19 Qp	1.24 / 0.01 / 0.0 / 0.0	50.44	L1	-9.56
190.93 kHz	54.01 Qp	0.17 / -0.24 / 0.0 / 0.0	53.94	L2	-10.05
12.845 MHz	48.45 Qp	1.24 / 0.01 / 0.0 / 0.0	49.7	L1	-10.3
702.0 kHz	43.11 Qp	0.28 / -0.09 / 0.0 / 0.0	43.31	L2	-12.69
1.023 MHz	39.13 Qp	0.33 / 0.0 / 0.0 / 0.0	39.46	L2	-16.54
13.56 MHz	40.27 Qp	1.27 / 0.02 / 0.0 / 0.0	41.55	L1	-18.45
1.086 MHz	36.25 Qp	0.34 / 0.0 / 0.0 / 0.0	36.59	L2	-19.41
6.771 MHz	38.35 Qp	0.9 / 0.0 / 0.0 / 0.0	39.25	L1	-20.75
11.676 MHz	37.53 Qp	1.2 / 0.01 / 0.0 / 0.0	38.73	L2	-21.27
19.32 MHz	36.07 Qp	1.32 / 0.05 / 0.0 / 0.0	37.44	L1	-22.56
16.476 MHz	35.83 Qp	1.31 / 0.03 / 0.0 / 0.0	37.17	L2	-22.83
19.512 MHz	34.51 Qp	1.32 / 0.05 / 0.0 / 0.0	35.88	L1	-24.12
4.92 MHz	30.27 Qp	0.78 / 0.0 / 0.0 / 0.0	31.05	L2	-24.95
1.851 MHz	28.75 Qp	0.45 / 0.0 / 0.0 / 0.0	29.2	L2	-26.8
6.963 MHz	31.79 Qp	0.91 / 0.0 / 0.0 / 0.0	32.7	L1	-27.3
29.973 MHz	28.67 Qp	1.36 / 0.1 / 0.0 / 0.0	30.13	L1	-29.87
29.907 MHz	26.79 Qp	1.36 / 0.1 / 0.0 / 0.0	28.25	L1	-31.75
23.001 MHz	26.73 Qp	1.33 / 0.07 / 0.0 / 0.0	28.13	L2	-31.87

**Measurement summary for limit2: 15.207 Avg (Av)**

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 FCC 15.207 Avg
575.98 kHz	44.97 Av	0.26 / -0.12 / 0.0 / 0.0	45.11	L2	-0.89
12.714 MHz	47.31 Av	1.24 / 0.01 / 0.0 / 0.0	48.56	L1	-1.44
383.64 kHz	46.67 Av	0.22 / -0.18 / 0.0 / 0.0	46.71	L2	-1.49
190.93 kHz	50.41 Av	0.17 / -0.24 / 0.0 / 0.0	50.34	L1	-3.65
12.845 MHz	44.55 Av	1.24 / 0.01 / 0.0 / 0.0	45.8	L1	-4.2
702.0 kHz	40.82 Av	0.28 / -0.09 / 0.0 / 0.0	41.02	L1	-4.98
255.0 kHz	45.22 Av	0.2 / -0.22 / 0.0 / 0.0	45.2	L1	-6.39
1.023 MHz	37.75 Av	0.33 / 0.0 / 0.0 / 0.0	38.08	L2	-7.92
1.086 MHz	35.04 Av	0.34 / 0.0 / 0.0 / 0.0	35.38	L2	-10.62
19.32 MHz	35.87 Av	1.32 / 0.05 / 0.0 / 0.0	37.24	L2	-12.76
6.771 MHz	34.8 Av	0.9 / 0.0 / 0.0 / 0.0	35.7	L1	-14.3
13.56 MHz	32.88 Av	1.27 / 0.02 / 0.0 / 0.0	34.16	L1	-15.84
4.92 MHz	28.78 Av	0.78 / 0.0 / 0.0 / 0.0	29.56	L2	-16.44
11.676 MHz	31.07 Av	1.2 / 0.01 / 0.0 / 0.0	32.27	L1	-17.73
1.851 MHz	27.59 Av	0.45 / 0.0 / 0.0 / 0.0	28.04	L2	-17.96
19.512 MHz	29.71 Av	1.32 / 0.05 / 0.0 / 0.0	31.08	L1	-18.92
16.476 MHz	29.18 Av	1.31 / 0.03 / 0.0 / 0.0	30.52	L2	-19.48
6.963 MHz	27.21 Av	0.91 / 0.0 / 0.0 / 0.0	28.12	L1	-21.88
29.973 MHz	24.05 Av	1.36 / 0.1 / 0.0 / 0.0	25.51	L1	-24.49
29.907 MHz	22.51 Av	1.36 / 0.1 / 0.0 / 0.0	23.97	L1	-26.03
23.001 MHz	21.67 Av	1.33 / 0.07 / 0.0 / 0.0	23.07	L1	-26.93

**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:

- None
- As indicated on the data sheet(s)

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: 07 May 2014Condition of EUT: NormalTesting Start Date: 07 May 2014Testing End Date: 09 May 2014**TÜV SÜD AMERICA INC**

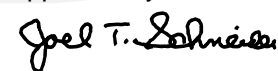
Tested by:



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Greg Jakubowski  
Senior EMC Technician

Approved by:



---

Joel T Schneider  
Senior EMC Engineer



## Appendix A

### Constructional Data Form





# **EMC Test Plan for DRYVIEW 6950 Laser Imaging System and TRIMAX TX65 Laser Imaging System**

**Author: Eric Vraa  
And Ronald Cain**

All printed copies of this document are "Uncontrolled."

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## 1. Purpose

This document will detail the EMC and FCC, Industry Canada (IC) and European Union R&TTE Test requirements for the DV 6950 EM 7 Imaging System.

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

The product will be tested to confirm DV 6950 EM 7 Imager compliance to IEC 60601-1-2:2007. Necessary testing and submissions for EM 7 compliance to FCC, IC and R&TTE requirements for RFID systems operating at 13.56 MHz. are also required.

Formal EMC and wireless reports will be required.

This document is limited to providing the framework for testing the DRYVIEW 6950 Laser Imaging System and TRIMAX TX65 Laser Imaging System. From an EMC and wireless standpoint the models are identical. The differences are cosmetic (Identification Labels) and in a software forced delay between images for the TRIMAX TX65 making the throughput slightly slower.

### References

9J5681 Product Requirement Spec (PRS) – VIPER

## 3. 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

## 4. Responsibilities

EHS Oakdale is responsible for the EMC and wireless testing. The DV 6950 - Hardware and Software Design Teams are responsible to support the 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. TUV New Brighton Lab, New Brighton, MN will conduct Immunity testing. 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.

## 5. Accessories

The DV 6950 EMXX Imager can be configured with the following accessory.

Cable:		
Catalog Number	Description	Usage
Any	Cat 6 Ethernet Cable	Communication with the Ethernet system.

## 6. Test Space and Power Requirements

### Space and Power for EUT

The DV 6950 EM 07 Imager requires ~ 5 square feet of area.  
 (~ 2 feet X ~2.5 feet).

Circuit amperage capacity for 60 Cycle, 100/120 V must be  $\geq$  8 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.

## 7. 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.

### Heater Warm Up/Cool Down Time

From ambient to Operating Temperature: Approximately 30 minutes

From Operating Temp. to 80 degs F:

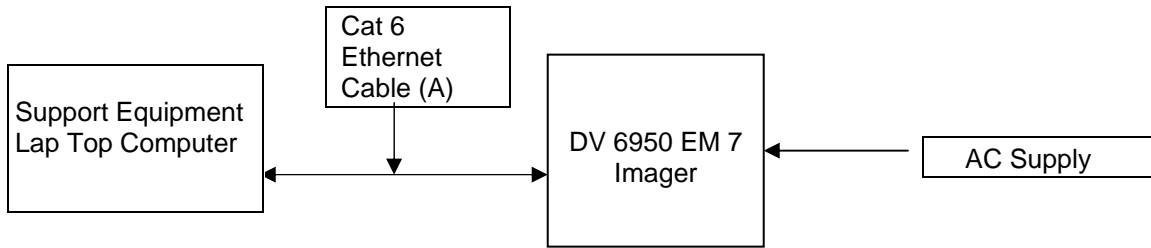
With covers open and Carestream provided external fan: 15 minutes

Alternatively, Carestream can provide second set of heaters that can be installed in place of heaters at operating temperature.

## 8. 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		

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



## 10. EMC and Wireless 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 +A1:2010 Group 1 Class A [EMC Dir.]	ICES-003, Issue 4: 2004	AS/NZS CISPR 11: 2009+A1:2010	CISPR 11: 2009+A1:2010
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		

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

Test Type	Requirement for 100/120 VAC Heaters	Requirement for 230/240 VAC Heaters	Mains Voltage
Radiated Emissions	Either 100/120 VAC or 230/240 Heaters	Either 100/120 VAC or 230/240 Heaters	Determine worst case radiated emissions in prescans. Test only worst case heaters for final radiated data. (100/120 or 230/240 VAC)
Conducted Emissions	Must test 100/120 VAC Heaters	Must test 230/240 VAC Heaters.	Test Heaters at 100, 120 VAC 60 Hz  Test Heaters at 230 VAC
RFTag Emissions	Either 100/120 VAC or 230/240 Heaters	Either 100/120 VAC or 230/240 Heaters	100/120 VAC Or 230/240 VAC
Harmonic Current	Do not test 100/120 VAC Heaters	EN/IEC 61000-3-2	230 VAC, 50 Hz
Voltage Flicker	Do not test 100/120 VAC Heaters	EN/IEC 61000-3-3	230 VAC, 50 Hz
<b>Immunity</b>	100/120 VAC Heaters will be included in indicated tests only.	230/240 VAC Heaters will be included in all immunity tests	
Electro Static Discharge	Do not test 100/120 VAC Heaters	Must test 230/240 VAC Heaters	Test 230 V, 50 Hz
Radiated RF Immunity	Do not test 100/120 VAC Heaters	Must test 230/240 VAC Heaters	230 V, 50 Hz
Electrical Fast Transients	Must test 100/120 VAC Heaters	Must test 230/240 VAC Heaters	100 VAC, 60 Hz 240 VAC, 50 Hz
Surge	Must test 100/120 VAC Heaters	Must test 230/240 VAC Heaters.	100 VAC, 60 Hz 240 VAC, 50 Hz
Conducted Immunity Tests	Do not test 100/120 VAC Heaters	Must test 230/240 VAC Heaters	230 V, 50 Hz
Power Frequency Magnetic Tests	Must test 100/120 VAC Heaters	Must test 230/240 VAC Heaters.	120 VAC, 60 Hz 230 VAC, 50Hz
Voltage Dip Tests	Must test 100/120 VAC Heaters	Must test 230/240 VAC Heaters	100 V, 60 Hz 240 V, 50Hz



Test Type	Requirement for 100/120 VAC Heaters	Requirement for 230/240 VAC Heaters	Mains Voltage
Short Range Device Immunity	Either 100/120 VAC or 230/240 Heaters	Either 100/120 VAC or 230/240 Heaters	100/120 VAC Or 230/240 VAC

## 12. Pass/Fail Criteria

- The DV 6950 EM 7 Imager shall pass the Emissions tests if all emissions are below the standards' limit lines
- The DV 6950 EM 7 Imager shall pass the Immunity tests if there are no Image aberrations visible on the films printed during the tests.

## 13. Supplies

DryView Imaging - Film 7 Cases

## 14. Reports

Two sets of reports and TRS will be produced by TUV and provided electronically to Carestream Health Inc. at [eric.vraa@carestream.com](mailto:eric.vraa@carestream.com)

One set specifying the **DRYVIEW 6950 Laser Imaging System** as the tested system, a second set, identical to the first set, except that it specifies the **TRIMAX TX65** as the tested system.

Reports showing compliance to both EMC and wireless requirements are required.

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

## 15. Wireless Certifications

TUV will file all necessary documents with their FCB to secure an FCC Grant and an IC license for the **DRYVIEW 6950 Laser Imaging System**.