

TEST RESULT SUMMARY

FCC PART 15 SUBPART C

Section 15.209

FCC PART 15 SUBPART C

Section 15.207 Conducted Emission Requirements

MANUFACTURER'S NAME (CHINA)	Kodak Electronic Product Co. Ltd. (KEPS)
MANUFACTURER'S ADDRESS	1510 Chuanqiao Road Jinqiao Export Processing Zone Pudong, 201206 Shanghai, China
MANUFACTURER'S NAME (USA)	Eastman Kodak - Health Imaging Division
MANUFACTURER'S ADDRESS	3400 Granada Avenue Oakdale, MN 55128 USA
NAME OF EQUIPMENT	Eastman Kodak DryView Model 8150 Medical Laser Imager
MODEL NUMBER	8150
TEST REPORT NUMBER	WC401796.3
TEST DATE	14 April 2004

According to testing performed at TÜV Product Service Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in FCC Part 15 Subpart C, Sections 15.207 and 15.209.

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.

TÜV Product Service Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the requirements of FCC Part 15 Subpart C, Sections 15.207 and 15.209.

Date: 26 October 2004



Location: Taylors Falls MN
USA

J. C. Sausen
Tested By

T. K. Swanson
Reviewed By

EMC EMISSION - TEST REPORT

Test Report File No. : **WC401796.3** Date of issue: 26 October 2004

Model / Serial No. : 8150 / EM0011

Product Type : Eastman Kodak DryView - Medical Laser Imager

Manufacturer (China) : Kodak Electronic Product Co. Ltd. (KEPS)

Address : 1510 Chuanqiao Road

: Jinqiao Export Processing Zone

: Pudong, 201206 Shanghai, China

Manufacturer (USA) : Eastman Kodak - Health Imaging Division

Address : 3400 Granada Avenue

: Oakdale, MN 55128 USA

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

Test Project Number :
Reference(s) : **WC401796.3**

Total pages including
Appendices : 29

TÜV Product Service Inc is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV Product Service 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 Product Service Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service Inc issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP or any agency of the US government.

TÜV Product Service Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- | | | |
|--|---|------------------------------------|
| <input type="checkbox"/> - EN 50081-1 / 1991 | <input type="checkbox"/> - Group 1 | <input type="checkbox"/> - Group 2 |
| <input type="checkbox"/> - EN 55011 / 1991 | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55013 / 1990 | <input type="checkbox"/> - Household appliances and similar | |
| <input type="checkbox"/> - EN 55014 / 1987 | <input type="checkbox"/> - Portable tools | |
| | <input type="checkbox"/> - Semiconductor devices | |
| <input type="checkbox"/> - EN 55014 / A2:1990 | <input type="checkbox"/> - Household appliances and similar | |
| <input type="checkbox"/> - EN 55014 / 1993 | <input type="checkbox"/> - Portable tools | |
| | <input type="checkbox"/> - Semiconductor devices | |
| <input type="checkbox"/> - EN 55015 / 1987 | | |
| <input type="checkbox"/> - EN 55015 / A1:1990 | | |
| <input type="checkbox"/> - EN 55015 / 1993 | | |
| <input type="checkbox"/> - EN 55022 / 1987 | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55022 / 1994 | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - BS | | |
| <input type="checkbox"/> - VCCI | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input checked="" type="checkbox"/> - FCC Part 15 Subpart C Section 15.209 | | |
| <input checked="" type="checkbox"/> - FCC Part 15 Subpart C Section 15.207 Conducted Emission Requirements | | |
| <input type="checkbox"/> - FCC Part 15 Subpart B | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - CISPR 11 (1990) | <input type="checkbox"/> - Group 1 | <input type="checkbox"/> - Group 2 |
| | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - CISPR 22 (1993) | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |

Environmental conditions in the lab:

	<u>Actual</u>
Temperature	: 21 °C
Relative Humidity	: 30 %
Atmospheric pressure	: 98.0 kPa
Power supply system	: 60 Hz – 115 VAC – 1 Phase

Sign Explanations:

- not applicable
- applicable



Emissions Test Conditions: CONDUCTED EMISSIONS [FCC 15.207]

The **CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)** measurements were performed at the following test location:

- Test not applicable

- Wild River Lab Large Test Site (Open Area Test Site)
- Wild River Lab Small Test Site (Open Area Test Site)
- Oakwood Lab (Open Area Test Site)
- Wild River Lab Screen Room
- New Brighton Lab Shielded Room

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ - 2417	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1439	Code B
■ - 2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	1-14-05

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

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

Emissions Test Conditions: RADIATED EMISSIONS (FCC 15.209 10 kHz - 30 MHz)

The **RADIATED EMISSIONS (MAGNETIC FIELD)** measurements were performed at the following test location:

- Test not applicable

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

at a test distance of :

- 0.3 meters
- 1 meter
- 3 meter
- 10 meters
- 30 meters

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ - 2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	1-14-05
■ - 2418	6502	Electro-Mechanics (EMCO)	Loop Antenna	2215	3-08-05

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

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

Emissions Test Conditions: RADIATED EMISSIONS (FCC 15.209 Electric Field 30 - 1000 MHz)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location:

- Test not applicable

- Wild River Lab Large Test Site (Open Area Test Site) – NSA measurements made 2-03, due 2-05.
- Wild River Lab Small Test Site (Open Area Test Site)
- Oakwood Lab (Open Area Test Site)

at a test distance of :

- 3 meters
- 10 meters
- 30 meters

Test equipment used :

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ - 3204	EM-6917B	Electro-Metrics	Biconicalog Periodic	102	10-24-04
■ - 8052	8566B	Hewlett-Packard	Spectrum Analyzer	2115a00853	10-17-04
■ - 8051	85662A	Hewlett-Packard	Analyzer Display	2112A02220	10-17-04
■ - 2682	85650A	Hewlett-Packard	Quasi-Peak Adapter	2811A01127	2-23-05
■ - 2668	8447D	Electro-Mechanics (EMCO)	Preamplifier	1937A02209	Code B

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

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

Emissions Test Conditions: INTERFERENCE POWER

The *INTERFERENCE POWER* measurements were performed by using the absorbing clamp on the mains and interface cables in the frequency range 30 MHz - 300 MHz at the following test location:

- Test not applicable

- Wild River Lab Large Test Site (Open Area Test Site)
- Wild River Lab Small Test Site (Open Area Test Site)
- Oakwood Lab (Open Area Test Site)
- Wild River Lab Screen Room
- New Brighton Lab Shielded Room

Emissions Test Conditions: RADIATED EMISSIONS Electric Field 1 to 100 GHz

The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range 1 GHz - 100 GHz were performed in a horizontal and vertical polarization at the following test location:

■ - Test not applicable

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

at a test distance of:

- 1 meters
- 3 meters
- 10 meters



Equipment Under Test (EUT) Test Operation Mode - Emission tests :

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

- Standby
- Test program (H - Pattern)
- Test program (color bar)
- Test program (customer specific)
- Practice operation
- Normal Operating Mode
- Continuous transmit.

Configuration of the device under test:

- See Constructional Data Form in Appendix B - Page B2
- See Product Information Form in Appendix B - beginning on Page B3

The following peripheral devices and interface cables were connected during the measurement:

- _____ Type : _____
- _____ Type : _____
- _____ Type : _____
- _____ Type : _____
- _____ Type : _____
- unshielded power cable
- unshielded cables
- shielded cables MPS.No.: _____
- customer specific cables
- _____
- _____

Emission Test Results:

FCC 15.207 - Conducted emissions 150 kHz - 30 MHz

The requirements are - MET - NOT MET

Minimum margin of compliance 27 dB at 9.72 MHz

Maximum margin of non-compliance dB at MHz

Remarks: _____

FCC 15.209 / IC RSS-210 - Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are - MET - NOT MET

Minimum limit margin for fundamental 49 dB at 13.56 MHz

Minimum limit margin for spurious/harmonics >10 dB at MHz

Remarks: The signal at 13.56 MHz was measured at 0.3 meters and 1 meter in order to establish the falloff rate, and this rate was used to extrapolate the measured values out to 30 or 300 meters, as appropriate. The 13.56 MHz signal has a 30 meter extrapolated value of -19.5 dBuV/m (0.10 microvolts/meter) in Quasi-Peak mode. The limit is 29.54 dBuV/m (30 microvolts/meter) at 30 meters. No spurious emissions or other harmonics were detected above the noise level of the measuring system. The noise level of the measuring system is a minimum of 10 dB below the 30 uV/m limit.

FCC 15.209 - Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are - MET - NOT MET

Minimum margin of compliance >10 dB at MHz

Minimum limit margin for spurious dB at MHz

Remarks: Testing done up to 1000 MHz due to oscillator frequency of laser imager (non-Intentional Radiator) Intentional radiator is contained in. This report only addresses emissions from Intentional radiator. No emissions detected from the intentional radiator above the noise level of the measuring system. The noise level of the measuring system is a minimum of 10 dB below the limit.

Interference Power at the mains and interface cables 30 MHz - 300 MHz

The requirements are - MET - NOT MET - N/A

Remarks: _____

Equivalent Radiated emissions 1 GHz - 100 GHz

The requirements are - MET - NOT MET - N/A

Remarks: _____

DEVIATIONS FROM STANDARD:

None.

GENERAL REMARKS:

The radiated measurements from 10 kHz to 30 MHz are made in quasi-peak detection, except for the levels noted between 110-490 kHz, which are made in average detection.

SUMMARY:

The requirements according to the technical regulations are

- met
- **not** met.

The device under test does

- fulfill the general approval requirements mentioned on page 3.
- **not** fulfill the general approval requirements mentioned on page 3.

Testing Start Date: 14 April 2004

Testing End Date: 14 April 2004

- TÜV PRODUCT SERVICE INC -

Thomas K. Swanson

T. K. Swanson
Reviewed By

J. C. Sausen

Tested By:
J. C. Sausen

Test-setup photo(s):
Conducted emission 150 kHz - 30 MHz

See Test Setup Exhibit



Test-setup photo(s):
Radiated emission 10 kHz - 1000 MHz

See Test Setup Exhibit



Appendix A

Test Data Sheets
and
Test Setup Drawing(s)



TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Large Test Site

See Test Setup Exhibit



CONDUCTED EMISSIONS



Test Report #: 1796 Run 2 Test Area: LTS
 EUT Model #: Kodak DryView 8150 Date: 4/14/04
 EUT Serial #: EM0011 EUT Power: 60 Hz / 110 VAC Temperature: 21.0 °C
 Test Method: FCC 15.207 Air Pressure: 98.0 kPa
 Customer: Eastman Kodak Rel. Humidity: 30.0 %

EUT Description: Medical laser imager

Notes: 60 Hz / 110 VAC

Data File Name: 1796-2-rad.dat Page: 1 of 3

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55011 B Grp1 Qp	DELTA2 EN55011 B Grp1 Avg
270.0 kHz	19.32 Qp	0.1 / 1.65 / 0.0 / 0.0	21.07	L1	-40.05	n/a
270.0 kHz	17.1 Av	0.1 / 1.65 / 0.0 / 0.0	18.85	L1	n/a	-32.27
407.98 kHz	16.29 Qp	0.1 / 0.96 / 0.0 / 0.0	17.35	L1	-40.34	n/a
407.98 kHz	15.03 Av	0.1 / 0.96 / 0.0 / 0.0	16.09	L1	n/a	-31.6
5.752 MHz	12.11 Qp	0.5 / 0.05 / 0.0 / 0.0	12.66	L1	-47.34	n/a
5.752 MHz	11.03 Av	0.5 / 0.05 / 0.0 / 0.0	11.58	L1	n/a	-38.42
10.583 MHz	24.55 Qp	0.7 / 0.05 / 0.0 / 0.0	25.3	L1	-34.7	n/a
10.583 MHz	21.7 Av	0.7 / 0.05 / 0.0 / 0.0	22.45	L1	n/a	-27.55
325.0 kHz	8.82 Qp	0.1 / 1.38 / 0.0 / 0.0	10.3	L1	-49.28	n/a
325.0 kHz	2.7 Av	0.1 / 1.38 / 0.0 / 0.0	4.18	L1	n/a	-45.4
9.72 MHz	22.09 Qp	0.7 / 0.05 / 0.0 / 0.0	22.84	L1	-37.16	n/a
9.72 MHz	21.21 Av	0.7 / 0.05 / 0.0 / 0.0	21.96	L1	n/a	-28.04
270.0 kHz	16.97 Qp	0.1 / 1.65 / 0.0 / 0.0	18.72	N	-42.4	n/a
270.0 kHz	13.15 Av	0.1 / 1.65 / 0.0 / 0.0	14.9	N	n/a	-36.22
325.0 kHz	8.82 Qp	0.1 / 1.38 / 0.0 / 0.0	10.3	N	-49.28	n/a
325.0 kHz	6.63 Av	0.1 / 1.38 / 0.0 / 0.0	8.11	N	n/a	-41.47
407.98 kHz	0.0 Qp	0.1 / 0.96 / 0.0 / 0.0	1.06	N	-56.63	n/a
407.98 kHz	13.86 Av	0.1 / 0.96 / 0.0 / 0.0	14.92	N	n/a	-32.77
5.752 MHz	0.0 Qp	0.5 / 0.05 / 0.0 / 0.0	0.55	N	-59.45	n/a
5.752 MHz	9.56 Av	0.5 / 0.05 / 0.0 / 0.0	10.11	N	n/a	-39.89
10.583 MHz	23.76 Qp	0.7 / 0.05 / 0.0 / 0.0	24.51	N	-35.49	n/a
10.583 MHz	19.89 Av	0.7 / 0.05 / 0.0 / 0.0	20.64	N	n/a	-29.36
9.72 MHz	22.48 Qp	0.7 / 0.05 / 0.0 / 0.0	23.23	N	-36.77	n/a
9.72 MHz	21.94 Av	0.7 / 0.05 / 0.0 / 0.0	22.69	N	n/a	-27.31

Tested by: J. C. Sausen


 Printed



 Signature

Reviewed by: TKS

 Printed



 Signature

CONDUCTED EMISSIONS



Test Report #: 1796 Run 2 Test Area: LTS
 EUT Model #: Kodak DryView 8150 Date: 4/14/04
 EUT Serial #: EM0011 EUT Power: 60 Hz / 110 VAC Temperature: 21.0 °C
 Test Method: FCC 15.207 Air Pressure: 98.0 kPa
 Customer: Eastman Kodak Rel. Humidity: 30.0 %

EUT Description: Medical laser imager

Notes: 60 Hz / 110 VAC

Data File Name: 1796-2-rad.dat Page: 2 of 3

Measurement summary for limit1: EN55011 B Grp1 Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55011 B Grp1 Qp
10.583 MHz	24.55 Qp	0.7 / 0.05 / 0.0 / 0.0	25.3	L1	-34.7
9.72 MHz	22.48 Qp	0.7 / 0.05 / 0.0 / 0.0	23.23	N	-36.77
270.0 kHz	19.32 Qp	0.1 / 1.65 / 0.0 / 0.0	21.07	L1	-40.05
407.98 kHz	16.29 Qp	0.1 / 0.96 / 0.0 / 0.0	17.35	L1	-40.34
5.752 MHz	12.11 Qp	0.5 / 0.05 / 0.0 / 0.0	12.66	L1	-47.34
325.0 kHz	8.82 Qp	0.1 / 1.38 / 0.0 / 0.0	10.3	L1	-49.28

Measurement summary for limit2: EN55011 B Grp1 Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55011 B Grp1 Avg
9.72 MHz	21.94 Av	0.7 / 0.05 / 0.0 / 0.0	22.69	N	-27.31
10.583 MHz	21.7 Av	0.7 / 0.05 / 0.0 / 0.0	22.45	L1	-27.55
407.98 kHz	15.03 Av	0.1 / 0.96 / 0.0 / 0.0	16.09	L1	-31.6
270.0 kHz	17.1 Av	0.1 / 1.65 / 0.0 / 0.0	18.85	L1	-32.27
5.752 MHz	11.03 Av	0.5 / 0.05 / 0.0 / 0.0	11.58	L1	-38.42
325.0 kHz	6.63 Av	0.1 / 1.38 / 0.0 / 0.0	8.11	N	-41.47

Tested by: J. C. Sausen

Printed

Signature

Reviewed by: TKS

Printed

Signature

CONDUCTED EMISSIONS



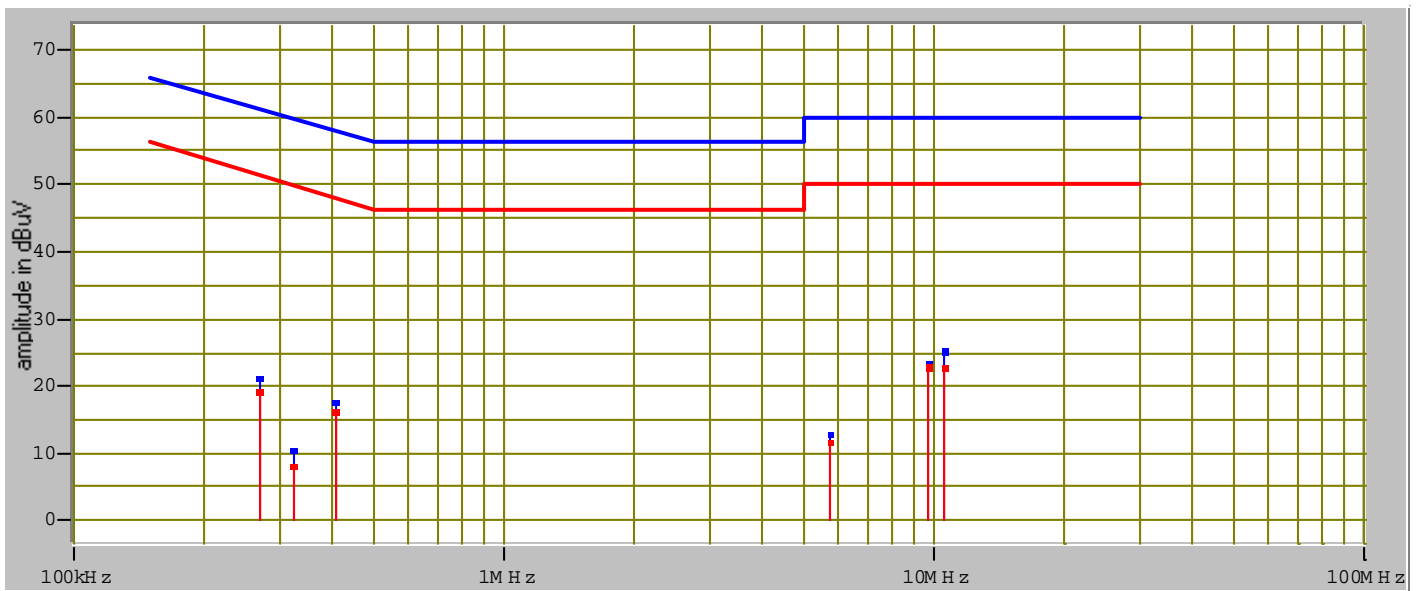
Test Report #: 1796 Run 2 Test Area: LTS
EUT Model #: Kodak DryView 8150 Date: 4/14/04
EUT Serial #: EM0011 EUT Power: 60 Hz / 110 VAC Temperature: 21.0 °C
Test Method: FCC 15.207 Air Pressure: 98.0 kPa
Customer: Eastman Kodak Rel. Humidity: 30.0 %

EUT Description: Medical laser imager

Notes: 60 Hz / 110 VAC

Data File Name: 1796-2-rad.dat Page: 3 of 3

Graph:



Tested by: J. C. Sausen
Printed

J C Sausen
Signature

Reviewed by: TKS
Printed

Thomas K. Swanson
Signature

RADIATED EMISSIONS



Test Report #: 1796 Run 7 Test Area: LTS
 EUT Model #: Kodak DryView 8150 Date: 4/14/04
 EUT Serial #: EM0011 EUT Power: 60 Hz / 110 VAC Temperature: 21.0 °C
 Test Method: FCC 15.209 / IC RSS-210 Air Pressure: 98.0 kPa
 Customer: Eastman Kodak Rel. Humidity: 30.0 %

EUT Description: Medical laser imager

Notes: _____

Data File Name: 1796-5-rad.dat Page: 1 of 1

List of measurements for run #: 7

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 15.209	DELTA2 en300330
reading at 0.3 meter distance						
13.56 MHz	54.0 Qp	0.3 / 10.18 / 0.0 / 0.0	64.48	V / 1.00 / 0		
reading at 1 meter distance						
13.56 MHz	33.0 Qp	0.3 / 10.18 / 0.0 / 0.0	43.48	V / 1.00 / 0		
levels below ambient at 3-30 m distances, will use 42 dB/decade falloff indicated by above readings						
extrapolated 30 meter level						
13.56 MHz	-30.0 Qp	0.3 / 10.18 / 0.0 / 0.0	-19.52	V / 1.00 / 0	-49.02	
no other harmonics or spurious emissions detected.						

Tested by: J. T. Schneider

Printed

Signature

Reviewed by: TKS

Printed

Signature

Appendix B

Constructional Data Form

and/or

Product Information Form(s)



EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.

Applicant -- *NOTE: This information will be input into your test report as shown below.*
Press the F1 key at any time to get HELP for the current field selected.

Company: Eastman Kodak

Address: Discovery Building
1 Imation Way
Oakdale, MN 55128-3414

Contact: Robert Pettitt Position: HSE Engineer

Phone: 651.393.1339 Fax: 651.393.1440

E-mail Address: robert.pettitt@kodak.com

General Equipment Description -- *NOTE: This information will be input into your test report as shown below.*

EUT Description Medical Laser Imager

EUT Name Eastman Kodak DryView Model 8150

Model No.: 8150 Serial No.: EM0011

Product Options: None

Configurations to be tested: With EMC Reduced Laser Driver Board and Connection

Test Objective

- | | |
|---|---|
| <input checked="" type="checkbox"/> EMC Directive 89/336/EEC (EMC)
Std: <u>55011</u> | <input checked="" type="checkbox"/> FCC: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B Part <u>B,C</u> |
| <input type="checkbox"/> Machinery Directive 89/392/EEC (EMC)
Std: _____ | <input checked="" type="checkbox"/> VCCI: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| <input checked="" type="checkbox"/> Medical Device Directive 93/42/EEC (EMC)
Std: <u>60601-1-2</u> | <input checked="" type="checkbox"/> BSMI: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| <input type="checkbox"/> Vehicle Directive 72/245/EEC (EMC)
Std: _____ | <input checked="" type="checkbox"/> Canada: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| <input type="checkbox"/> FDA Reviewers Guidance for Premarket
Notification Submissions (EMC) | <input checked="" type="checkbox"/> Australia: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| | <input type="checkbox"/> Other: _____ |

TÜV Product Service Certification Requested

- | | |
|--|---|
| <input type="checkbox"/> Attestation of Conformity (AoC) | <input type="checkbox"/> EMC Certification (used with Octagon Mark) |
| <input type="checkbox"/> Certificate of Conformity (CoC) | <input checked="" type="checkbox"/> Compliance Document |
| Protection Class (N/A for vehicles) | <input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III |
- (Press F1 when field is selected to show additional information on Protection Class.)

Attendance

Test will be: Attended by the customer Unattended by the customer

EMC Test Plan and Constructional Data Form

Failure - Complete this section if testing will not be attended by the customer.

If a failure occurs, TUV Product Service should:

- Call contact listed above, if not available then stop testing. (After hrs phone): 651.402.1018
- Continue testing to complete test series.
- Continue testing to define corrective action.
- Stop testing.

EUT Specifications and Requirements

Length 26 Width: 25 Height: 46 Weight: 414
 : _____

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 100,120,200, (If battery powered, make sure battery life is sufficient to complete testing.)
220,230

of Phases: 1

Current (Amps/phase(max)):	<u>8.3 for 100</u>	Current (Amps/phase(nominal)):	_____
	<u>6.9 for 120</u>		
	<u>4.1 for 200</u>		
	<u>3.8 for 220</u>		
	<u>3.6 for 230</u>		

Other _____

Other Special Requirements

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
 Hospital, Clinic

EUT Power Cable

- Permanent OR Removable Length (in meters): 3
- Shielded OR Unshielded
- Not Applicable

EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables														
Type	Analog	Digital	During Test		Qty	Shielding		Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent	
			Active	Passive		Yes	No							Type
EXAMPLE: RS232	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ethernet	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>			RJ-45		3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: See Attached List

Description:

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Full speed printing using an internal density checking SMPTE pattern
- 2.
- 3.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
Sony CD ROM Drive	CDU5211		
Sony Diskette Drive	MPF920-Z		
BCM Advanced Research Mother board	IN 845 GV		
Seagate Hard Drive	ST380011A		

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)
This information is required for FCC & Taiwan testing.

<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
HP Mouse	M-S48		DZL211092

Oscillator Frequencies

<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>
1.843200 MHz		4B4451	RF Tag Reader Board
13.56 MHz			Crystal Oscillator RF Tag Reader Board
16 MHz		96-0000-1824-0	Feeder Assembly, Densitometer, MCS, RF Tag Reader Board
18.432 MHz		70-0701-4515-9	PCIO
32 MHz		96-0000-2077-4	MCS
1.1GHz		96-0000-1607-9	Laser Driver
1.2 GHz			MIM 200

Power Supply

<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Type</i>
SPI	FSP200-601U		<input checked="" type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____
			<input type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____

Power Line Filters

<i>Manufacturer</i>	<i>Model #</i>	<i>Location in EUT</i>

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)				
<i>Description</i>	<i>Manufacturer</i>	<i>Part # or Value</i>	<i>Qty</i>	<i>Component # / Location</i>
Plate Filter	Spectrum Control	7F3358	1	Attached to Laser Driver Board

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization Signatures

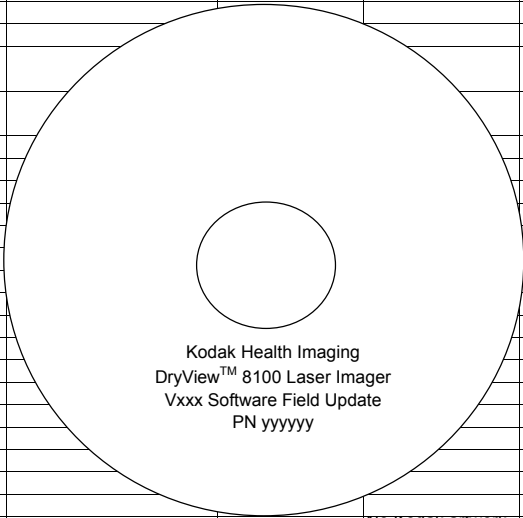
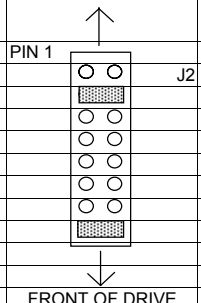
 Customer authorization to perform tests according to this test plan.

 Date

 Test Plan/CDF Prepared By (please print)

 Date

PROGRAMMED BD & P/N	REV	UNPROG'D PCB TITLE & P/N	REF DESIG	DEVICE TYPE	MANUFAC'R P/N	UNPROG'D DEVICE P/N	PROG'D DEVICE P/N	CHECKSUM	SOURCE FILENAME	EXACT LABEL TEXT	LABEL SIZE
		7F1066 PC BOARD ASSY LOCAL PANEL UNPROGRAMMED									
7F1152 PROGRAMMED FEEDER CPU ASSY	30	7F1157 Assy Feeder Board UNPROGRAMMED	U4	CPU	INTEL N87C52-1	96-0000-3713-3	7F1153 Rev 30	0X104600	FEEDER.HEX		.50" X .50"
96-0000-2600-3 PROGRAMMED OPTICS BOARD ASSY	F	96-0000-0947-0 PCB ASSY OPTICS UNPROGRAMMED	U8	CPU	INTEL N87C52-1	96-0000-3713-3	8E9889 V2.1.3	151B00	OPTICS.HEX	OPTCPU 1B00 V2.1.3 U8	.50" X .50"
			U4	PLD	ALTERA EPM7064LC44-15	96-0000-1749-9	78-8066-2592-3 Ver 002	0X8A37	OPTIC002.POF	OPTCTL 8A37 V002 U4	.50" X .50"
96-0000-3896-6 PROGRAMMED PCIO ASSY	A	96-0000-3061-7 PCB ASSY PCIO UNPROGRAMMED	ROM1	EEPROM	ATMEL AT17C128-10PC	26-1012-1356-4	96-0000-2604-5 Ver 004	0X4FA79	PCIO004.HEX	FA79 ROM1	.25" X .25"
96-0000-3898-2 PROGRAMMED DENSITOMETER BOARD ASSY	B	96-0000-1346-4 PCB ASSY DENSITOMETER UNPROGRAMMED	U6	CPU	INTEL N87C52-1	96-0000-3713-3	74-0401-8074-2 V2.1	0X15E700	DENSI.HEX	DENCPU E700 V2.1 U6	.50" X .50"
			U5	PLD	ALTERA EPM7064SLC44-10	96-0000-3714-1	96-0000-2753-0 Ver 002	0X91F0	DEN002.POF	DENCTL 91F0 V002 U5	.50" X .50"
8E9983 PROGRAMMED MCS ASSY		8E9984 Unprogrammed Assembly - Machine Control Board, 8150									
			ROM1	EEPROM		6E8937	7F3496	0X1BD9850	MCS.HEX		.25" X .25"
			ROM2	EPROM	AMD AM27C020	26-1012-1356-4	7F3497	0x91F8	MCS007.HEX		.25" X .25"
			U30	EEPROM		96-0000-1693-9	7F3501		TSTEP001.HEX		.187" X .812"
			U32	EPROM	ATMEL AT89C2051-24PC	96-0000-1693-9	7F3500		TSTEP001.HEX		.187" X .812"
			U34	EPROM		96-0000-1693-9	7F3499		TSTEP001.HEX		.187" X .812"
			U36	EPROM		96-0000-1693-9	7F3498		TSTEP001.HEX		.187" X .812"
8E7299 PROGRAMMED RF TAG INTERFACE ASSY	A	7E2543 PCB ASSY RF TAG INTERFACE UNPROGRAMMED	U1	MICRO CONTROLLER CPU	DALLAS SEMICONDUCTOR DS87C520-QCL PLCC 44	4B4148	8E2408 V1.10	0X8B47A SEE NOTE 3	RFTAG.HEX	RFTAG 8E2408 V1.10 U1	.50" X .50"
8E9087 IMS ASSY V2.4.1	B	n/a	INSTALLED TO HARD DISK	CDROM media	n/a	3E5776 (UNPROGRAMMED IMS)	8E9901 V2.4.2 (CDROM ONLY)	n/a	See software release notes	n/a - CD ROM is not shipped to field	
8E9083 (Field Update CD) V2.4.1	A		INSTALLED TO HARD DISK	CDROM media	n/a	26-1014-5077-8 (Blank CD)	8E9083 (Field Update CD)	n/a	See software release notes	See page 2	See page 2
8E9086 RF Tag Update Kit Version 2.4.1	A		ROM1	EPROM	AMD AM27C020	96-0000-2085-7	8E9080 V2.4.1	0XF8D58A	MCS2_4_1.HEX	8E9080 RF TAG MCS ROM1 LSB V2.4.1 F8D58A	.437" x 1.00"
			U1	MICRO CONTROLLER CPU	DALLAS SEMICONDUCTOR DS87C520-QCL PLCC 44	4B4148	8E2408 V1.10	0X8B47A SEE NOTE 3	RFTAG.HEX	RFTAG 8E2408 V1.10 U1	.50" X .50"

LABEL MATERIAL AND PLACEMENT SPECIFICATIONS													
1.) LABEL MATERIAL TO BE WHITE REMOVABLE POLYESTER													
2.) LABELS TO BE ORIENTED PER THE EXAMPLES BELOW FOR EACH DEVICE SIZE.													
6" WIDE DIP PACKAGES		74-0500-5522-2 ROM1 MCS IR7.3.2 1B6868		Label size: .437"X1.00"		Field Update CD							
				17 CHARS/LINE 4 LINES/LABEL		Notes: include jewel case							
.3" X 24 PIN DIP PACKAGES		96-0000-2871-0 U1 9376 V001		Label size: .187X.812"									
				14 CHARS/LINE 2 LINES/LABEL									
.3" X 8 PIN DIP PACKAGES		91F8 ROM3		Label size: .25" X .25"									
				4 CHARS/LINE 2 LINES/LABEL									
44 PIN PLCC PACKAGES:		DENCTL 91F0 V002 U5		Label size: .50" X .50"				No Kodak artwork required Printer CDROM Label stock may be used: Avery #5824 or equivalent					
				8 CHARS/LINE 4 LINES/LABEL									
PROGRAMMING INSTRUCTIONS													
1.) PROGRAM THE DEVICE SHOWN IN THE "UNPROGRAMMED DEVICE" COLUMN OF PAGE 1 WITH THE DATA CONTAINED IN EITHER THE MASTER OR THE "SOURCE FILENAME" FILE, ENSURING THAT THE PROGRAMMED CHECKSUM MATCHES THAT SHOWN IN THE "CHECKSUM" COLUMN.													
2.) LABEL THE DEVICE WITH THE TEXT SHOWN IN THE "EXACT LABEL TEXT" COLUMN ON PAGE 1 AND ORIENT THE LABEL PER THE ABOVE EXAMPLES.													
SCSI DRIVE JUMPER CONFIGURATION FOR 70-0701-4512-6													
SCSI CONNECTOR													
1.) CONFIGURE J2 PER DRAWING:													
													
		FRONT OF DRIVE											
2.) REMOVE ALL JUMPERS FROM J6 (FRONT OF DRIVE) AND J1-A (REAR OF DRIVE)													

Appendix C

MEASUREMENT PROTOCOL FOR FCC

GENERAL INFORMATION

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. These test systems have a measurement uncertainty of ± 4.8 dB. The equipment comprising the test systems are 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, expressed in $\text{dB}\mu\text{V}$, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC limit.

To convert between $\text{dB}\mu\text{V}$ and μV , the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

RADIATED EMISSIONS

The final level, expressed in $\text{dB}\mu\text{V}/\text{m}$, is arrived at by taking the reading from the spectrum analyzer (Level $\text{dB}\mu\text{V}$), adding the antenna correction factor and cable loss factor (Factor dB) to it, then subtracting the preamp gain. This result then has the FCC 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 ($\text{dB}\mu\text{V}$)	CABLE/ANT/PREAMP (dB)	FINAL ($\text{dB}\mu\text{V}/\text{m}$)	POL/HGT/AZ (m) (deg)	DELTA1 FCC B
60.80	42.5Qp	+ 1.2 + 10.9 - 25.5 =	29.1	V 1.0 0.0 -	-10.9

DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with ANSI C63.4-2001 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

Conducted Emissions

Conducted emissions on the 60 Hz power interface of the EUT are measured in the frequency range of 450 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 μ 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. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver or spectrum analyzer with quasi-peak and average detection and recorded on the data sheets.

Radiated Emissions

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. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. 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 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. Intentional radiators are rotated through three orthogonal axes to determine the attitude that maximizes the emissions.

In the frequency range of 9 kHz to 30 MHz, measurements are made with quasi-peak or average detection with a loop antenna. The antenna is positioned 1 meter above the ground plane and rotated about its vertical axis for maximum response at each azimuth about the EUT. The antenna is also positioned horizontally at the specified distances.