TEST RESULT SUMMARY

FCC Part 15 Subpart C Section 15.207
FCC Part 15 Subpart C Section 15.209
IC RSS-210 Issue 7
IC RSS-Gen Issue 2

MANUFACTURER'S NAME	Carestream Health Incorporated 150 Verona Street Rochester NY 14608
PRODUCT NAME	DRYVIEW 6850 Laser Imaging System
MODEL NUMBER(S) TESTED	DRYVIEW 6850 Laser Imaging System
SERIAL NUMBER(S) TESTED	EM 06
PRODUCT DESCRIPTION	Laser Imager with a product class 1, 13.56 MHz RFID
TEST REPORT NUMBER	WC1000098.2 Rev A
TEST DATE(S)	28 January 2010

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 Issue 7 “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: 18 June 2010

Location: Taylors Falls MN
USA

Robert J Behringer
EMC Test Engineer

Joel T Schneider
Senior EMC Engineer

Not Transferable

EMC TEST REPORT

Test Report No.	**WC1000098.2 Rev A**	Date of issue:	18 June 2010
Product Name	DRYVIEW 6850 Laser Imaging System		
Model(s) Tested	DRYVIEW 6850 Laser Imaging System		
Serial No(s) Tested	EM 06		
Product Description	Laser Imager with 13.56 MHz RFID		
Manufacturer	Carestream Health Incorporated 150 Verona Street Rochester NY 14608		
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
	34	17 February 2010	Initial Release
A	34	18 June 2010	Revisions Include: ▪ Page 1 and corresponding TRS: Correcting the Test Report Number from WC1000089.2 to WC1000098.2. Changing model number from CARESTREAM DRYVIEW 6850 Laser Imager to DRYVIEW 6850 Laser Imaging System and Name of Equipment from DRYVIEW 6850 Laser Imager to DRYVIEW 6850 Laser Imaging System per information received from Carestream. ▪ Appendix B: Replaced with revised document received from Carestream.

DIRECTORY

Contents

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 7 Section 2.6
IC RSS-Gen Issue 2 Sections 4.6.1, 7.2.2

ENVIRONMENTAL CONDITIONS IN THE LAB

	Actual
Temperature:	: 22°C
Atmospheric pressure	: 100kPa
Relative Humidity	: 16%

POWER SUPPLY UTILIZED

Power supply system	: 110 V / 60 Hz

TEST EQUIPMENT
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 2.6

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Testing was performed in accordance with the test procedure of ANSI C63.4 2003, clause 8.2.2
Maximum field strength of the fundamental is -7.5 dBμV/m* or 0.42 μV/m at 30 meters at 13.56 MHz
Minimum margin of compliance of the fundamental is 37 dB
Maximum field strength of spurious emissions is -32.2 dBμV/m* or 0.024 μV/m at 30 meters at 27.12 MHz
Minimum margin of compliance of the spurious emission is 61.7 dB
No unwanted emissions exceed the level of the fundamental
***Extrapolated levels using a 40 dB/decade falloff as indicated by the measurements.

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
■ - 1.0 meters
■ - 3 meters

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE02517	HFH2-Z2	Polarad	Loop Antenna	879285/036	01-Jul-10
WRLE02534	ESHS-20	Rohde & Schwarz	EMI Receiver	837055/003	09-Apr-10

Test limit

Frequency (MHz)	Field strength μV/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

Test Data, dBμV/m

Frequency (MHz)	Detector	Distance 0.3 m	1.0 m	3.0 m	30 m	Limit 30 m	Delta (dB)
13.56	QP	73.9	52.5	nf	-7.5*	29.5	-37
27.12	QP	47.8	nf	nf	-32.2*	29.5	-61.7

* Extrapolated value using 40 dB per decade fall off
nf = noise floor
No other signals detected up to 30 MHz.

Radiated Emissions 30 - 8000 MHz
FCC 15.209(c), FCC 15.209(f), IC RSS-210 2.6

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Testing was performed in accordance with the test procedure of ANSI C63.4 2003, clause 8.3
Maximum spurious emission below 135.6 MHz is 30.45 dBμV/m at 3 meters at 40.68 MHz
Minimum margin of compliance is 9.55 dB
Maximum spurious emission of Incorporated digital device above 135.6 MHz is 45.26 dBμV/m at 3 meters at 150.86 MHz
Minimum margin of compliance is 8.74 dB

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

Test distance
■ - 3 meters
☐ - 10 meters

Test Equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE03203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	04-Jun-10
NBLE02683	85650A	Hewlett-Packard	Quasi-peak Adapter	2430A00495	23-Feb-10
WRLE02673	85662A	Hewlett-Packard	Analyzer Display	2152A03687	19-Mar-10
WRLE03294	8566B	Hewlett-Packard	Spectrum Analyzer	2349A03098	19-Mar-10
WRLE10616	ZHL-1042J	Mini-Circuits	Preamplifier 10 - 3000 MHz	QA0746005	Code B 23-Oct-10
WRLE02075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	18-Jan-11
WRLE10527	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0001	Code B 28-Sep-10

Cal Code B = Calibration verification performed internally.

Test limits
Transmitter

Frequncy (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
30 - 88	100	40	3
88 - 135.6	150	43.5	3

Incorporated digital device

Frequncy (MHz)	Field strength (μV/m)	Field strength (dBμV/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

Test data
See following pages

Measurement summary for limit1: FCC 15.209 to 135.6MHz (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC 15.209 to 135.6MHz
40.68 MHz	43.2 Qp	0.28 / 16.66 / 29.69 / 0.0	30.45	V / 1.00 / 0	-9.55
121.992 MHz	50.2 Qp	0.84 / 9.21 / 29.61 / 0.0	30.65	V / 1.00 / 180	-12.85
67.764 MHz	46.55 Qp	0.5 / 9.66 / 29.66 / 0.0	27.05	V / 1.00 / 0	-12.95
129.037 MHz	48.95 Qp	0.86 / 8.72 / 29.6 / 0.0	28.93	V / 1.00 / 0	-14.57
54.24 MHz	41.8 Qp	0.39 / 12.79 / 29.67 / 0.0	25.31	V / 1.00 / 0	-14.69
81.324 MHz	46.55 Qp	0.61 / 7.43 / 29.65 / 0.0	24.94	V / 1.00 / 0	-15.06
75.409 MHz	46.0 Qp	0.56 / 7.96 / 29.65 / 0.0	24.87	V / 1.00 / 0	-15.13
121.381 MHz	47.4 Qp	0.84 / 9.25 / 29.61 / 0.0	27.89	V / 1.00 / 0	-15.61
135.552 MHz	45.0 Qp	0.88 / 8.37 / 29.59 / 0.0	24.66	V / 1.00 / 0	-18.84
108.432 MHz	43.25 Qp	0.81 / 9.44 / 29.62 / 0.0	23.88	V / 1.00 / 0	-19.62

Measurement summary for limit1: FCC-A <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m
150.86 MHz	64.63 Qp	0.92 / 9.29 / 29.58 / 0.0	45.26	V / 1.00 / 255	-8.74
163.196 MHz	62.76 Qp	0.95 / 8.98 / 29.56 / 0.0	43.13	V / 1.00 / 255	-10.87
176.286 MHz	60.07 Qp	0.98 / 9.73 / 29.55 / 0.0	41.23	V / 1.00 / 0	-12.77
203.4 MHz	55.37 Qp	1.05 / 10.55 / 29.52 / 0.0	37.45	V / 1.00 / 0	-16.55
244.08 MHz	54.96 Qp	1.16 / 11.88 / 29.58 / 0.0	38.42	V / 1.00 / 355	-18.48
189.84 MHz	53.1 Qp	1.02 / 10.51 / 29.54 / 0.0	35.09	V / 1.00 / 0	-18.91
40.68 MHz	43.2 Qp	0.28 / 16.66 / 29.69 / 0.0	30.45	V / 1.00 / 0	-19.05
162.72 MHz	53.9 Qp	0.95 / 8.96 / 29.56 / 0.0	34.24	V / 1.00 / 0	-19.76
149.112 MHz	51.35 Qp	0.91 / 9.38 / 29.58 / 0.0	32.07	V / 1.00 / 0	-21.93
67.764 MHz	46.55 Qp	0.5 / 9.66 / 29.66 / 0.0	27.05	V / 1.00 / 0	-22.45
121.992 MHz	50.2 Qp	0.84 / 9.21 / 29.61 / 0.0	30.65	V / 1.00 / 180	-23.35
276.592 MHz	48.55 Qp	1.22 / 12.59 / 29.47 / 0.0	32.89	V / 1.00 / 0	-24.01
54.24 MHz	41.8 Qp	0.39 / 12.79 / 29.67 / 0.0	25.31	V / 1.00 / 0	-24.19
251.428 MHz	48.8 Qp	1.18 / 12.24 / 29.56 / 0.0	32.66	V / 1.00 / 0	-24.24
81.324 MHz	46.55 Qp	0.61 / 7.43 / 29.65 / 0.0	24.94	V / 1.00 / 0	-24.56
75.409 MHz	46.0 Qp	0.56 / 7.96 / 29.65 / 0.0	24.87	V / 1.00 / 0	-24.63
230.52 MHz	49.35 Qp	1.12 / 11.23 / 29.54 / 0.0	32.16	V / 1.00 / 0	-24.74
980.583 MHz	38.3 Qp	2.92 / 23.08 / 29.16 / 0.0	35.14	V / 1.00 / 0	-24.86
129.037 MHz	48.95 Qp	0.86 / 8.72 / 29.6 / 0.0	28.93	V / 1.00 / 0	-25.07
121.381 MHz	47.4 Qp	0.84 / 9.25 / 29.61 / 0.0	27.89	V / 1.00 / 0	-26.11
136.7 MHz	47.35 Qp	0.88 / 8.52 / 29.59 / 0.0	27.16	V / 1.00 / 0	-26.84
216.96 MHz	47.65 Qp	1.09 / 10.8 / 29.51 / 0.0	30.03	V / 1.00 / 0	-26.87
447.48 MHz	40.85 Qp	1.42 / 16.77 / 29.3 / 0.0	29.73	V / 1.00 / 0	-27.17
298.32 MHz	44.55 Qp	1.24 / 13.28 / 29.41 / 0.0	29.67	V / 1.00 / 0	-27.23
402.294 MHz	41.15 Qp	1.36 / 16.05 / 29.39 / 0.0	29.17	H / 3.00 / 0	-27.73
501.72 MHz	39.05 Qp	1.48 / 17.91 / 29.38 / 0.0	29.05	V / 1.00 / 0	-27.85
352.56 MHz	41.55 Qp	1.31 / 15.13 / 29.45 / 0.0	28.54	V / 1.00 / 0	-28.36
515.28 MHz	38.05 Qp	1.49 / 18.08 / 29.4 / 0.0	28.22	V / 1.00 / 0	-28.68
135.552 MHz	45.0 Qp	0.88 / 8.37 / 29.59 / 0.0	24.66	V / 1.00 / 0	-29.34
257.64 MHz	43.2 Qp	1.19 / 12.54 / 29.54 / 0.0	27.4	V / 1.00 / 0	-29.5
284.76 MHz	42.6 Qp	1.23 / 12.7 / 29.44 / 0.0	27.09	V / 1.00 / 0	-29.81
108.432 MHz	43.25 Qp	0.81 / 9.44 / 29.62 / 0.0	23.88	V / 1.00 / 0	-30.12
271.2 MHz	42.25 Qp	1.21 / 12.73 / 29.49 / 0.0	26.71	V / 1.00 / 0	-30.19
474.6 MHz	37.25 Qp	1.45 / 17.12 / 29.34 / 0.0	26.48	V / 1.00 / 0	-30.42
339.0 MHz	39.55 Qp	1.29 / 14.63 / 29.5 / 0.0	25.97	V / 1.00 / 0	-30.93
583.08 MHz	33.2 Qp	1.62 / 19.09 / 29.46 / 0.0	24.45	V / 1.00 / 0	-32.45
433.92 MHz	34.95 Qp	1.4 / 16.63 / 29.39 / 0.0	23.59	V / 1.00 / 0	-33.31
311.88 MHz	37.6 Qp	1.26 / 13.85 / 29.44 / 0.0	23.28	V / 1.00 / 0	-33.62
406.8 MHz	34.9 Qp	1.37 / 16.17 / 29.42 / 0.0	23.02	V / 1.00 / 0	-33.88

Measurement summary for limit1: FCC-A <1GHz 3m (Qp)					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m
366.12 MHz	35.05 Qp	1.32 / 15.6 / 29.39 / 0.0	22.58	V / 1.00 / 0	-34.32
488.16 MHz	32.9 Qp	1.46 / 17.51 / 29.36 / 0.0	22.52	V / 1.00 / 0	-34.38
623.76 MHz	29.8 Qp	1.69 / 20.12 / 29.35 / 0.0	22.27	V / 1.00 / 0	-34.63
461.04 MHz	33.35 Qp	1.43 / 16.73 / 29.32 / 0.0	22.19	V / 1.00 / 0	-34.71
325.44 MHz	36.25 Qp	1.28 / 14.12 / 29.47 / 0.0	22.17	V / 1.00 / 0	-34.73
555.96 MHz	31.55 Qp	1.57 / 18.35 / 29.32 / 0.0	22.15	V / 1.00 / 0	-34.75
542.4 MHz	31.45 Qp	1.54 / 18.42 / 29.32 / 0.0	22.09	V / 1.00 / 0	-34.81
610.2 MHz	29.85 Qp	1.67 / 19.81 / 29.41 / 0.0	21.92	V / 1.00 / 0	-34.98
420.36 MHz	33.25 Qp	1.39 / 16.71 / 29.48 / 0.0	21.87	V / 1.00 / 0	-35.03
393.24 MHz	33.65 Qp	1.35 / 15.89 / 29.32 / 0.0	21.57	V / 1.00 / 0	-35.33
705.12 MHz	28.75 Qp	1.85 / 20.3 / 29.35 / 0.0	21.55	V / 1.00 / 0	-35.35
528.84 MHz	30.65 Qp	1.52 / 18.32 / 29.36 / 0.0	21.13	V / 1.00 / 0	-35.77
379.68 MHz	32.9 Qp	1.34 / 15.67 / 29.34 / 0.0	20.57	V / 1.00 / 0	-36.33
637.32 MHz	28.35 Qp	1.72 / 19.8 / 29.31 / 0.0	20.56	V / 1.00 / 0	-36.34
569.52 MHz	29.2 Qp	1.59 / 18.63 / 29.39 / 0.0	20.03	V / 1.00 / 0	-36.87

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 = 2.825 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

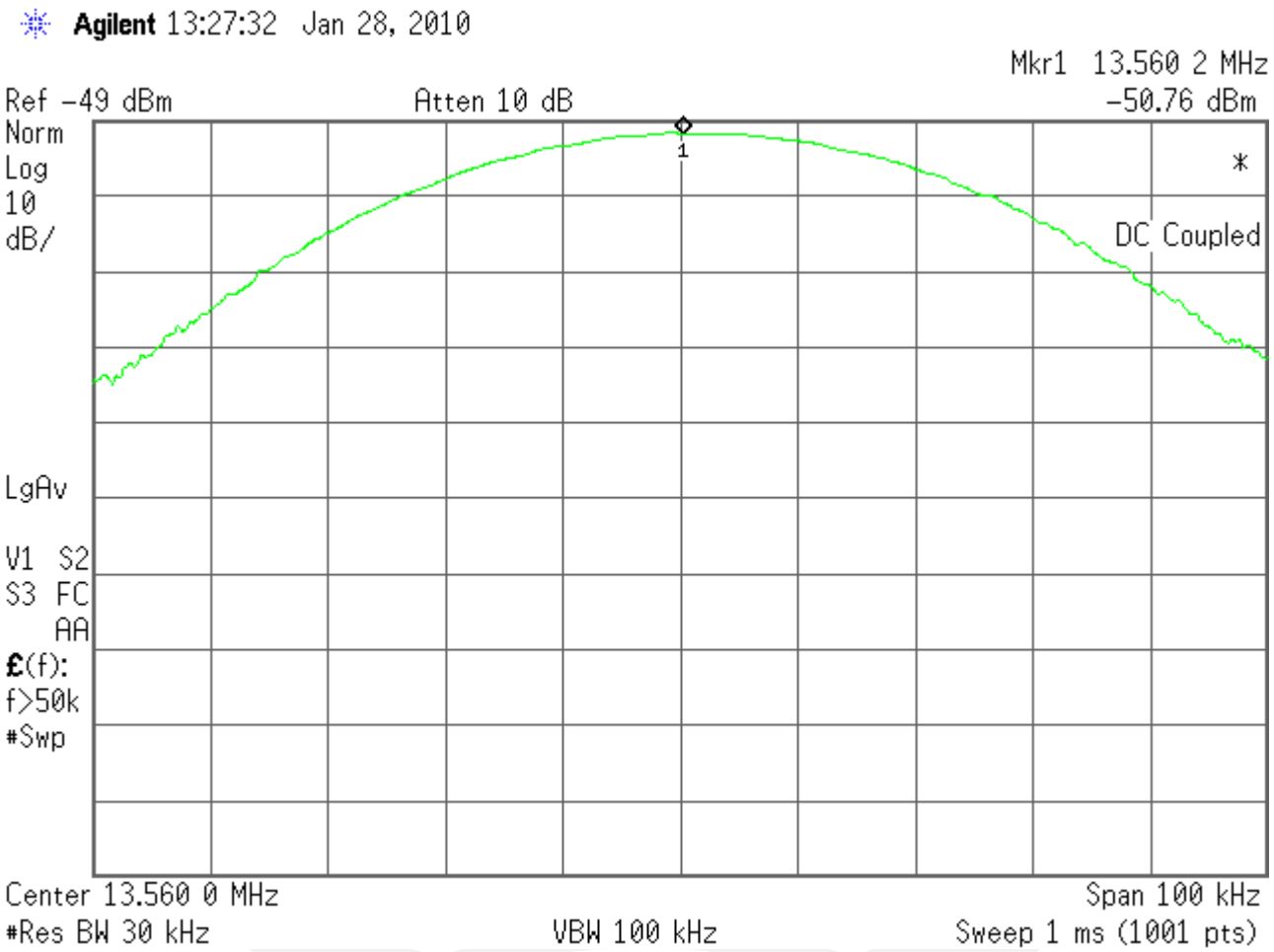
TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
WRLE02517	HFH2-Z2	Polorad	Loop Antenna	879285/036	01-Jul-10

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

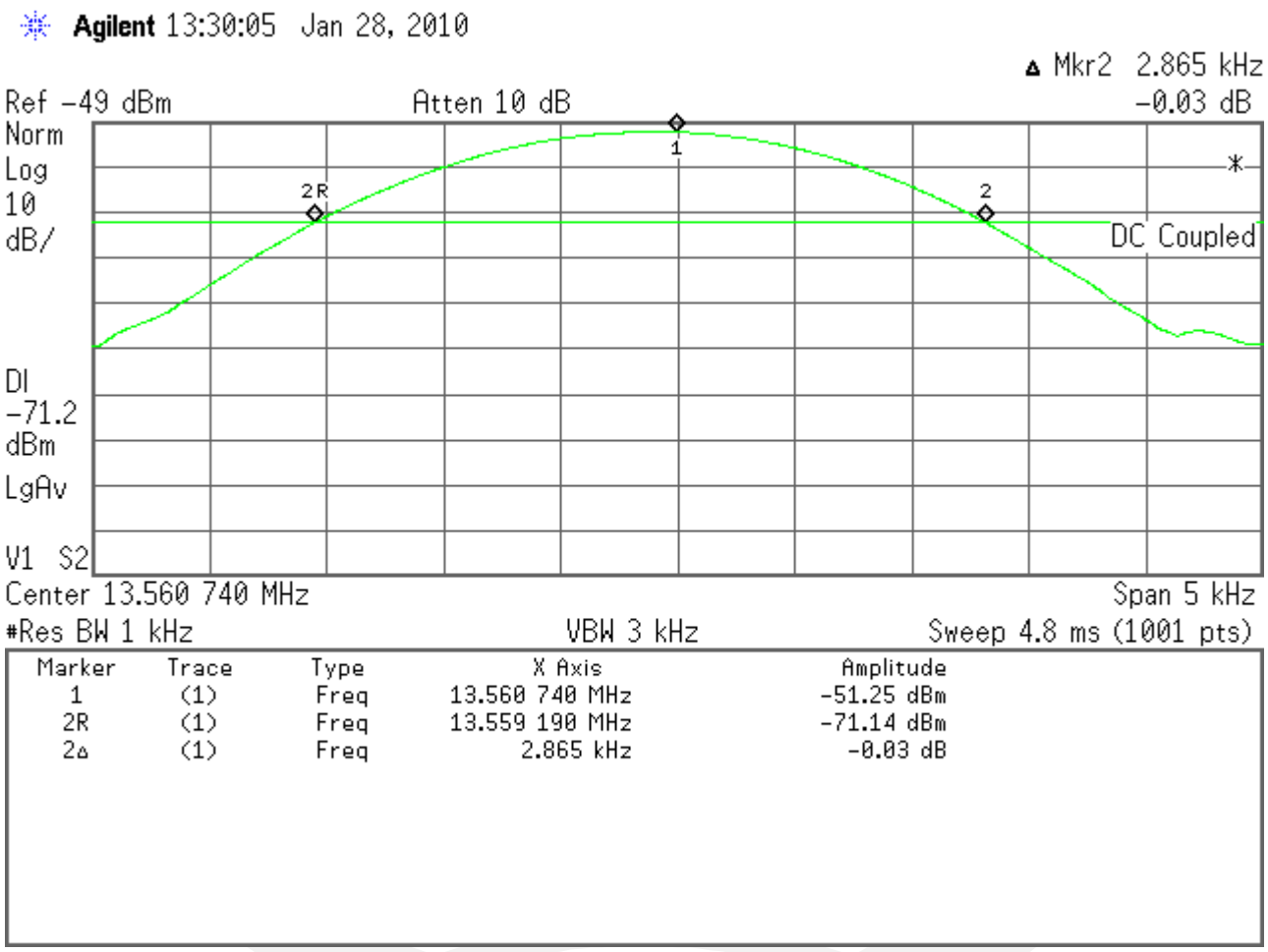
Test limit
No limit specified

Test data
See following pages

99% Occupied bandwidth
1 of 2



99% Occupied bandwidth
2 of 2



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	13.560 740 MHz	-51.25 dBm
2R	(1)	Freq	13.559 190 MHz	-71.14 dBm
2Δ	(1)	Freq	2.865 kHz	-0.03 dB

Conducted Emissions - AC Power Lines
FCC 15.207(a), IC RSS-Gen 7.2.2

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 9 dB at 10.7 MHz – quasi-peak
Minimum margin of compliance is 2 dB at 13.56 MHz – average

The signal at 10.7 MHz is 9 dB below the FCC Section 15.107 Class A limit – average. This signal is from the incorporated digital device, not the 13.56 MHz transmitter.

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
WRLE02416	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1437	Code B 14-Jan-10
WRLE02534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	09-Apr-10

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

Test limits, dBµV

Frequncy (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 data
See following pages

Measurement summary for limit1: FCC 15.207 .15-30MHz QP (Qp)					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 FCC 15.207 .15-30MHz QP
10.77 MHz	49.39 Qp	0.79 / 0.21 / 0.0 / 0.0	50.39	L1	-9.61
13.56 MHz	48.13 Qp	0.9 / 0.24 / 0.0 / 0.0	49.27	N	-10.73
12.52 MHz	47.29 Qp	0.86 / 0.23 / 0.0 / 0.0	48.38	N	-11.62
8.735 MHz	45.53 Qp	0.72 / 0.1 / 0.0 / 0.0	46.34	N	-13.66
9.32 MHz	42.05 Qp	0.74 / 0.15 / 0.0 / 0.0	42.93	L1	-17.07
455.0 kHz	31.85 Qp	0.17 / 0.1 / 0.0 / 0.0	32.12	N	-24.66
4.205 MHz	29.75 Qp	0.5 / 0.0 / 0.0 / 0.0	30.25	N	-25.75
255.0 kHz	35.21 Qp	0.14 / 0.1 / 0.0 / 0.0	35.45	L1	-26.14
2.8 MHz	29.15 Qp	0.4 / 0.0 / 0.0 / 0.0	29.55	L1	-26.45
830.0 kHz	28.95 Qp	0.22 / 0.1 / 0.0 / 0.0	29.27	L1	-26.73
17.275 MHz	31.55 Qp	1.02 / 0.27 / 0.0 / 0.0	32.84	N	-27.16
205.0 kHz	35.39 Qp	0.13 / 0.15 / 0.0 / 0.0	35.67	N	-27.73
1.005 MHz	26.93 Qp	0.24 / 0.07 / 0.0 / 0.0	27.24	L1	-28.76
1.855 MHz	25.39 Qp	0.33 / 0.0 / 0.0 / 0.0	25.72	N	-30.28
390.0 kHz	27.51 Qp	0.16 / 0.1 / 0.0 / 0.0	27.77	L1	-30.29
22.355 MHz	26.55 Qp	1.14 / 0.49 / 0.0 / 0.0	28.18	N	-31.82
150.0 kHz	32.67 Qp	0.12 / 0.3 / 0.0 / 0.0	33.09	N	-32.91
27.36 MHz	21.55 Qp	1.26 / 0.89 / 0.0 / 0.0	23.7	N	-36.3
175.0 kHz	25.43 Qp	0.13 / 0.23 / 0.0 / 0.0	25.79	L1	-38.93
330.0 kHz	18.73 Qp	0.15 / 0.1 / 0.0 / 0.0	18.98	N	-40.47

Measurement summary for limit2: FCC 15.207 .15-30MHz Avg (Av)					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 FCC 15.207 .15-30MHz Avg
10.77 MHz	49.66 Av	0.79 / 0.21 / 0.0 / 0.0	50.66	L1	0.66
13.56 MHz	46.59 Av	0.9 / 0.24 / 0.0 / 0.0	47.73	N	-2.27
12.52 MHz	44.01 Av	0.86 / 0.23 / 0.0 / 0.0	45.1	L1	-4.9
8.735 MHz	43.41 Av	0.72 / 0.1 / 0.0 / 0.0	44.22	N	-5.78
9.32 MHz	35.32 Av	0.74 / 0.15 / 0.0 / 0.0	36.2	L1	-13.8
205.0 kHz	34.0 Av	0.13 / 0.15 / 0.0 / 0.0	34.28	L1	-19.12
455.0 kHz	22.93 Av	0.17 / 0.1 / 0.0 / 0.0	23.2	N	-23.58
4.205 MHz	19.56 Av	0.5 / 0.0 / 0.0 / 0.0	20.06	N	-25.94
830.0 kHz	19.25 Av	0.22 / 0.1 / 0.0 / 0.0	19.57	L1	-26.43
17.275 MHz	21.13 Av	1.02 / 0.27 / 0.0 / 0.0	22.42	N	-27.58
22.355 MHz	17.83 Av	1.14 / 0.49 / 0.0 / 0.0	19.46	N	-30.54
2.8 MHz	14.46 Av	0.4 / 0.0 / 0.0 / 0.0	14.86	L1	-31.14
1.005 MHz	14.39 Av	0.24 / 0.07 / 0.0 / 0.0	14.7	N	-31.3
1.855 MHz	14.05 Av	0.33 / 0.0 / 0.0 / 0.0	14.38	N	-31.62
27.36 MHz	15.23 Av	1.26 / 0.89 / 0.0 / 0.0	17.38	N	-32.62
255.0 kHz	15.94 Av	0.14 / 0.1 / 0.0 / 0.0	16.18	L1	-35.41
390.0 kHz	11.38 Av	0.16 / 0.1 / 0.0 / 0.0	11.64	L1	-36.42
175.0 kHz	14.6 Av	0.13 / 0.23 / 0.0 / 0.0	14.96	N	-39.76
330.0 kHz	7.37 Av	0.15 / 0.1 / 0.0 / 0.0	7.62	L1	-41.83
150.0 kHz	9.92 Av	0.12 / 0.3 / 0.0 / 0.0	10.34	N	-45.66

Measurement summary for limit2: FCC 15.107 Class A.15-30MHz Avg					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 FCC 15.207 .15-30MHz Avg
10.77 MHz	49.66 Av	0.79 / 0.21 / 0.0 / 0.0	50.66	L1	-9.34

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Large Test Site

Notes:

1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.

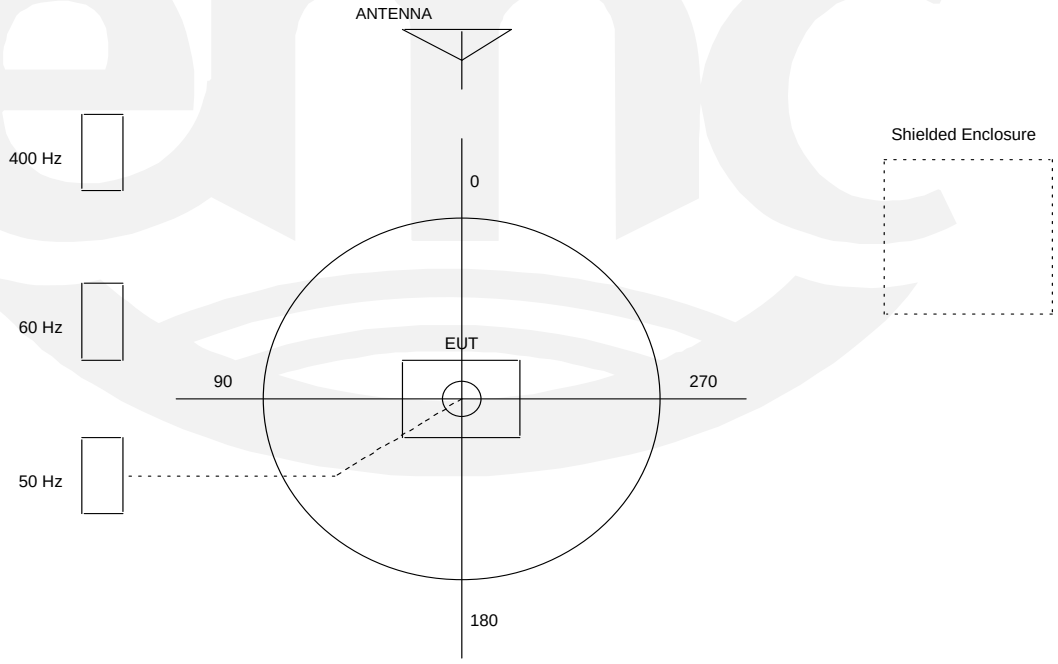
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.

3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.

4. The circle is a 6.7 meter diameter turntable.

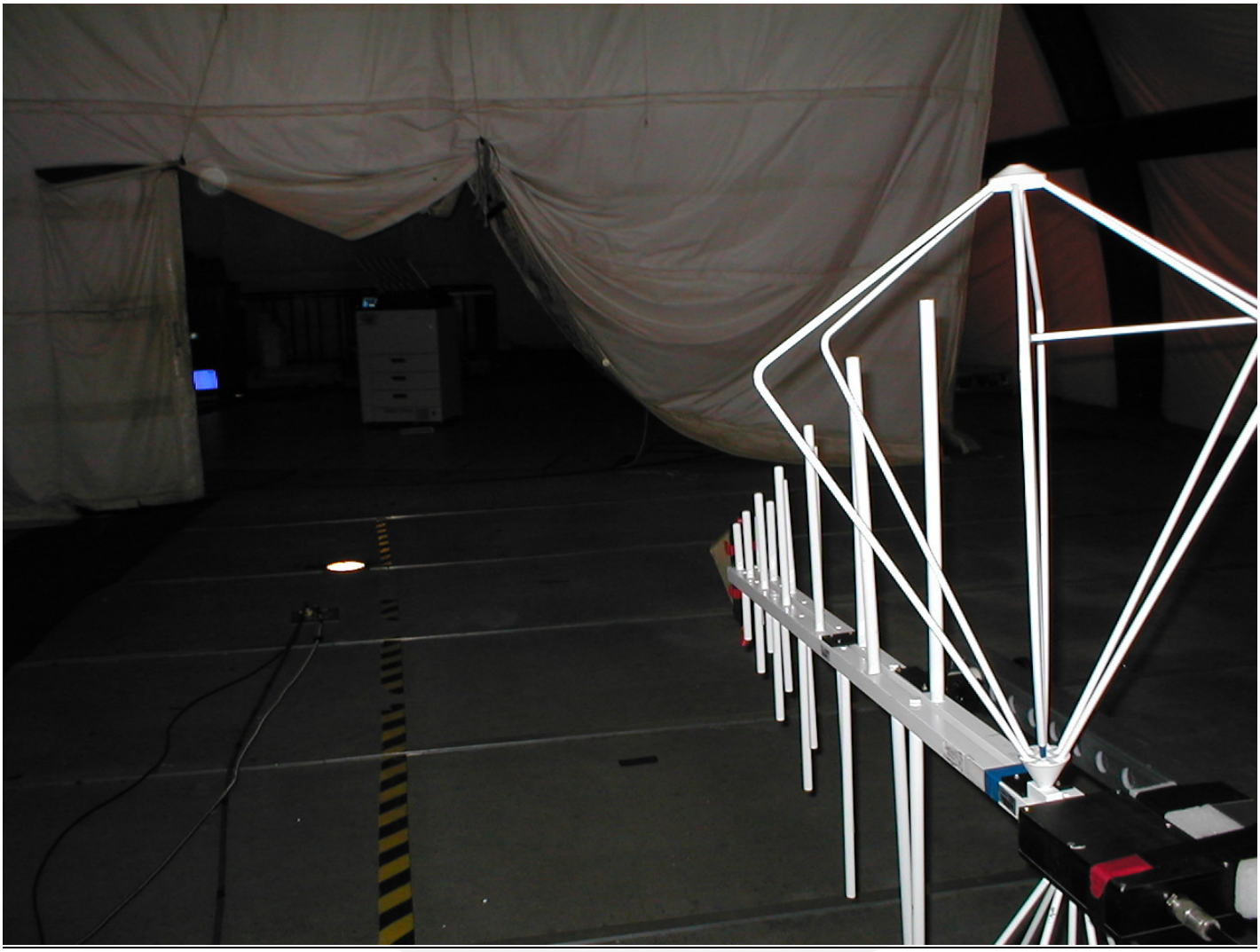
5. A ground plane is in the plane of this sheet.

6. The test sample is shown in the azimuthal position representing zero degrees.



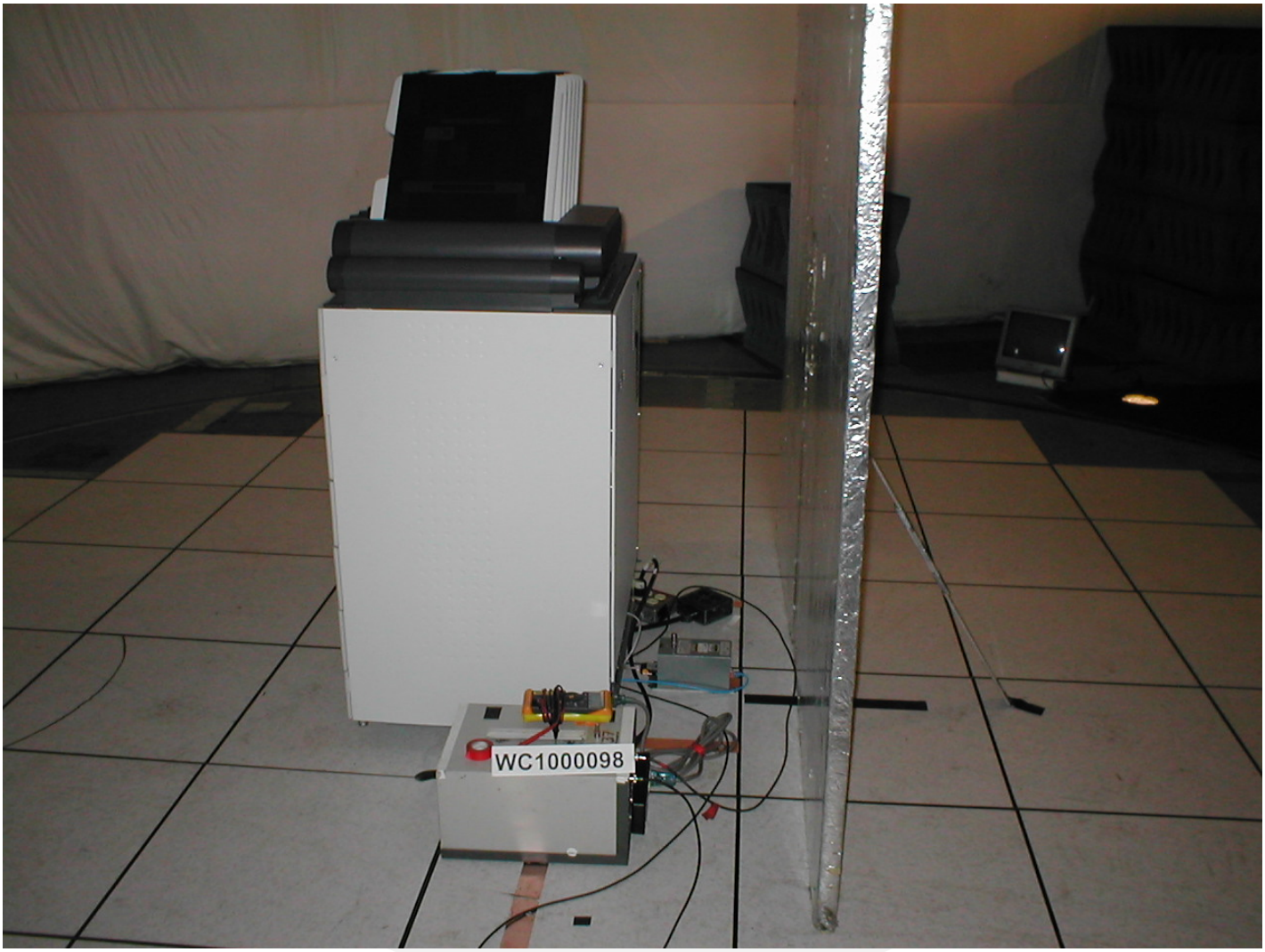
Test-setup photo(s):
General Field Strength Limits 0.009 – 30 MHz

Test-setup photo(s):
Radiated Emissions 30 - 8000 MHz



Test-setup photo(s):
Radiated Emissions 30 - 8000 MHz

Test-setup photo(s):
Conducted Emissions, AC lines, 150 kHz - 30 MHz



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: 27 January 2010
Condition of EUT: Normal
Testing Start Date: 28 January 2010
Testing End Date: 28 January 2010

TÜV SÜD AMERICA INC

Tested by:
Robert J Behringer
EMC Test Engineer

Approved by:
Joel T Schneider
Senior EMC Engineer

Appendix A

Carestream Health Incorporated EMC Test Plan
Document Part Number #8F6667

EMC Test Plan

CARESTREAM DRYVIEW 6850 Laser Imager

Document # 8F6667

Author/Approver:	**Robert Pettitt**	**EHS Manager**
Additional Approvers:	**Steve Hair**	**TPM**
	Mike Kaszynski	**Design Engineering**
	Mark Giebler	**SW Design Engineering**
Reviewer:	**Tom Kraemer**	**Quality Assurance**
	John Sjolander	**Quality Assurance**
Affected Departments:	**Design, Agency, Quality Assurance**	

TABLE OF CONTENTS

1. Purpose

This document will detail the EMC Test requirements for the CARESTREAM DRYVIEW 6850 Laser Imager [official product name] called DV6850 in the rest of this document. The product will be tested for Worldwide EMC compliance.

This document will define the following:

- Define who is responsible for what under this plan.
- List the configurations which are required to be tested.
- Summarize the tests that will be executed.
- List the support equipment required to execute the testing.
- List test programs and software needed to execute the tests.

2. Scope

This document is limited to testing the DV6850 for WW EMC Compliance. The specific Imager being tested is DV6850, Serial Number EM 06. This Imager is KODAK DRYVIEW 6800 Laser Imager S/N 68001401, modified with production level components and software to current DV6850 configuration.

3. References

8F6377 Product Requirement Spec (PRS) – DV6850, Rev.1.0

PRS Sections 12.1.2.1 through 12.1.2.5 and PRS2490 will be met by the Test Reports generated as a result of this testing.

4. Acronyms

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

5. Responsibilities

EHS Oakdale is responsible for the EMC Testing.

The DV6850 - Hardware and Software Design Teams are responsible to support the EMC testing.

The testing will be executed by a 3rd party test house, TUV Wild River Lab, which is qualified to certify the equipment as compliant. The order of testing will be which ever order is most advantageous to TUV with the following exception; ESD testing will be performed last.

6. Theory of Operation DryView™ Laser Imager 6850 RF Tag Subsystem

The RF Tag works at a frequency of 13.56 MHz. It comprises a reader, antenna and transponder (for example: smart label) and is used for wireless identification.

The system works according the “reader talks first” principle, which means that the transponder keeps quiet until reader sends a request to it. The reader can rapidly and simultaneously identify numerous transponders in the antenna’s field. It can write data to and read from the transponders: either in addressed mode by using the factory programmed read only number, or in general mode to all transponders in its field. The read/write capability of the transponder allows users to update the data stored in the transponders memory anywhere along its movement.

The RF Tag provides the receive/transmit functions required to communicate with variety of transponders that operate in the 13.56 MHz ISM band. A transmit encoder converts the transmitted data stream into the selected protocol; Protocol section is done in the header of the transmitted data string.

7. System Components

Catalog Number	Part Number
Local Panel	7F2150
Power Module	2G6714
Power Module Secondary Board	2G6626
Back Panel Electronics with EMI Gasket Laird Technologies 4788AB51K	8F2314
Air Intake, Main Panel Front side	8F2426
Gasket Laird Technologies 4788AB51K	?????
Dicom Raster Engine	2G7455
SPG RS44BXLD-A11, DC Motor 24VDC (Rollers Pickup)	2G5516
SPG DGO-5424-EKA, DC Motor 24VDC (Drive Pickup Motor)	2G5518
Gast 8R1110-201-1048, DC Pump 24VDC (Vacuum Pickup Pump)	5F7220
Dynamco D1X545, DC Motor 24VDC (Pickup Relief Valve)	6H7727
SPG RS44BXLE-A09, DC Motor 24VDC (Rollback)	2G5515
SPG RS44BXLE-A10, DC Motor 24VDC (Separation, Rollers, Film Registration)	2G5517
Shimpo VGMR-64-86-D-L06	2G6581
NMB 23KM-K040-08V Stepper Motor 24VDC (Registration, Pickup [1 for each drawer], Temp Cooling, Drum Drive, Turnaround)	2G1630
Moons 17HD4014-01N rev B Stepper Motor 24VDC (Film Centering)	7F2203
Hayden 26841-05-046 Stepper Motor 5VDC (Linear Optics)	2G6566
Moons 17HD4014-02N rev D Stepper Motor 24VDC (4) (Sorter)	7F2403
Moons 17HD4001-03N rev A Stepper Motor 24 VDC (Latch)	7F2440

8. Accessories

The DV6850 can be configured with the following accessory.

Cable:

Catalog Number	Description	Usage
N/A	Cat 6 Ethernet Cable	Communication with the Ethernet system.

9. Test Space and Power Requirements

Space and Power for EUT

The DV6850 requires 9 square feet of area.
(3 feet X 3 feet).

Voltage and Frequency are found in Section

Circuit amperage capacity for 100 V /120 V must be >= 20 Amps.
Circuit amperage capacity for 230 V / 240V must be >= 8 Amps.

An additional 25 square feet are required for film.

Space and Power for Test Support Equipment

The test support equipment, used for operating the EUT, requires space and power dedicated outside the test chamber.

The test support equipment and operator 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 120 Volt 15 Amp outlet. This must be within 6 feet of the test support equipment.

10. Test Set Up and Change-Over Times

Initial Equipment Set Up Time

The equipment can be set up for testing in approximately 1/2 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 testing the EUT for proper operation before any EMC testing commences.

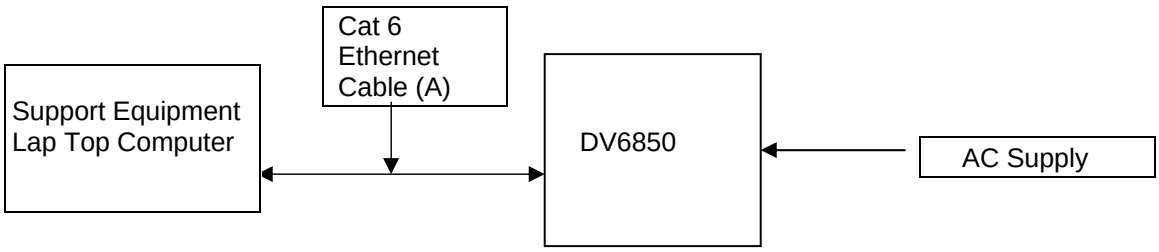
Configuration Change-Over Time

The amount of time for changing the configurations of the EUT and the support equipment should be less than 15 minutes.

11. Test Support Equipment

Description	***Manufacturer***	***Model / Serial #***	***FCC ID #***
Lap Top Computer	Dell		
Cat 6 Ethernet Cable - 30 Ft			

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



13. Clock, Oscillator and Data Rate frequencies

Description	Assembly	Part Number	Crystal or Oscillator	Frequency
Datapath Board	2G6232	ECERA FX 2400026	Crystal	24.000 MHz
		SG-636PCE 26.0000MC0	Oscillator	26.000 MHz
		None	PLL	96.000 MHz
		None	PLL	170.444 MHz
		None	PLL	17.0444 MHz
		None	PLL	48.000 MHz
RF Antenna Board	8F0618	None		
Local Panel Board	8F0916	ECS-SR1-6.00-B-TR	Crystal	6.00 MHz
Film Supply Board	8F0992	CS10-13.560MABJ-UT	Crystal	13.56 MHz
		CS10-16.000MABJ-UT	Crystal	16.00 MHz
Beam Power Monitor Board	2G3054			
Shimpo Motor	2G6581	Included in Motor	Crystal	10.614581 MHz
Densitometer Control Board	8F1420	SG-636PCE 16.0000MC0:ROHS	Oscillator	16.00 MHz
Densitometer Light Source Board	8F1594	None		
Power Distribution Board	2G6363	CS10-15.360MABJ-UT	Crystal	15.36 MHz
Film Registration Board	8F1611	CS10-13.560MABJ-UT	Crystal	13.56 MHz
Processor Control Board	2G9659	CS10-15.360MABJ-UT	Crystal	15.36 MHz
Sorter Control Board	8F2133	CS10-15.360MABJ-UT	Crystal	15.36 MHz
Laser Driver Board	8F4002	EL6203	Oscillator	200-600 MHz adjustable
Dicom Raster Engine	2G7455	The highest frequency referenced for FCC testing is 1.6 GHz .	Oscillator Oscillator Oscillator Oscillator Oscillator Oscillator Oscillator Oscillator Oscillator Oscillator	14.31818 MHz – Super I/O 32.768 KHz - RTC 25 MHz – LAN (RTL8111C) 100 MHz – 945 GSE Chipset 96 MHz – 945 GSE Chipset 33 MHz – 945 GSE Chipset 48 MHz - USB I/F 1.6 GHz - CPU core 533 MHz – DDR3 Memory I/F 166 MHz – CPU I/F

14. EMC Requirements Table

	USA	EU	Canada	AS/NZS	ROW
EMISSIONS		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 55011:2007 +A2:2007 Group 1 Class A [EMC Dir.]	ICES-003, Issue 4: 2004	AS/NZS CISPR 11:2003 +A1:2004, +A2:2006	CISPR 11:2003 / A2:2006
Harmonic Current	*	EN 61000-3-2:2006 [EMC Dir.]		AS/NZS 61000.3.2:2007 (Modified)	IEC 61000-3-2:2005
Voltage Flicker	*	EN 61000-3-3 :1995+A1:2001+ A2:2005 [EMC Dir.]			IEC 61000-3-3:1994/A2:2005
IMMUNITY		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 V1.3.1(2006-04) [RTTE Dir.]	IC RSS-210 Issue 7 IC RSS-Gen Issue 2		

- The United States currently does not have any Immunity requirements; there are discussions relating to Harmonization underway and acceptance of (i.e. they may be required to use) IEC 50081-1, IEC 50082-1 and the Basic EMC Standards that support them.

Immunity testing is not required but may be needed to support a product's Risk Analysis.

15. 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
Immunity	EN/IEC 60601-1-2	**See Tests Below.**
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

16. Pass/Fail Criteria

- The DV6850 shall pass the Radiated Emissions tests if all emissions are below the standard's limit line. Attempts will be made to achieve 4 dB **below** the limit line [–4dB guard band].

- The DV6850 shall pass the ESD immunity test:

  1.) If the DV6850 reprints, without artifact, an image which had previously been printed with an artifact, due to a parity error or pixel transfer count error, which may have been induced by the ESD discharge.

  2.) If the DV6850 returns to normal operation, within 3 minutes from any temporary condition, caused by the ESD discharge."

- The DV6850 shall pass the radiated and conducted immunity tests provided the images produced during these tests are diagnostically acceptable. This judgment will be made by Carestream Health employees who are familiar with potential imaging artifacts caused by a variety of other sources, not only those potentially induced by the impinging radiated field.

- During radiated and conducted immunity tests if the system becomes inoperable, that will be considered a failure.

17. Supplies

DryView Imaging Film

18. Addendum

After the EMC testing and was complete and the test reports generated, the name of the product was changed from

Carestream DryView 6850 Laser Imager

to

DRYVIEW 6850 Laser Imaging System

This revision requires that the test reports be regenerated, with the revised product name; so that all "proof" documents have the same product name for country submittals.

Appendix B

Measurement Protocol

MEASUREMENT PROTOCOL

GENERAL INFORMATION

Test Methodology

Emissions testing is performed according to the procedures in ANSI C63.4-2003 & the article “The Measurement of Occupied Bandwidth” by Industry Canada’s certification bureau

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 ±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 ±4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

Conducted Emissions

The final level, in dBμV, equals the EMI receiver level plus the cable loss and LISN factor.

Radiated Emissions

The final level, in dBμV/m, equals the reading from the spectrum analyzer (Level dBμV), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Attachment A.

Example:

FREQ (MHz)	LEVEL (dBuV)		CABLE/ANT/PREAMP (dB)	(dB/m)	(dB)	FINAL (dBuV/m)		POL/HGT/AZ (m)	(deg)	DELTA1
60.80	42.5Qp	+	1.2	+ 10.9	- 25.5 =	29.1		V 1.0	0.0	-10.9

Test Equipment

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

DETAILS OF TEST PROCEDURES

Conducted Emissions

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 and quasi-peak 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.

Radiated Emissions

Radiated emissions in the frequency range of 10kHz to 30 MHz, including the fundamental transmit signal, are measured using a receiver capable of quasi-peak and average measurements and a magnetic loop antenna. The transmitter is 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. 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 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Floor standing equipment is placed directly on the turntable/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 are rotated 360 degrees.