

# 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)

MANUFACTURER'S ADDRESS

Kodak Electronic Product Co. Ltd. (KEPS)

1510 Chuanqiao Road

Jinqiao Export Processing Zone

Pudong, 201206 Shanghai, China

MANUFACTURER'S NAME (USA)

MANUFACTURER'S ADDRESS

Eastman Kodak - Health Imaging Division

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.	:	<b>WC401796.3</b>	Date of issue: <u>26 October 2004</u>
Model / Serial No.	:	<u>8150 / EM0011</u>	
Product Type	:	<u>Eastman Kodak DryView - Medical Laser Imager</u>	
Manufacturer (China)	:	<u>Kodak Electronic Product Co. Ltd. (KEPS)</u>	
Address	:	<u>1510 Chuanqiao Road</u>	
	:	<u>Jinqiao Export Processing Zone</u>	
	:	<u>Pudong, 201206 Shanghai, China</u>	
Manufacturer (USA)	:	<u>Eastman Kodak - Health Imaging Division</u>	
Address	:	<u>3400 Granada Avenue</u>	
	:	<u>Oakdale, MN 55128 USA</u>	
Test Result	:	<input checked="" type="checkbox"/> <b>Positive</b> <input type="checkbox"/> <b>Negative</b>	
Test Project Number	:		
Reference(s)	:	<u><b>WC401796.3</b></u>	
Total pages including Appendices	:	<u>29</u>	

*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*

## D I R E C T O R Y - E M I S S I O N S

	<b>Page(s)</b>
<b>A) Documentation</b>	
Test report	1 - 10
Directory	2
Test Regulations	3
Deviation from standard / Summary	10
Test-setups (Photos)	11 - 12
Test-setup (drawing)	<u>Appendix A</u>
<b>B) Test data</b>	
FCC 15.207 - Conducted emissions	10/150 kHz - 30 MHz
FCC 15.209 - Radiated emissions	10 kHz - 30 MHz
FCC 15.209 - Radiated emissions	30 MHz - 1000 MHz
Interference power	30 MHz - 300 MHz
Equivalent Radiated emissions	1 GHz - 18 GHz
<b>C) Appendix A</b>	
Test Data Sheets and Test Setup Drawing(s)	<u>A2 – A6</u>
<b>D) Appendix B</b>	
Constructional Data Form	<u>B2 – B9</u>
Product Information Form(s)	<u>N/A</u>
<b>E) Appendix C</b>	
Measurement Protocol	<u>C1 - C2</u>

## EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- EN 50081-1 / 1991

- EN 55011 / 1991

- Group 1

- Group 2

- EN 55013 / 1990

- EN 55014 / 1987

- Class A

- Class B

- EN 55014 / A2:1990

- EN 55014 / 1993

- Household appliances and similar

- Portable tools

- Semiconductor devices

- EN 55015 / 1987

- EN 55015 / A1:1990

- EN 55015 / 1993

- EN 55022 / 1987

- EN 55022 / 1994

- Class A

- Class B

- BS

- VCCI

- FCC Part 15 Subpart C Section 15.209

- FCC Part 15 Subpart C Section 15.207 Conducted Emission Requirements

- FCC Part 15 Subpart B

- Class A

- Class B

- CISPR 11 (1990)

- Class A

- Class B

- CISPR 22 (1993)

- Group 1

- Group 2

- Class A

- Class B

- Class A

**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:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- unshielded power cable

- unshielded cables

- shielded cables

MPS.No.: \_\_\_\_\_

- customer specific cables

- \_\_\_\_\_

- \_\_\_\_\_

- Type : \_\_\_\_\_
- Type : \_\_\_\_\_
- Type : \_\_\_\_\_
- Type : \_\_\_\_\_
- Type : \_\_\_\_\_

## Emission Test Results:

### FCC 15.207 - Conducted emissions 150 kHz - 30 MHz

The requirements are	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - 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	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - 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	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - 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	<input type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET	<input checked="" type="checkbox"/> - N/A
Remarks:	_____		

### Equivalent Radiated emissions 1 GHz - 100 GHz

The requirements are	<input type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET	<input checked="" type="checkbox"/> - 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

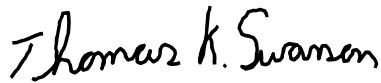


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Signature

Reviewed  
by:

TKS



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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

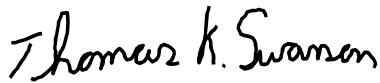


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by:

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# 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

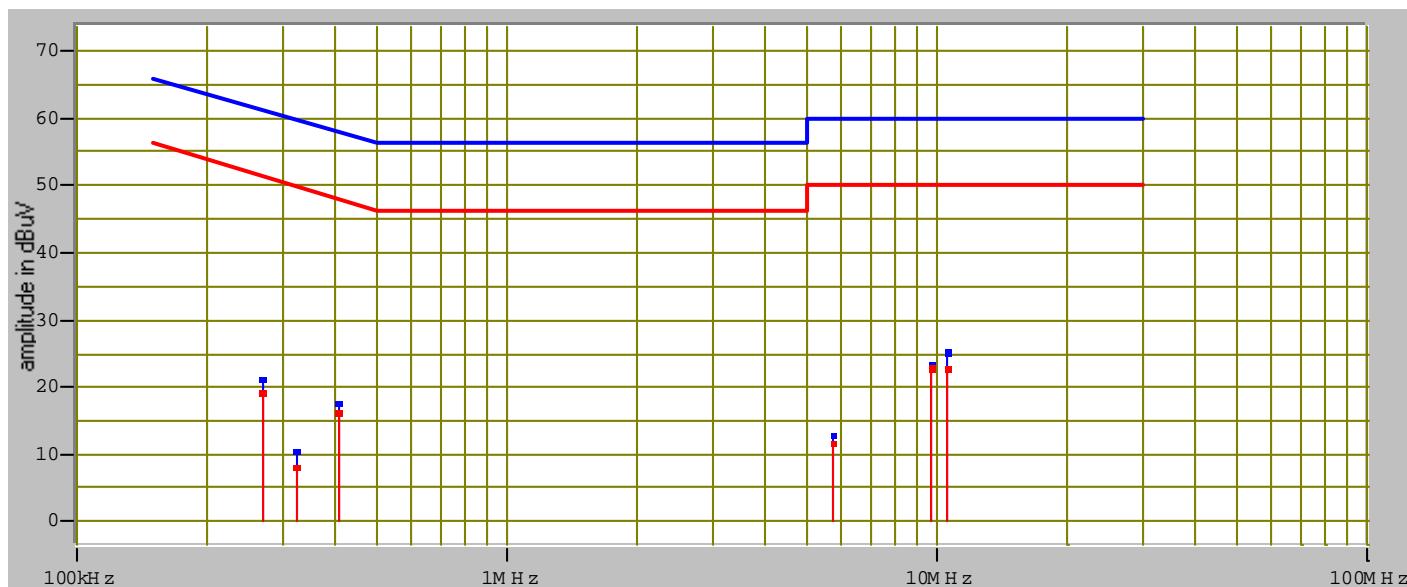
Customer: Eastman Kodak Rel. Humidity: 30.0 %

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

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Reviewed by: TKS

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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



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Signature

Reviewed  
by:

TKS



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## **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

AMERICA

### 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,  
220,230      (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: 1

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

Other: \_\_\_\_\_

### Other Special Requirements

### Typical Installation and/or Operating Environment

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

### EUT Power Cable

<input type="checkbox"/> Permanent	OR	<input checked="" type="checkbox"/> Removable	Length (in meters): <u>3</u>
<input type="checkbox"/> Shielded	OR	<input checked="" type="checkbox"/> Unshielded	
<input type="checkbox"/> Not Applicable			

**EMC Test Plan and Constructional Data Form**

AMERICA

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

Description	Model #	Serial #	FCC ID #
HP Mouse	M-S48		DZL211092

### Oscillator Frequencies

Frequency	Derived Frequency	Component # / Location	Description of Use
1.843200 MHz		4B4451	RF Tag Reader Board
13.56 MHz			Crystal Oscillaror 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

Manufacturer	Model #	Serial #	Type
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

Manufacturer	Model #	Location in EUT

**EMC Test Plan and Constructional Data Form**

<b>Critical EMI Components (Capacitors, ferrites, etc.)</b>				
<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

<b>EMC Critical Detail --</b> Describe other EMC Design details used to reduce high frequency noise.
--

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

<b>Authorization Signatures</b>
---------------------------------

---

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

7 CHARS/LINE  
LINES/LABEL

### **.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"

## 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

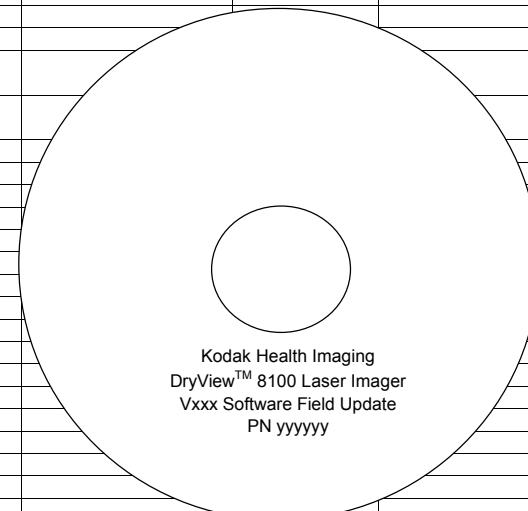
#### 1.) CONFIGURE J2 PER DRAWING:

DIN 1

○
●
○
○
○
○
○
●

FRONT OF DRIVE

3.) REMOVE ALL JUMBERS 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  $\pm 4.8$  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 dB $\mu$ 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 dB $\mu$ V and  $\mu$ V, 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 dB $\mu$ V/m, is arrived at by taking the reading from the spectrum analyzer (Level dB $\mu$ 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 (dB $\mu$ V)	CABLE/ANT/PREAMP (dB)	FINAL (dB $\mu$ V/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  $50\ \Omega/50\ \mu\text{H}$  (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.