

TEST RESULT SUMMARY

FCC PART 15 SUBPART C

Section 15.225

FCC PART 15 SUBPART C

Section 15.207 Conducted Emission Requirements

MANUFACTURER'S NAME	Eastman Kodak Company
TYPE OF EQUIPMENT	13.56 MHz RF Tag Reader Board
MODEL NUMBER	8E1587
MANUFACTURER'S ADDRESS	1 Imation Way Oakdale, MN 55128-3414
TEST REPORT NUMBER	NC300707
TEST DATE	19 February 2003

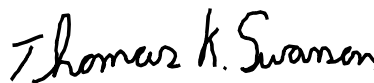
According to testing performed at TÜV Product Service Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in FCC Part 15 Subpart C, Sections 15.207 and 15.225.

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.

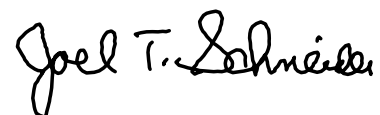
TÜV Product Service Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the requirements of FCC Part 15 Subpart C, Sections 15.207 and 15.225.

Date: 24 June 2003

Location: Taylors Falls MN
USA



T. K. Swanson
Tested By



J. T. Schneider
Reviewed By

EMC EMISSION - TEST REPORT

Test Report File No. : **NC300707** Date of issue: 24 June 2003Model No. : **8E1587**Product Type : **13.56 MHz RF Tag Reader Board**Applicant : **Eastman Kodak Company**Manufacturer : **Eastman Kodak Company**License holder : **Eastman Kodak Company**Address : **1 Imation Way**: **Oakdale, MN 55128-3414**Test Result : **Positive** **Negative**Test Project Number :
Reference(s) : **NC300707**Total pages including
Appendices : **31**

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 15.225 | | |
| <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	: 22 °C
Relative Humidity	: 25 %
Atmospheric pressure	: 99.0 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	1-15-04
■ -	2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	12-03-03

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

Emissions Test Conditions: RADIATED EMISSIONS [FCC 15.225 (a),(b) 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
■ -	2517	HFH2-Z2	Polorad	Loop Antenna	879285/036	2-26-03
■ -	2420	ESHS-10	Rhode & Schwarz	EMI Receiver	828178/006	4-26-03

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

Emissions Test Conditions: RADIATED EMISSIONS [FCC 15.225 (b) 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 2-04.
- 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
■ -	2665	ZHL-1042J	Mini-Circuits	Preamplifier	32296	10-15-03
■ -	3202	EM-6917B	Electro-Metrics	Biconicalog Periodic	102	10-04-03
■ -	2690	8566B	Hewlett-Packard	Spectrum Analyzer (Unit F)	2430A00930	12-02-03
■ -	2678	85662A	Hewlett-Packard	Analyzer Display (Unit F)	2403A08134	12-02-03
■ -	2684	85650A	Hewlett-Packard	Quasi-Peak Adapter (Unit F)	2521A01006	11-26-03

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

Emissions Test Conditions: FREQUENCY TOLERANCE OF THE CARRIER SIGNAL [FCC 15.225 (c)]

The *FREQUENCY TOLERANCE* 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
- Specialty Labs

Test equipment used:

	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ -	8566B	Hewlett-Packard	Spectrum Analyzer	2349A03098	7-01-03
■ -	901	Emco	Near Field Probe	7405-901	N/A
■ -	S1.2	Thermotron	Temperature Chamber	16759-S	N/A
■ -	HH23	Omega	Digital Temperature Sensor	C00672	9-13-03

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

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
- customer specific cables

MPS.No.: _____

- _____
- _____

Emission Test Results:

FCC 15.207 - Conducted emissions 450 kHz - 30 MHz

The requirements are - MET - NOT MET

Minimum margin of compliance _____ 34 dB at _____ 11.65 MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: _____

FCC 15.225 (a)(b) - Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are - MET - NOT MET

Minimum limit margin for fundamental _____ 36 dB at _____ 13.56 MHz

Minimum limit margin for spurious/harmonics _____ >10 dB at _____ kHz

Remarks: The fundamental was measured to be 44 dBuV/m (158.49 microvolts/meter) in Quasi-Peak mode at 30 meters. The limit is 80 dBuV/m (10000 microvolts/meter) at 30 meters. No spurious emissions or other harmonics were detected within 10 dB of the 30 uV/m limit. For band edge compliance the carrier meets the spurious limits at 13.5589 MHz and 13.56175 MHz, at all other frequencies the carrier level is >10 dB below the spurious limit.

FCC 15.225 (b) - 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: No emissions detected within 10 dB of the limit. Testing done up to 1000 MHz due to oscillator frequency of Dry View Laser Imager (non-RF device) RF ID is contained in. This report only addresses emissions from RF ID.

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: _____

FCC 15.225 (c) - Frequency Tolerance of the Carrier Signal

The requirements are - MET - NOT MET

Remarks: Limit is $\pm 0.01\%$ of 13.56 MHz, or ± 1.356 kHz, so allowed band is 13.558644 MHz to 13.561356 MHz. Frequency deviates from 13.5605 MHz to 13.5608 MHz from -20 to 50 degrees C and 4.58 to 5.75 VDC.

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

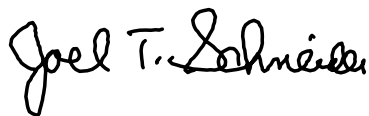
- fulfill the general approval requirements mentioned on page 3.

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


Testing Start Date: 19 February 2003

Testing End Date: 19 February 2003

- TÜV PRODUCT SERVICE INC -



J. T. Schneider
Reviewed By



Tested By:
T. K. Swanson

Test-setup photo(s):
Conducted emission 450 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



FCC Part 15.225 Radiated Emissions							
Test Report # NC300707				Test Date: 19 February 2003			
Company: Eastman Kodak							
EUT: 8E1587 RF Tag Reader							
MHz	dBuV/m 0.3 m	dBuV/m 1 m	dBuV/m 3 m	dBuV/m 10 m	dBuV/m 30 m	dBuV/m 30 m Limit	margin dB
0.009						80	
0.49						80	
0.49						80	
1.705						80	
1.705						80	
13.56	114	88	70	60	44	80	36
30						80	
All levels are measured - no extrapolations							
Quasi-Peak							
No further spurious emissions detected 10 kHz to 30 MHz							
Tested By: R. M. Johnson							
							

BAND EDGE COMPLIANCE

MKR 13.560 30 MHz
44.60 dB μ V

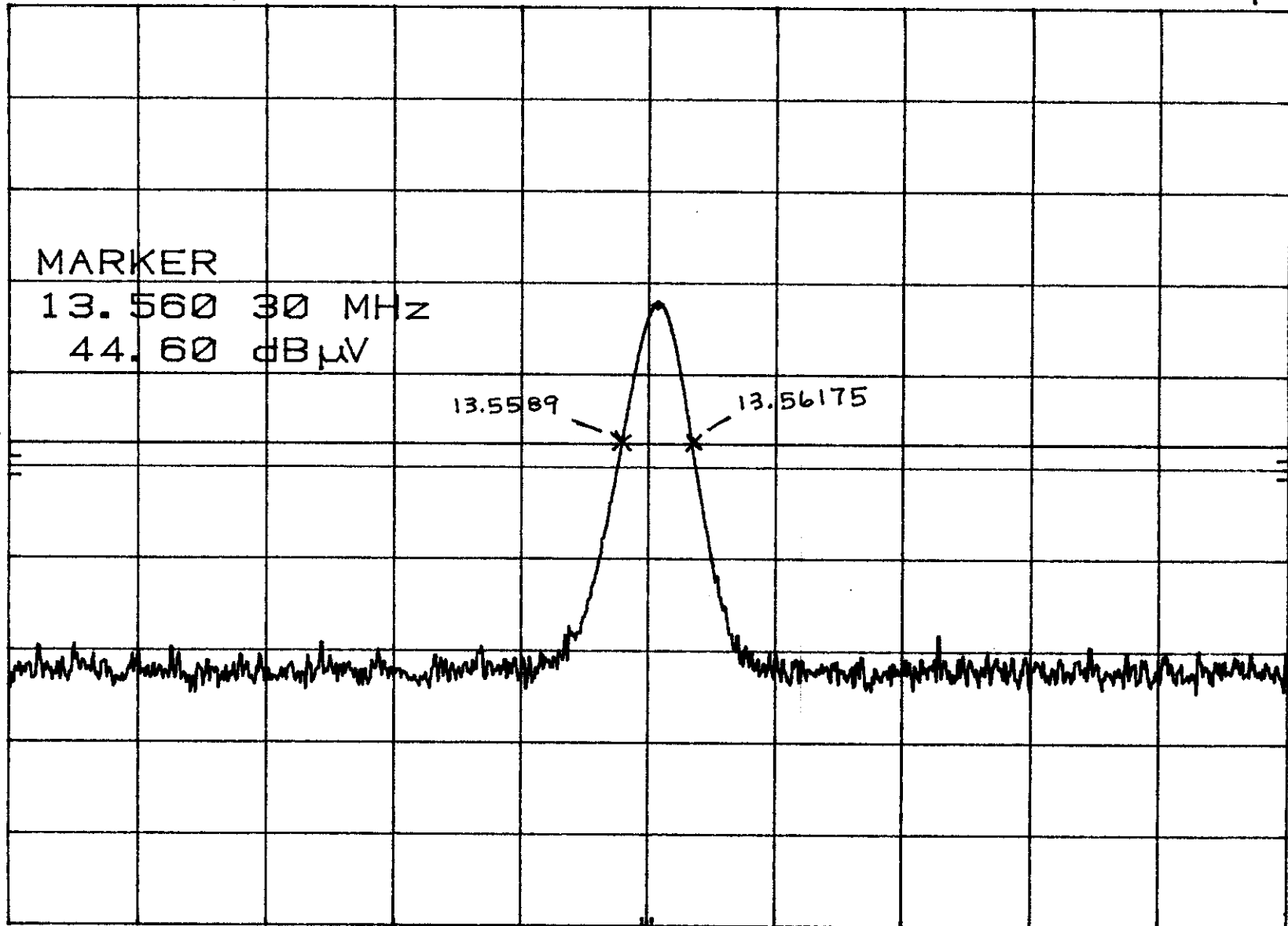
hp REF 77.0 dB μ V ATTEN 10 dB

10 dB/

OFFSET
-10.0
dB

DL
29.5
dB μ V

15.209 LIMIT



CENTER 13.560 0 MHz
RES BW 1 kHz

VBW 3 kHz

SPAN 50.0 kHz
SWP 300 msec

Frequency stability testing on Kodak 8900 RF ID tag reader
13-Mar-03 TEST PROJECT NC300707

FCC

Temperature Degrees C	Frequency MHz
-20	13.5608
-10	13.5605
0	13.5605
10	13.5605
20	13.5605
30	13.5605
40	13.5605
50	13.5605

Voltage VDC	Frequency MHz
----------------	------------------

4.58	13.5605 eut ceases operation at 4.58 VDC
5.75	13.5605

Allowed deviation is +/- .01%, measured deviation is .0022% - PASS

CE

Temperature Degrees C	Frequency range MHz	
	low	high
-20	13.5565	13.5645
55	13.5563	13.5643

Voltage VDC	Frequency range MHz	
	low	high
4.58	13.5565	13.564
5.75	13.5563	13.564

Permitted range of operating frequencies is 13.553-13.567 MHz - PASS

The radiated spatial power density did not exceed 31.6 dBm EIRP
at extreme voltage & power conditions. Limit = 55 dBm - PASS

Thermotron S1.2 temperature chamber, s/n 16759-S
Omega HH23 digital temperature sensor, cal due 9-03
HP8566B spectrum analyzer, s/n 2349A03098, cal due 7-03
HP spectrum analyzer display, s/n 2349A06144, cal due 7-03
EMCO near field probe, 7405-901

Conducted Electromagnetic Emissions



Test Report #: 0707 Run 01 Test Area: DOME (CE)
 Test Method: EN55011 Test Date: 19-Feb-2003
 EUT Model #: 8900 EUT Power: 50/60HZ / 230/110VAC
 EUT Serial #: EM102 Temperature: 22 °C
 Manufacturer: EASTMAN KODAK Relative Humidity: 25 %
 EUT Description: DRY VIEW LASER IMAGER Air Pressure: 99 kPa
 Notes: _____ Page: 1 of 4

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 EN55011 A Grp1 QP	DELTA2 EN55011 A Grp1 Avg
50HZ/230VAC						
5.66	16.6 Qp	0.1 / 0.0 / 0.0	16.7	Neutral	-56.3	N/A
11.65	24.0 Qp	0.2 / 0.1 / 0.0	24.3	Neutral	-48.7	N/A
16.21	28.0 Qp	0.3 / 0.1 / 0.0	28.4	Neutral	-44.6	N/A
20.01	24.1 Qp	0.3 / 0.1 / 0.0	24.5	Neutral	-48.5	N/A
21.68	16.0 Qp	0.3 / 0.1 / 0.0	16.5	Neutral	-56.5	N/A
24.02	27.1 Qp	0.3 / 0.2 / 0.0	27.6	Neutral	-45.4	N/A
5.66	15.9 Av	0.1 / 0.0 / 0.0	16.0	Neutral	N/A	-44.0
11.65	24.9 Av	0.2 / 0.1 / 0.0	25.2	Neutral	N/A	-34.8
16.21	24.4 Av	0.3 / 0.1 / 0.0	24.8	Neutral	N/A	-35.2
20.01	24.4 Av	0.3 / 0.1 / 0.0	24.8	Neutral	N/A	-35.2
21.68	4.5 Av	0.3 / 0.1 / 0.0	5.0	Neutral	N/A	-55.0
24.02	13.4 Av	0.3 / 0.2 / 0.0	13.9	Neutral	N/A	-46.1
5.66	18.0 Qp	0.1 / 0.0 / 0.0	18.1	Line 1	-54.9	N/A
11.65	22.4 Qp	0.2 / 0.1 / 0.0	22.7	Line 1	-50.3	N/A
16.21	26.8 Qp	0.3 / 0.1 / 0.0	27.2	Line 1	-45.8	N/A
20.01	23.9 Qp	0.3 / 0.1 / 0.0	24.3	Line 1	-48.7	N/A
21.68	0.0 Qp	0.3 / 0.1 / 0.0	0.4	Line 1	-72.6	N/A
24.02	0.0 Qp	0.3 / 0.2 / 0.0	0.5	Line 1	-72.5	N/A
5.66	14.6 Av	0.1 / 0.0 / 0.0	14.7	Line 1	N/A	-45.3
11.65	20.3 Av	0.2 / 0.1 / 0.0	20.6	Line 1	N/A	-39.4
16.21	21.6 Av	0.3 / 0.1 / 0.0	22.0	Line 1	N/A	-38.0

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

Conducted Electromagnetic Emissions



Test Report #: 0707 Run 01 Test Area: DOME (CE)
 Test Method: EN55011 Test Date: 19-Feb-2003
 EUT Model #: 8900 EUT Power: 50/60HZ / 230/110VAC
 EUT Serial #: EM102 Temperature: 22 °C
 Manufacturer: EASTMAN KODAK Relative Humidity: 25 %
 EUT Description: DRY VIEW LASER IMAGER Air Pressure: 99 kPa
 Notes: _____ Page: 2 of 4

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 EN55011 A Grp1 QP	DELTA2 EN55011 A Grp1 Avg
20.01	23.3 Av	0.3 / 0.1 / 0.0	23.7	Line 1	N/A	-36.3
21.68	8.4 Av	0.3 / 0.1 / 0.0	8.9	Line 1	N/A	-51.1
24.02	11.6 Av	0.3 / 0.2 / 0.0	12.1	Line 1	N/A	-47.9
60HZ/110VAC						
0.155	25.7 Qp	0.0 / 0.1 / 0.0	25.8	Neutral	-53.2	N/A
0.165	20.1 Qp	0.0 / 0.1 / 0.0	20.2	Neutral	-58.8	N/A
0.180	24.9 Qp	0.0 / 0.1 / 0.0	25.0	Neutral	-54.0	N/A
0.190	24.8 Qp	0.0 / 0.0 / 0.0	24.8	Neutral	-54.2	N/A
0.235	24.9 Qp	0.0 / 0.0 / 0.0	24.9	Neutral	-54.1	N/A
0.250	36.1 Qp	0.0 / 0.0 / 0.0	36.1	Neutral	-42.9	N/A
0.155	12.0 Av	0.0 / 0.1 / 0.0	12.1	Neutral	N/A	-53.9
0.165	9.7 Av	0.0 / 0.1 / 0.0	9.8	Neutral	N/A	-56.2
0.180	14.3 Av	0.0 / 0.1 / 0.0	14.4	Neutral	N/A	-51.6
0.190	8.1 Av	0.0 / 0.0 / 0.0	8.2	Neutral	N/A	-57.8
0.235	-1.8 Av	0.0 / 0.0 / 0.0	-1.8	Neutral	N/A	-67.8
0.250	-8.8 Av	0.0 / 0.0 / 0.0	-8.8	Neutral	N/A	-74.8
0.155	31.5 Qp	0.0 / 0.1 / 0.0	31.6	Line 1	-47.4	N/A
0.165	35.9 Qp	0.0 / 0.1 / 0.0	36.0	Line 1	-43.0	N/A
0.180	38.6 Qp	0.0 / 0.1 / 0.0	38.7	Line 1	-40.3	N/A
0.190	0.0 Qp	0.0 / 0.0 / 0.0	0.0	Line 1	-79.0	N/A
0.235	38.9 Qp	0.0 / 0.0 / 0.0	38.9	Line 1	-40.1	N/A
0.250	27.3 Qp	0.0 / 0.0 / 0.0	27.3	Line 1	-51.7	N/A

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

Conducted Electromagnetic Emissions



Test Report #: 0707 Run 01 Test Area: DOME (CE)
 Test Method: EN55011 Test Date: 19-Feb-2003
 EUT Model #: 8900 EUT Power: 50/60HZ / 230/110VAC
 EUT Serial #: EM102 Temperature: 22 °C
 Manufacturer: EASTMAN KODAK Relative Humidity: 25 %
 EUT Description: DRY VIEW LASER IMAGER Air Pressure: 99 kPa
 Notes: _____ Page: 3 of 4

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 EN55011 A Grp1 QP	DELTA2 EN55011 A Grp1 Avg
0.155	19.9 Av	0.0 / 0.1 / 0.0	20.0	Line 1	N/A	-46.0
0.165	9.3 Av	0.0 / 0.1 / 0.0	9.3	Line 1	N/A	-56.7
0.180	14.3 Av	0.0 / 0.1 / 0.0	14.4	Line 1	N/A	-51.6
0.190	-9.0 Av	0.0 / 0.0 / 0.0	-9.0	Line 1	N/A	-75.0
0.235	25.4 Av	0.0 / 0.0 / 0.0	25.4	Line 1	N/A	-40.6
0.250	-1.4 Av	0.0 / 0.0 / 0.0	-1.4	Line 1	N/A	-67.4
END OF SCAN.						

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

Conducted Electromagnetic Emissions



Test Report #: 0707 Run 01 Test Area: DOME (CE)
 Test Method: EN55011 Test Date: 19-Feb-2003
 EUT Model #: 8900 EUT Power: 50/60HZ / 230/110VAC
 EUT Serial #: EM102 Temperature: 22 °C
 Manufacturer: EASTMAN KODAK Relative Humidity: 25 %
 EUT Description: DRY VIEW LASER IMAGER Air Pressure: 99 kPa
 Notes: _____ Page: 4 of 4

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 EN55011 A Grp1 QP	DELTA2 EN55011 A Grp1 Avg
---------------	-----------------	------------------------------	-----------------	------------	-----------------------------	------------------------------

***** MEASUREMENT SUMMARY *****						
11.65	24.9 Av	0.2 / 0.1 / 0.0	25.2	Neutral	N/A	-34.8
16.21	24.4 Av	0.3 / 0.1 / 0.0	24.8	Neutral	N/A	-35.2
20.01	24.4 Av	0.3 / 0.1 / 0.0	24.8	Neutral	N/A	-35.2
0.235	38.9 Qp	0.0 / 0.0 / 0.0	38.9	Line 1	-40.1	N/A
0.180	38.6 Qp	0.0 / 0.1 / 0.0	38.7	Line 1	-40.3	N/A
0.250	36.1 Qp	0.0 / 0.0 / 0.0	36.1	Neutral	-42.9	N/A
0.165	35.9 Qp	0.0 / 0.1 / 0.0	36.0	Line 1	-43.0	N/A
5.66	15.9 Av	0.1 / 0.0 / 0.0	16.0	Neutral	N/A	-44.0
24.02	27.1 Qp	0.3 / 0.2 / 0.0	27.6	Neutral	-45.4	N/A
0.155	19.9 Av	0.0 / 0.1 / 0.0	20.0	Line 1	N/A	-46.0
21.68	8.4 Av	0.3 / 0.1 / 0.0	8.9	Line 1	N/A	-51.1
0.190	24.8 Qp	0.0 / 0.0 / 0.0	24.8	Neutral	-54.2	N/A

Tested by: RMJ

Printed

Signature

Reviewed by: TKS

Printed

Signature

Radiated Electromagnetic Emissions



Test Report #: 0707 Run 01 Test Area: LTS 3m
 Test Method: N/A Test Date: 19-Feb-2003
 EUT Model #: RF TAG READER (8900) EUT Power: 5VDC
 EUT Serial #: _____ Temperature: 22 °C
 Manufacturer: EASTMAN KODAK Relative Humidity: 25 %
 EUT Description: RF TAG READER ASSEMBLY (8E1587) Air Pressure: 99 kPa
 Notes: TRANSMITTER / SPURIOUS SCAN Page: 1 of 1

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 N/A	DELTA2 N/A
NO EMISSIONS FOUND 30 - 135.6MHZ.						
END OF SCAN.						

Tested by: RMJ

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 Company

Address: 1 Imation Way
Oakdale, MN 55128-3414

Contact: Bimal Patel Position: HSE Engineer

Phone: 651-393-1541 Fax: 651-393-1440

E-mail Address: bimal.patel@kodak.com

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

EUT Description: Laser Imager

EUT Name: Dry View

Model No.: 8900 Serial No.: EM102

Product Options: No Product Options Provided

Configurations to be tested: Single Configuration with RT Tag Reader Board (8E1587) for Limited Modular Transmitter Approval.

Test Objective

- | | |
|--|--|
| <input checked="" type="checkbox"/> EMC Directive 89/336/EEC (EMC) | <input checked="" type="checkbox"/> FCC: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B Part |
| Std: _____ | <input checked="" type="checkbox"/> VCCI: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| <input type="checkbox"/> Machinery Directive 89/392/EEC (EMC) | <input type="checkbox"/> BCIQ: Class <input type="checkbox"/> A <input type="checkbox"/> B |
| Std: _____ | <input checked="" type="checkbox"/> Canada: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| <input checked="" type="checkbox"/> Medical Device Directive 93/42/EEC (EMC) | <input type="checkbox"/> Australia: Class <input type="checkbox"/> A <input type="checkbox"/> B |
| Std: _____ | <input checked="" type="checkbox"/> Other: EN 300 330-2 V1.1.1:2001
EN 301 489-3: 2002 |
| <input type="checkbox"/> Vehicle Directive 72/245/EEC (EMC) | |
| Std: _____ | |
| <input type="checkbox"/> FDA Reviewers Guidance for Premarket Notification Submissions (EMC) | |

EMC Test Plan and Constructional Data Form

TÜV Product Service Certification Requested

- | | |
|--|--|
| <input type="checkbox"/> Attestation of Conformity (AoC) | <input type="checkbox"/> International EMC Mark (IEM) |
| <input type="checkbox"/> Certificate of Conformity (CoC) | <input checked="" type="checkbox"/> Compliance Document |
| Protection Class (N/A for vehicles) | <input checked="" 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

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

- If a failure occurs, TÜV Product Service should:
- Call contact listed above, if not available then stop testing. (After hrs phone): _____
 - Continue testing to complete test series.
 - Continue testing to define corrective action.
 - Stop testing.

EUT Specifications and Requirements

Length: 39 Width: 32 Height: 60 in Weight: 1028 lbs
 : _____

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

of Phases: 1

Current (Amps/phase(max)): 7 A Current (Amps/phase(nominal)): _____

Other _____

Other Special Requirements

Not required.

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
 The Laser Imager Dryview Model 8900 is intended for Hospital use.

EUT Power Cable

- | | | | | |
|---|----|--|---------------------|----------|
| <input type="checkbox"/> Permanent | OR | <input type="checkbox"/> Removable | Length (in meters): | 2 meters |
| <input type="checkbox"/> Shielded | OR | <input checked="" type="checkbox"/> Unshielded | | |
| <input type="checkbox"/> Not Applicable | | | | |

EMC Test Plan and Constructional Data Form



EUT Interface Ports and Cables												
Interface			Shielding									
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent
EXAMPLE:												
RS232	<input type="checkbox"/>	<input checked="" 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"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	10/100 Base T			100 ohms	0	<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"/>

EMC Test Plan and Constructional Data Form



EUT Software.

Revision Level: Milestone 9.1 software version

Description: The software version at the time of EUT testing was unreleased version of the software.

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. The Laser Imager Model 8900 is a continuous-tone laser imager with an internal photothermographic film processor. The laser imager prints images on film which is packed in 125 sheet cartridges. Three cartridges can be loaded into laser imager simultaneously. The laser imager can accept five different sizes of film.
- 2.
- 3.

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

Description	Model #	Serial #	FCC ID #
Local Panel	8E1992	LPL00012	
Power Supply Module	8E1533 (93625001XX)		
Dicom Raster Engine	8E2652		

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)			
<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
Dell Lp Top Computer	PPX (latitude CPi R Series)		

Oscillator Frequencies			
<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>
15 MHz		CPU Processor Board	
3.6864 MHz		CPU Rotating Board	
15 MHz		Oscillator RF Tag Reader Board	
13.56 MHz		Crystal Oscillator RF tag Reader Board	
380-400 MHz 32.768 MHz 25 MHz		CPU Laser Driver Board Crystal DRE Mother Board 3070 Crystal DRE Mother Board 3070	
16 MHz 66 MHz 15, 66 MHz 15 MHz 15 MHz 12 MHz 32 MHz 1.843 MHz 200 Mhz 10,40 MHz 14.31818 MHz		Oscillator Densitometer Board EBA Optics Module Board Optics Board Processor Communication Board Cartridge Controller Board Sorter Board ROB Board PMC 600 Board CPU 600 Board Oscillator DRE Mother Board 3070 Crystal DRE Mother Board 3070	

Power Supply			
<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Type</i>
Basler Electric	93625001XX		<input checked="" type="checkbox"/> Switched-mode: (Frequency) <u>50/60 Hz</u> <input type="checkbox"/> Linear <input type="checkbox"/> Other: <u>100/120/200/220/230 VAC</u>

Power Line Filters		
<i>Manufacturer</i>	<i>Model #</i>	<i>Location in EUT</i>
Corcom	10EEA1	Power Supply Module Model 93625001XX

Form

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>
Ferrite	Steward	28A2029-0A0	1	Ferrite located on Densitometer cable near the gear drive belt.

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

N/A

(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

Reviewed by TÜV Product Service Associate

Date

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 ± 4.5 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 C63.4-1992 - "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.