

TEST RESULT SUMMARY

EUROPEAN STANDARD EN 55022: 1998 + Amd. 1: 2000

AS/NZS 3548: 1995 + A1 & A2: 1997

VCCI V-3/99.05

FCC PART 15 SUBPART B

Class A Limit

MANUFACTURER'S NAME

Monarch Marking Systems, Inc, dba Paxar Corporation

NAME OF EQUIPMENT

Ultra Gold Thermal Barcode Printer with Cisco Radio Card

MODEL NUMBER

M06037 (Printer)
LMC352 (Cisco Radio Card)

MANUFACTURER'S ADDRESS

170 Monarch Lane
Miamisburg, OH 45342

TEST REPORT NUMBER

NC202932.1

TEST DATE

28 & 29 May 2002

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, VCCI V-3/99.05, AS/NZS 3548 and European Standard EN 55022.

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, VCCI V-3/99.05, AS/NZS 3548 and European Standard EN 55022: "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment".

Date: 05 August 2002



Location: Taylors Falls MN
USA

R M Johnson
Test Technician

T. K. Swanson
Test Technician

EMC EMISSION - TEST REPORT

Test Report File No. : **NC202932.1** Date of issue: 05 August 2002

Model / Serial No. : **M06037 (Printer) /
LMC352 (Cisco Radio Card) /**

Product Type : Ultra Gold Thermal Barcode Printer with Cisco Radio Card

Applicant : Monarch Marking Systems, Inc, dba Paxar Corporation

Manufacturer : Monarch Marking Systems, Inc, dba Paxar Corporation

License holder : Monarch Marking Systems, Inc, dba Paxar Corporation

Address : 170 Monarch Lane

: Miamisburg, OH 45342

Test Result : **■ Positive Negative**

Test Project Number
Reference(s) : **NC202932.1**

Total pages including
Appendices : **34**

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

| | Page(s) |
|--|---------------------|
| A) Documentation | |
| Test report | 1 - 10 |
| Directory | 2 |
| Test Regulations | 3 |
| Deviations from standard / Summary | 10 |
| Test-setups (Photos) | 11 - 12 |
| Test-setup (drawing) | Appendix A |
| B) Test data | |
| Conducted emissions | 10/150 kHz - 30 MHz |
| Radiated emissions | 5, 9 |
| Radiated emissions | 10 kHz - 30 MHz |
| Radiated emissions | 6, 9 |
| Interference power | 30 MHz - 300 MHz |
| Equivalent Radiated emissions | 7, 9 |
| C) Appendix A | |
| Test Data Sheets and Test Setup Drawing(s) | A2 – A13 |
| D) Appendix B | |
| Constructional Data Form(s) and/or Product Information Form(s) | B2 – B7 |
| E) Appendix C | |
| Measurement Protocol | C1 - C2 |

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 / 1998 w/Amendment A1:1999 | <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"/> - EN 55015 / 1987 | <input type="checkbox"/> - Semiconductor devices | |
| <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 checked="" type="checkbox"/> - EN 55022 / 1998 | <input checked="" type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - BS | | |
| <input checked="" type="checkbox"/> - VCCI | <input checked="" type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input checked="" type="checkbox"/> - FCC | <input checked="" type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input checked="" type="checkbox"/> - AS 3548 (1995) | <input checked="" 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 checked="" type="checkbox"/> - CISPR 22 (1993) | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| | <input checked="" type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |

Environmental conditions in the lab:

| | <u>Actual</u> |
|----------------------|------------------------------------|
| Temperature | : 21 °C |
| Relative Humidity | : 34 % |
| Atmospheric pressure | : 99.0 kPa |
| Power supply system | : 50/60 Hz – 230/115 VAC – 1 Phase |

Sign Explanations:

- not applicable
- applicable



Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

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 | 1-23-03 |
| ■ - 2534 | ESHS-20 | Rhode & Schwarz | EMI Receiver | 837055/003 | 8-22-02 |

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

Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

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 :

- 3 meters
- 30 meters

Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

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 7-01, due 7-02.
- 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 |
|--|--------------|-----------------|-----------------------------|---------------|----------|
| <input checked="" type="checkbox"/> - 3202 | EM-6917B | Electro-Metrics | Biconicalog Periodic | 102 | 9-24-02 |
| <input checked="" type="checkbox"/> - 3926 | 11867A | Hewlett-Packard | Limiter | 02442 | 3-18-03 |
| <input checked="" type="checkbox"/> - 2665 | ZHL-1042J | Mini-Circuits | Preamplifier | 32296 | 9-12-02 |
| <input checked="" type="checkbox"/> - 2690 | 8566B | Hewlett-Packard | Spectrum Analyzer (Unit F) | 2430A00930 | 11-19-02 |
| <input checked="" type="checkbox"/> - 2678 | 85662A | Hewlett-Packard | Analyzer Display (Unit F) | 2403A08134 | 11-19-02 |
| <input checked="" type="checkbox"/> - 2684 | 85650A | Hewlett-Packard | Quasi-Peak Adapter (Unit F) | 2521A01006 | 11-19-02 |

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)

The **EQUIVALENT RADIATED EMISSIONS** measurements in the frequency range 1 GHz - 18 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
- 1. Printer will scan a barcode every 5 seconds and print a line of 'H's.
- The access point will ping the radio transmitter, variably set from 10ms to 1000ms.

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 : _____

- unshielded power cable

- unshielded cables

- shielded cables

MPS.No.: _____

- customer specific cables

- _____
- _____

Emission Test Results:

Conducted emissions 10/150 kHz - 30 MHz

The requirements are - MET - NOT MET

Minimum margin of compliance _____ dB at _____ kHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: _____

Conducted common mode disturbance at telecommunication ports – 150 kHz to 30 MHz

The requirements are - MET - NOT MET

Minimum margin of compliance _____ dB at _____ MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: _____

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are - MET - NOT MET

Minimum margin of compliance _____ dB at _____ MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: _____

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

The requirements are - MET - NOT MET

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Equivalent Radiated emissions 1 GHz - 18 GHz

The requirements are - MET - NOT MET

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

DEVIATIONS FROM STANDARD:

None

GENERAL REMARKS:

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:

28 May 2002

Testing End Date:

29 May 2002

- TÜV PRODUCT SERVICE INC -

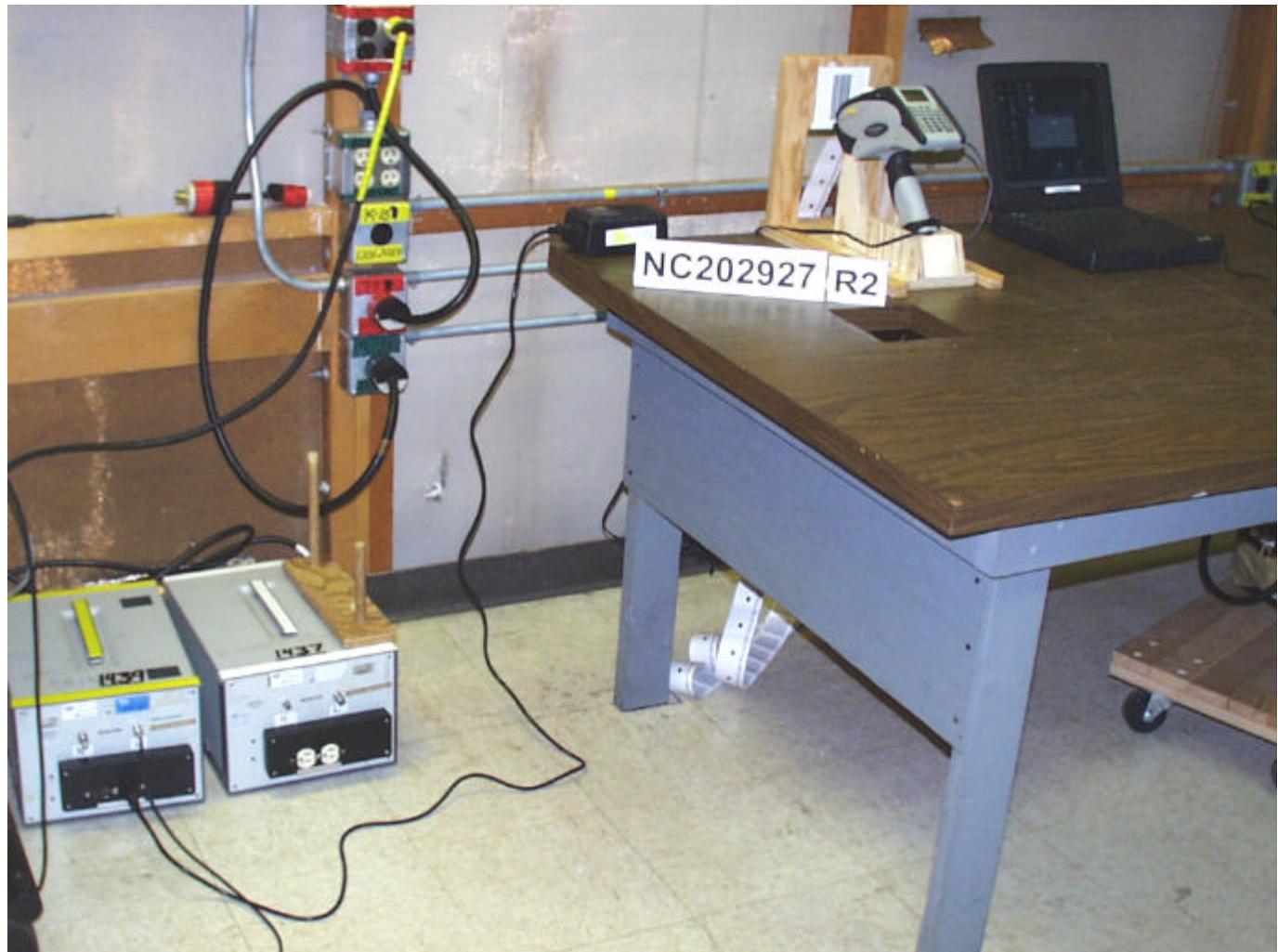
Thomas K. Swanson

T. K. Swanson
Test Technician

Russ M. Johnson

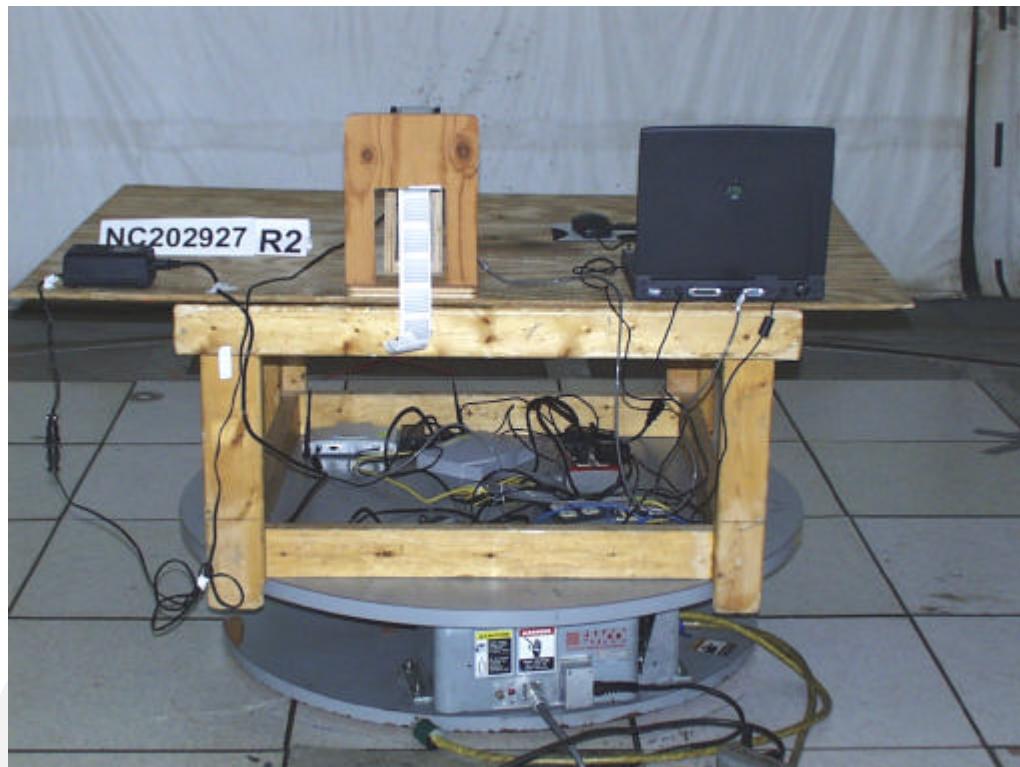
Tested By:
R. M. Johnson

Test-setup photo(s):
Conducted emission 10/150 kHz - 30 MHz



File No. NC202932.1, Page 11 of 12

Test-setup photo(s):
Radiated emission 30 MHz - 1000 MHz

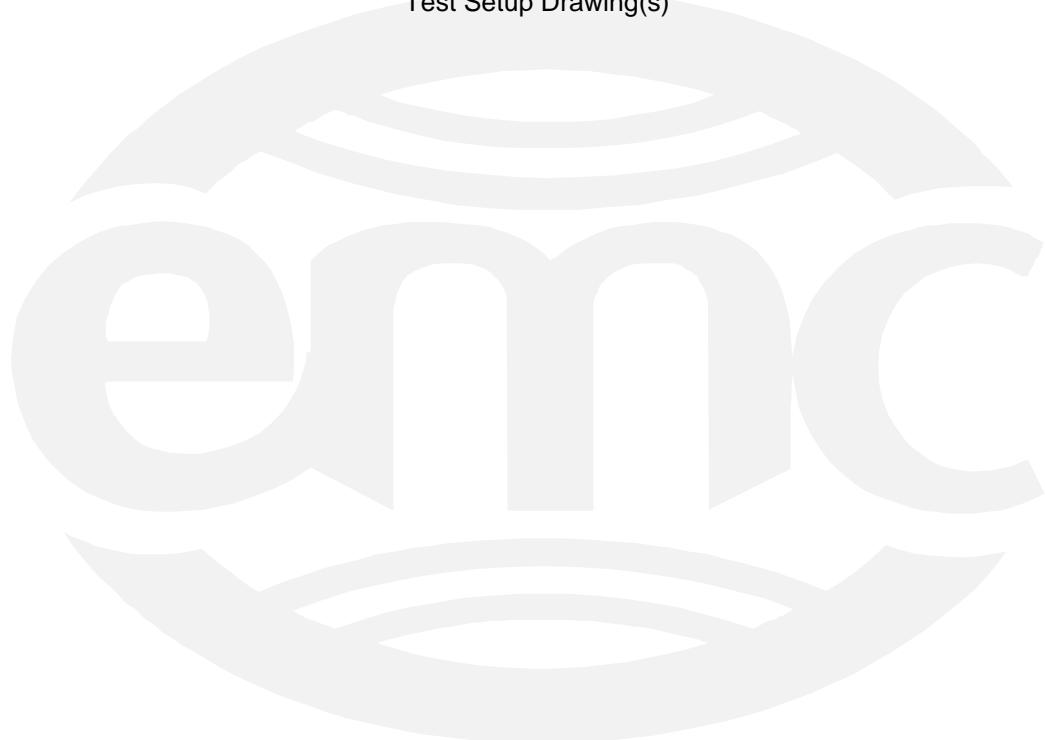


Appendix A

Test Data Sheets

and

Test Setup Drawing(s)

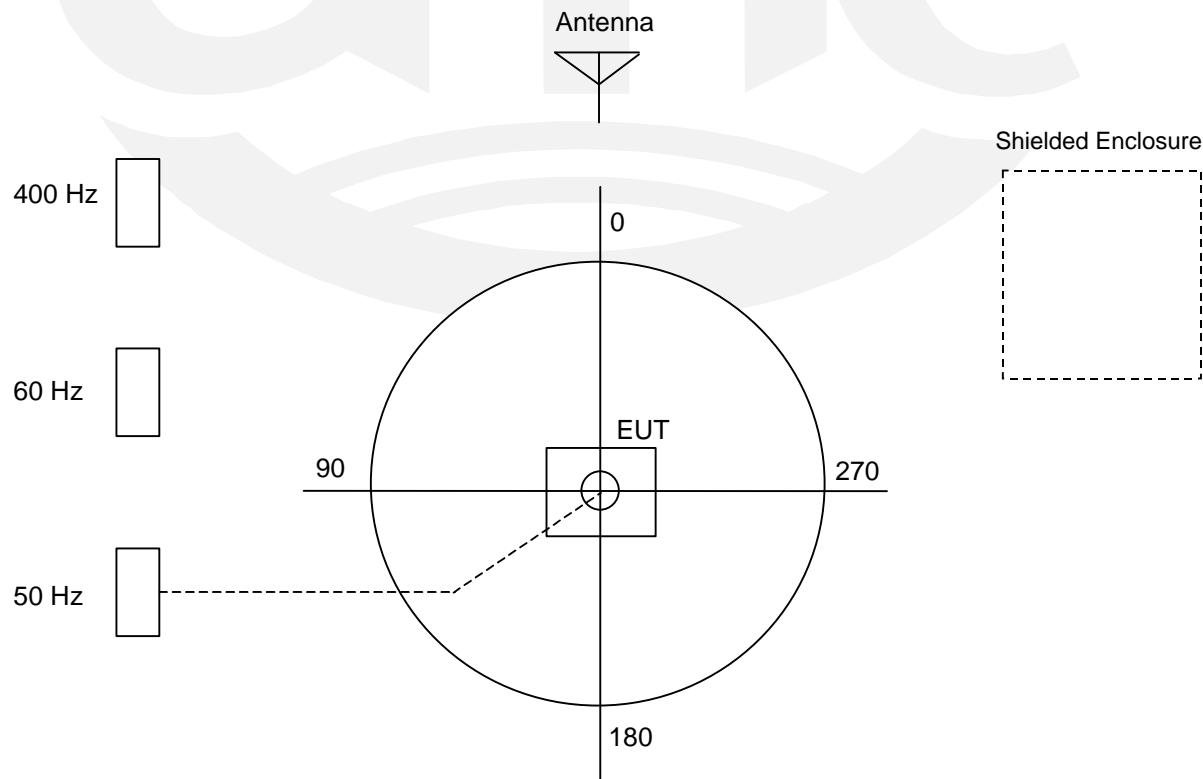


TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Large Test Site

Notes:

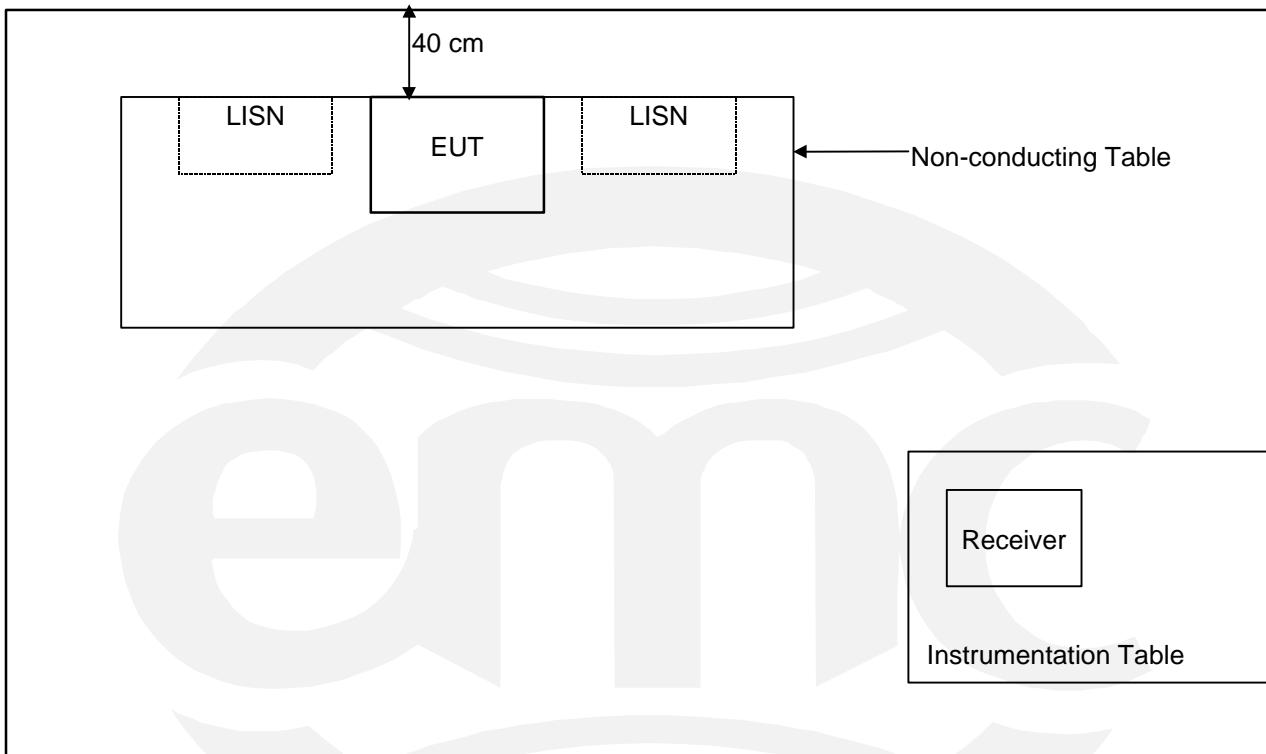
1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.
3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.
4. The circle is a 6.7 meter diameter turntable.
5. A ground plane is in the plane of this sheet.
6. The test sample is shown in the azimuthal position representing zero degrees.



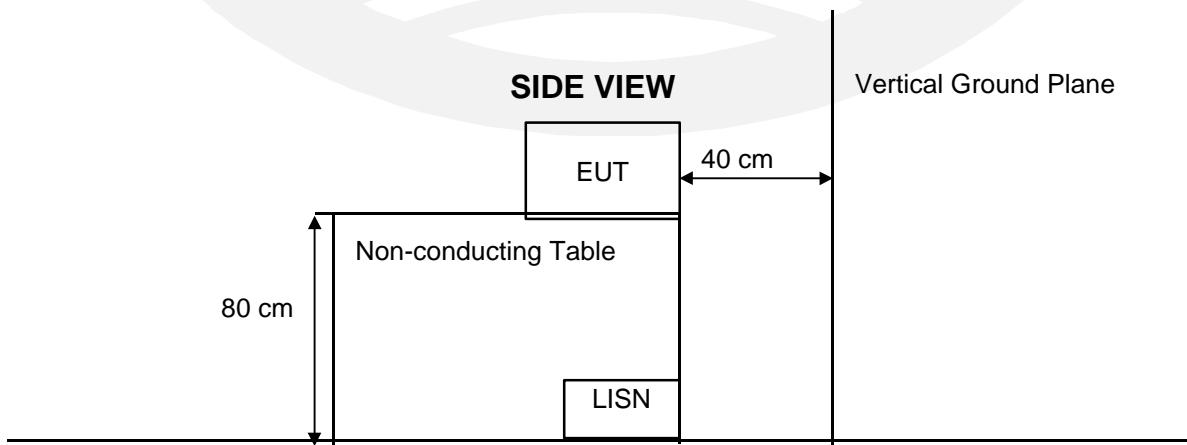
TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Screen Room

TOP VIEW



SIDE VIEW



Other Measurements:

2 meters from top of EUT to ceiling
80 cm from closest part of EUT to the LISN

Conducted Electromagnetic Emissions

| | | | |
|------------------|---|--------------------|----------------------|
| Test Report #: | 2927 Run 02 | Test Area: | SCREEN ROOM |
| Test Method: | EN55022 | Test Date: | 29-May-2002 |
| EUT Model #: | M06037 CISCO LASER SCANNING | EUT Power: | 50/60HZ / 230/110VAC |
| EUT Serial #: | | Temperature: | 21 °C |
| Manufacturer: | MONARCH MARKING SYSTEMS | Relative Humidity: | 34 % |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | Air Pressure: | 99 kPa |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) UNINTENTIONAL RADIATOR CE SCAN | Page: | 1 of 4 |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / LISN / ATTEN (dB) | FINAL (dBuV) | TEST POINT | DELTA1 EN55022 A QP | DELTA2 EN55022 A Avg |
|---------------|-----------------|------------------------------|-----------------|------------|------------------------|-------------------------|
|---------------|-----------------|------------------------------|-----------------|------------|------------------------|-------------------------|

| 50HZ/230VAC | | | | | | |
|-------------|---------|-----------------|------|---------|-------|-------|
| 0.565 | 60.5 Qp | 0.0 / 0.1 / 0.0 | 60.6 | Neutral | -12.4 | N/A |
| 0.670 | 52.6 Qp | 0.1 / 0.0 / 0.0 | 52.8 | Neutral | -20.2 | N/A |
| 0.775 | 57.3 Qp | 0.1 / 0.0 / 0.0 | 57.4 | Neutral | -15.6 | N/A |
| 1.35 | 56.7 Qp | 0.1 / 0.0 / 0.0 | 56.8 | Neutral | -16.2 | N/A |
| 2.08 | 54.6 Qp | 0.1 / 0.0 / 0.0 | 54.7 | Neutral | -18.3 | N/A |
| 6.33 | 54.6 Qp | 0.1 / 0.1 / 0.0 | 54.8 | Neutral | -18.2 | N/A |
| <hr/> | | | | | | |
| 0.565 | 50.3 Av | 0.0 / 0.1 / 0.0 | 50.4 | Neutral | N/A | -9.6 |
| 0.670 | 28.2 Av | 0.1 / 0.0 / 0.0 | 28.4 | Neutral | N/A | -31.6 |
| 0.775 | 38.4 Av | 0.1 / 0.0 / 0.0 | 38.5 | Neutral | N/A | -21.5 |
| 1.35 | 47.3 Av | 0.1 / 0.0 / 0.0 | 47.4 | Neutral | N/A | -12.6 |
| 2.08 | 37.6 Av | 0.1 / 0.0 / 0.0 | 37.7 | Neutral | N/A | -22.3 |
| 6.33 | 33.9 Av | 0.1 / 0.1 / 0.0 | 34.1 | Neutral | N/A | -25.9 |
| <hr/> | | | | | | |
| 0.565 | 60.1 Qp | 0.0 / 0.1 / 0.0 | 60.2 | Line 1 | -12.8 | N/A |
| 0.670 | 54.4 Qp | 0.1 / 0.0 / 0.0 | 54.6 | Line 1 | -18.4 | N/A |
| 0.775 | 55.8 Qp | 0.1 / 0.0 / 0.0 | 55.9 | Line 1 | -17.1 | N/A |
| 1.35 | 55.2 Qp | 0.1 / 0.0 / 0.0 | 55.3 | Line 1 | -17.7 | N/A |
| 2.08 | 56.7 Qp | 0.1 / 0.0 / 0.0 | 56.8 | Line 1 | -16.2 | N/A |
| 6.33 | 54.0 Qp | 0.1 / 0.1 / 0.0 | 54.2 | Line 1 | -18.8 | N/A |
| <hr/> | | | | | | |
| 0.565 | 47.0 Av | 0.0 / 0.1 / 0.0 | 47.1 | Line 1 | N/A | -12.9 |
| 0.670 | 27.6 Av | 0.1 / 0.0 / 0.0 | 27.8 | Line 1 | N/A | -32.2 |
| 0.775 | 49.5 Av | 0.1 / 0.0 / 0.0 | 49.6 | Line 1 | N/A | -10.4 |

Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Conducted Electromagnetic Emissions

| | | | |
|------------------|---|--------------------|----------------------|
| Test Report #: | 2927 Run 02 | Test Area: | SCREEN ROOM |
| Test Method: | EN55022 | Test Date: | 29-May-2002 |
| EUT Model #: | M06037 CISCO LASER SCANNING | EUT Power: | 50/60HZ / 230/110VAC |
| EUT Serial #: | | Temperature: | 21 °C |
| Manufacturer: | MONARCH MARKING SYSTEMS | Relative Humidity: | 34 % |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | Air Pressure: | 99 kPa |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) UNINTENTIONAL RADIATOR CE SCAN | Page: | 2 of 4 |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / LISN / ATTEN (dB) | FINAL (dBuV) | TEST POINT | DELTA1 EN55022 A QP | DELTA2 EN55022 A Avg |
|---------------|-----------------|------------------------------|-----------------|------------|------------------------|-------------------------|
| 1.35 | 45.1 Av | 0.1 / 0.0 / 0.0 | 45.2 | Line 1 | N/A | -14.8 |
| 2.08 | 37.6 Av | 0.1 / 0.0 / 0.0 | 37.7 | Line 1 | N/A | -22.3 |
| 6.33 | 35.3 Av | 0.1 / 0.1 / 0.0 | 35.5 | Line 1 | N/A | -24.5 |
| <hr/> | | | | | | |
| 60HZ/110VAC | | | | | | |
| 0.315 | 53.3 Qp | 0.0 / 0.1 / 0.0 | 53.4 | Line 1 | -25.6 | N/A |
| 0.650 | 46.9 Qp | 0.2 / 0.0 / 0.0 | 47.1 | Line 1 | -25.9 | N/A |
| 0.790 | 54.1 Qp | 0.1 / 0.0 / 0.0 | 54.2 | Line 1 | -18.8 | N/A |
| 0.960 | 52.4 Qp | 0.1 / 0.0 / 0.0 | 52.5 | Line 1 | -20.5 | N/A |
| 1.45 | 49.6 Qp | 0.1 / 0.1 / 0.0 | 49.8 | Line 1 | -23.2 | N/A |
| 1.87 | 41.0 Qp | 0.1 / 0.0 / 0.0 | 41.1 | Line 1 | -31.9 | N/A |
| <hr/> | | | | | | |
| 0.315 | 48.5 Av | 0.0 / 0.1 / 0.0 | 48.6 | Line 1 | N/A | -17.4 |
| 0.650 | 34.7 Av | 0.2 / 0.0 / 0.0 | 34.9 | Line 1 | N/A | -25.1 |
| 0.790 | 42.5 Av | 0.1 / 0.0 / 0.0 | 42.6 | Line 1 | N/A | -17.4 |
| 0.960 | 41.0 Av | 0.1 / 0.0 / 0.0 | 41.1 | Line 1 | N/A | -18.9 |
| 1.45 | 38.0 Av | 0.1 / 0.1 / 0.0 | 38.2 | Line 1 | N/A | -21.8 |
| 1.87 | 27.1 Av | 0.1 / 0.0 / 0.0 | 27.2 | Line 1 | N/A | -32.8 |
| <hr/> | | | | | | |
| 0.315 | 53.5 Qp | 0.0 / 0.1 / 0.0 | 53.6 | Neutral | -25.4 | N/A |
| 0.565 | 12.7 Qp | 0.0 / 0.1 / 0.0 | 12.8 | Neutral | -60.2 | N/A |
| 0.650 | 46.5 Qp | 0.2 / 0.0 / 0.0 | 46.7 | Neutral | -26.3 | N/A |
| 0.790 | 54.2 Qp | 0.1 / 0.0 / 0.0 | 54.3 | Neutral | -18.7 | N/A |
| 0.960 | 52.6 Qp | 0.1 / 0.0 / 0.0 | 52.7 | Neutral | -20.3 | N/A |
| 1.87 | 50.6 Qp | 0.1 / 0.0 / 0.0 | 50.7 | Neutral | -22.3 | N/A |

Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Conducted Electromagnetic Emissions

Test Report #: 2927 Run 02 Test Area: SCREEN ROOM
 Test Method: EN55022 Test Date: 29-May-2002
 EUT Model #: M06037 CISCO LASER SCANNING EUT Power: 50/60HZ / 230/110VAC
 EUT Serial #: _____ Temperature: 21 °C
 Manufacturer: MONARCH MARKING SYSTEMS Relative Humidity: 34 %
 EUT Description: CISCO LASER SCANNING PRINTER (FHSS MODE) Air Pressure: 99 kPa
 Notes: SCANNING/PRINTING (NO ACCESS POINTS ON) Page: 3 of 4
UNINTENTIONAL RADIATOR CE SCAN

| FREQ (MHz) | LEVEL (dBuV) | CABLE / LISN / ATTEN (dB) | FINAL (dBuV) | TEST POINT | DELTA1 EN55022 A QP | DELTA2 EN55022 A Avg |
|---------------|-----------------|------------------------------|-----------------|------------|------------------------|-------------------------|
|---------------|-----------------|------------------------------|-----------------|------------|------------------------|-------------------------|

| | | | | | | |
|--------------|---------|-----------------|------|---------|-----|-------|
| 0.315 | 48.5 Av | 0.0 / 0.1 / 0.0 | 48.6 | Neutral | N/A | -17.4 |
| 0.650 | 22.4 Av | 0.2 / 0.0 / 0.0 | 22.6 | Neutral | N/A | -37.4 |
| 0.790 | 41.1 Av | 0.1 / 0.0 / 0.0 | 41.2 | Neutral | N/A | -18.8 |
| 0.960 | 32.3 Av | 0.1 / 0.0 / 0.0 | 32.4 | Neutral | N/A | -27.6 |
| 1.87 | 32.2 Av | 0.1 / 0.0 / 0.0 | 32.3 | Neutral | N/A | -27.7 |
| 1.45 | 31.7 Av | 0.1 / 0.1 / 0.0 | 31.9 | Neutral | N/A | -28.1 |
| END OF SCAN. | | | | | | |
| | | | | | | |

Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Conducted Electromagnetic Emissions

| | | | |
|------------------|---|--------------------|----------------------|
| Test Report #: | 2927 Run 02 | Test Area: | SCREEN ROOM |
| Test Method: | EN55022 | Test Date: | 29-May-2002 |
| EUT Model #: | M06037 CISCO LASER SCANNING | EUT Power: | 50/60HZ / 230/110VAC |
| EUT Serial #: | | Temperature: | 21 °C |
| Manufacturer: | MONARCH MARKING SYSTEMS | Relative Humidity: | 34 % |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | Air Pressure: | 99 kPa |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) UNINTENTIONAL RADIATOR CE SCAN | Page: | 4 of 4 |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / LISN / ATTEN (dB) | FINAL (dBuV) | TEST POINT | DELTA1 EN55022 A QP | DELTA2 EN55022 A Avg |
|---------------|-----------------|------------------------------|-----------------|------------|------------------------|-------------------------|
|---------------|-----------------|------------------------------|-----------------|------------|------------------------|-------------------------|

| ***** MEASUREMENT SUMMARY ***** | | | | | | |
|---------------------------------|---------|-----------------|------|---------|-------|-------|
| 0.565 | 50.3 Av | 0.0 / 0.1 / 0.0 | 50.4 | Neutral | N/A | -9.6 |
| 0.775 | 49.5 Av | 0.1 / 0.0 / 0.0 | 49.6 | Line 1 | N/A | -10.4 |
| 0.315 | 53.4 Qp | 0.0 / 0.1 / 0.0 | 53.5 | Neutral | -25.5 | N/A |
| 1.35 | 47.3 Av | 0.1 / 0.0 / 0.0 | 47.4 | Neutral | N/A | -12.6 |
| 2.08 | 56.7 Qp | 0.1 / 0.0 / 0.0 | 56.8 | Line 1 | -16.2 | N/A |
| 0.790 | 42.5 Av | 0.1 / 0.0 / 0.0 | 42.6 | Line 1 | N/A | -17.4 |
| 6.33 | 54.6 Qp | 0.1 / 0.1 / 0.0 | 54.8 | Neutral | -18.2 | N/A |
| 0.670 | 54.4 Qp | 0.1 / 0.0 / 0.0 | 54.6 | Line 1 | -18.4 | N/A |
| 0.960 | 41.0 Av | 0.1 / 0.0 / 0.0 | 41.1 | Line 1 | N/A | -18.9 |
| 1.45 | 38.0 Av | 0.1 / 0.1 / 0.0 | 38.2 | Line 1 | N/A | -21.8 |
| 1.87 | 50.6 Qp | 0.1 / 0.0 / 0.0 | 50.7 | Neutral | -22.3 | N/A |
| 0.650 | 34.7 Av | 0.2 / 0.0 / 0.0 | 34.9 | Line 1 | N/A | -25.1 |
| | | | | | | |

Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Radiated Electromagnetic Emissions

| | | | | | |
|------------------------------|---|------------|-------------|-------------------------|--|
| Test Report #: | 2927 Run 02 | Test Area: | LTS 10m | | |
| Test Method: | EN55022 | Test Date: | 28-May-2002 | | |
| EUT Model #: | M06037 CISCO LASER SCANNING PRINTER | | EUT Power: | 60HZ/110VAC. | |
| EUT Serial #: | | | | Temperature: 21 °C | |
| Manufacturer: | MONARCH MARKING SYSTEMS | | | Relative Humidity: 34 % | |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | | | Air Pressure: 99 kPa | |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) | | | Page: 1 of 6 | |
| UNINTENTIONAL RADIATOR SCAN. | | | | | |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) (dB/m) (dB) | FINAL (dBuV/m) | POL / HGT / AZ (m) (DEG) | DELTA1 EN55022 A | DELTA2 N/A |
|---------------|-----------------|--|-------------------|-----------------------------|---------------------|---------------|
| 46.24 | 37.1 Qp | 0.7 / 14.1 / 27.8 | 24.0 | V / 1.0 / 0.0 | -16.0 | N/A |
| 70.69 | 39.6 Qp | 1.0 / 8.4 / 27.8 | 21.2 | V / 1.0 / 0.0 | -18.8 | N/A |
| 150.03 | 37.4 Qp | 1.5 / 9.2 / 27.9 | 20.2 | V / 1.0 / 0.0 | -19.8 | N/A |
| 172.41 | 40.0 Qp | 1.6 / 8.7 / 27.9 | 22.5 | V / 1.0 / 0.0 | -17.5 | N/A |
| 175.98 | 43.7 Qp | 1.6 / 9.0 / 27.9 | 26.5 | V / 1.0 / 0.0 | -13.5 | N/A |
| 175.14 | 38.6 Qp | 1.6 / 9.0 / 27.9 | 21.4 | V / 1.0 / 0.0 | -18.6 | N/A |
| 175.98 | 43.5 Qp | 1.6 / 9.0 / 27.9 | 26.3 | V / 1.0 / 0.0 | -13.7 | N/A |
| 181.35 | 41.1 Qp | 1.7 / 9.4 / 27.9 | 24.3 | V / 1.0 / 0.0 | -15.7 | N/A |
| 187.54 | 42.2 Qp | 1.7 / 9.9 / 27.9 | 26.0 | V / 1.0 / 0.0 | -14.0 | N/A |
| 193.86 | 46.7 Qp | 1.8 / 10.2 / 27.8 | 30.9 | V / 1.0 / 0.0 | -9.1 | N/A |
| 195.33 | 36.1 Qp | 1.8 / 10.3 / 27.8 | 20.3 | V / 1.0 / 0.0 | -19.7 | N/A |
| 200.14 | 43.1 Qp | 1.8 / 10.3 / 27.8 | 27.3 | V / 1.0 / 0.0 | -12.7 | N/A |
| 215.70 | 32.2 Qp | 1.8 / 10.6 / 27.7 | 17.0 | V / 1.0 / 0.0 | -23.0 | N/A |
| 222.94 | 33.4 Qp | 1.8 / 10.6 / 27.7 | 18.1 | V / 1.0 / 0.0 | -21.9 | N/A |
| 243.94 | 39.8 Qp | 2.0 / 11.1 / 27.8 | 25.1 | V / 1.0 / 0.0 | -21.9 | N/A |
| 250.15 | 38.4 Qp | 2.0 / 11.4 / 27.8 | 23.9 | V / 1.0 / 0.0 | -23.1 | N/A |
| 262.65 | 34.1 Qp | 2.0 / 12.1 / 27.8 | 20.5 | V / 1.0 / 0.0 | -26.5 | N/A |
| 268.96 | 37.1 Qp | 2.0 / 12.4 / 27.8 | 23.6 | V / 1.0 / 0.0 | -23.4 | N/A |
| 275.10 | 35.3 Qp | 2.1 / 12.6 / 27.9 | 22.1 | V / 1.0 / 0.0 | -24.9 | N/A |
| 293.92 | 39.5 Qp | 2.1 / 12.4 / 27.8 | 26.2 | V / 1.0 / 0.0 | -20.8 | N/A |
| 300.21 | 37.4 Qp | 2.1 / 12.7 / 27.7 | 24.5 | V / 1.0 / 0.0 | -22.5 | N/A |
| 300.64 | 39.1 Qp | 2.1 / 12.7 / 27.7 | 26.2 | V / 1.0 / 0.0 | -20.8 | N/A |
| 337.69 | 37.6 Qp | 2.3 / 13.9 / 27.6 | 26.1 | V / 1.0 / 0.0 | -20.9 | N/A |
| 341.98 | 30.5 Qp | 2.3 / 14.2 / 27.6 | 19.4 | V / 1.0 / 0.0 | -27.6 | N/A |
| 344.01 | 34.0 Qp | 2.3 / 14.4 / 27.6 | 23.0 | V / 1.0 / 0.0 | -24.0 | N/A |

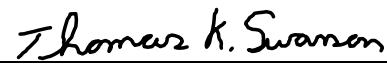
Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Radiated Electromagnetic Emissions

| | | | | | |
|------------------------------|---|------------|-------------|-------------------------|--|
| Test Report #: | 2927 Run 02 | Test Area: | LTS 10m | | |
| Test Method: | EN55022 | Test Date: | 28-May-2002 | | |
| EUT Model #: | M06037 CISCO LASER SCANNING PRINTER | | EUT Power: | 60HZ/110VAC. | |
| EUT Serial #: | | | | Temperature: 21 °C | |
| Manufacturer: | MONARCH MARKING SYSTEMS | | | Relative Humidity: 34 % | |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | | | Air Pressure: 99 kPa | |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) | | | Page: 2 of 6 | |
| UNINTENTIONAL RADIATOR SCAN. | | | | | |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) (dB/m) (dB) | FINAL (dBuV/m) | POL / HGT / AZ (m) (DEG) | DELTA1 EN55022 A | DELTA2 N/A |
|---------------|-----------------|--|-------------------|-----------------------------|---------------------|---------------|
| 344.93 | 31.2 Qp | 2.3 / 14.4 / 27.6 | 20.3 | V / 1.0 / 0.0 | -26.7 | N/A |
| 362.66 | 38.0 Qp | 2.4 / 15.1 / 27.7 | 27.8 | V / 1.0 / 0.0 | -19.2 | N/A |
| 412.77 | 34.9 Qp | 2.5 / 16.8 / 27.7 | 26.4 | V / 1.0 / 0.0 | -20.6 | N/A |
| 425.31 | 30.1 Qp | 2.5 / 17.1 / 27.7 | 21.9 | V / 1.0 / 0.0 | -25.1 | N/A |
| 431.49 | 31.8 Qp | 2.6 / 16.8 / 27.7 | 23.4 | V / 1.0 / 0.0 | -23.6 | N/A |
| 470.19 | 28.2 Qp | 2.8 / 17.5 / 27.6 | 20.9 | V / 1.0 / 0.0 | -26.1 | N/A |
| 474.12 | 27.7 Qp | 2.8 / 17.7 / 27.6 | 20.6 | V / 1.0 / 0.0 | -26.4 | N/A |
| 143.82 | 38.1 Qp | 1.5 / 9.1 / 27.9 | 20.8 | V / 1.0 / 0.0 | -19.2 | N/A |
| 169.88 | 38.2 Qp | 1.6 / 8.5 / 27.9 | 20.4 | V / 1.0 / 0.0 | -19.6 | N/A |
| 362.66 | 38.9 Qp | 2.4 / 15.1 / 27.7 | 28.7 | V / 1.0 / 90.0 | -18.3 | N/A |
| 412.77 | 38.1 Qp | 2.5 / 16.8 / 27.7 | 29.7 | V / 1.0 / 90.0 | -17.3 | N/A |
| 425.31 | 31.9 Qp | 2.5 / 17.1 / 27.7 | 23.7 | V / 1.0 / 90.0 | -23.3 | N/A |
| 505.07 | 27.4 Qp | 2.9 / 17.6 / 27.6 | 20.3 | V / 1.0 / 90.0 | -26.7 | N/A |
| 150.03 | 40.0 Qp | 1.5 / 9.2 / 27.9 | 22.8 | V / 1.0 / 180.0 | -17.2 | N/A |
| 175.14 | 42.5 Qp | 1.6 / 9.0 / 27.9 | 25.2 | V / 1.0 / 180.0 | -14.8 | N/A |
| 175.98 | 45.1 Qp | 1.6 / 9.0 / 27.9 | 27.8 | V / 1.0 / 180.0 | -12.2 | N/A |
| 181.35 | 46.6 Qp | 1.7 / 9.4 / 27.9 | 29.7 | V / 1.0 / 180.0 | -10.3 | N/A |
| 187.54 | 47.3 Qp | 1.7 / 9.9 / 27.9 | 31.0 | V / 1.0 / 180.0 | -9.0 | N/A |
| 200.14 | 44.0 Qp | 1.8 / 10.3 / 27.8 | 28.3 | V / 1.0 / 180.0 | -11.7 | N/A |
| 362.66 | 43.0 Qp | 2.4 / 15.1 / 27.7 | 32.8 | V / 1.0 / 180.0 | -14.2 | N/A |
| 337.69 | 39.1 Qp | 2.3 / 13.9 / 27.6 | 27.6 | V / 1.0 / 270.0 | -19.4 | N/A |
| 344.01 | 36.2 Qp | 2.3 / 14.4 / 27.6 | 25.2 | V / 1.0 / 270.0 | -21.8 | N/A |

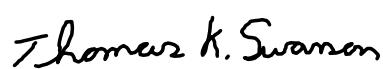
Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Radiated Electromagnetic Emissions

| | | | | | |
|------------------------------|---|------------|-------------|--------------------|--------|
| Test Report #: | 2927 Run 02 | Test Area: | LTS 10m | | |
| Test Method: | EN55022 | Test Date: | 28-May-2002 | | |
| EUT Model #: | M06037 CISCO LASER SCANNING PRINTER | | EUT Power: | 60HZ/110VAC. | |
| EUT Serial #: | | | | Temperature: | 21 °C |
| Manufacturer: | MONARCH MARKING SYSTEMS | | | Relative Humidity: | 34 % |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | | | Air Pressure: | 99 kPa |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) | | | Page: | 3 of 6 |
| UNINTENTIONAL RADIATOR SCAN. | | | | | |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) (dB/m) (dB) | FINAL (dBuV/m) | POL / HGT / AZ (m) (DEG) | DELTA1 EN55022 A | DELTA2 N/A |
|--|-----------------|--|-------------------|-----------------------------|---------------------|---------------|
| 344.93 | 34.4 Qp | 2.3 / 14.4 / 27.6 | 23.5 | V / 1.0 / 270.0 | -23.5 | N/A |
| MAXIMIZED. | | | | | | |
| 187.54 | 45.7 Qp | 1.7 / 9.9 / 27.9 | 29.4 | V / 1.0 / 0.0 | -10.6 | N/A |
| MAXED ANTENNA AND ROTATED EUT 360 DEGREES. | | | | | | |
| 215.70 | 35.1 Qp | 1.8 / 10.6 / 27.7 | 19.9 | H / 3.0 / 180.0 | -20.1 | N/A |
| MAXIMIZED. | | | | | | |
| 215.72 | 37.9 Qp | 1.8 / 10.6 / 27.7 | 22.6 | H / 3.5 / 0.0 | -17.4 | N/A |
| MAXED ANTENNA AND ROTATED EUT 360 DEGREES. | | | | | | |
| END OF SCAN 30 - 1000MHZ. | | | | | | |
| | | | | | | |

Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Radiated Electromagnetic Emissions

| | | | | |
|------------------------------|---|------------|-------------|-------------------------|
| Test Report #: | 2927 Run 02 | Test Area: | LTS 10m | |
| Test Method: | EN55022 | Test Date: | 28-May-2002 | |
| EUT Model #: | M06037 CISCO LASER SCANNING PRINTER | | EUT Power: | 60HZ/110VAC. |
| EUT Serial #: | | | | Temperature: 21 °C |
| Manufacturer: | MONARCH MARKING SYSTEMS | | | Relative Humidity: 34 % |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | | | Air Pressure: 99 kPa |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) | | | Page: 4 of 6 |
| UNINTENTIONAL RADIATOR SCAN. | | | | |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) (dB/m) (dB) | FINAL (dBuV/m) | POL / HGT / AZ (m) (DEG) | DELTA1 EN55022 A | DELTA2 N/A |
|---------------|-----------------|--|-------------------|-----------------------------|---------------------|---------------|
|---------------|-----------------|--|-------------------|-----------------------------|---------------------|---------------|

| ***** MEASUREMENT SUMMARY ***** | | | | | | |
|---------------------------------|---------|-------------------|------|-----------------|-------|-----|
| 187.54 | 47.3 Qp | 1.7 / 9.9 / 27.9 | 31.0 | V / 1.0 / 180.0 | -9.0 | N/A |
| 193.86 | 46.7 Qp | 1.8 / 10.2 / 27.8 | 30.9 | V / 1.0 / 0.0 | -9.1 | N/A |
| 181.35 | 46.6 Qp | 1.7 / 9.4 / 27.9 | 29.7 | V / 1.0 / 180.0 | -10.3 | N/A |
| 200.14 | 44.0 Qp | 1.8 / 10.3 / 27.8 | 28.3 | V / 1.0 / 180.0 | -11.7 | N/A |
| 175.98 | 45.1 Qp | 1.6 / 9.0 / 27.9 | 27.8 | V / 1.0 / 180.0 | -12.2 | N/A |
| 362.66 | 43.0 Qp | 2.4 / 15.1 / 27.7 | 32.8 | V / 1.0 / 180.0 | -14.2 | N/A |
| 175.14 | 42.5 Qp | 1.6 / 9.0 / 27.9 | 25.2 | V / 1.0 / 180.0 | -14.8 | N/A |
| 46.24 | 37.1 Qp | 0.7 / 14.1 / 27.8 | 24.0 | V / 1.0 / 0.0 | -16.0 | N/A |
| 150.03 | 40.0 Qp | 1.5 / 9.2 / 27.9 | 22.8 | V / 1.0 / 180.0 | -17.2 | N/A |
| 412.77 | 38.1 Qp | 2.5 / 16.8 / 27.7 | 29.7 | V / 1.0 / 90.0 | -17.3 | N/A |
| 215.72 | 37.9 Qp | 1.8 / 10.6 / 27.7 | 22.6 | H / 3.5 / 0.0 | -17.4 | N/A |
| 172.41 | 40.0 Qp | 1.6 / 8.7 / 27.9 | 22.5 | V / 1.0 / 0.0 | -17.5 | N/A |
| 70.69 | 39.6 Qp | 1.0 / 8.4 / 27.8 | 21.2 | V / 1.0 / 0.0 | -18.8 | N/A |
| 143.82 | 38.1 Qp | 1.5 / 9.1 / 27.9 | 20.8 | V / 1.0 / 0.0 | -19.2 | N/A |
| 337.69 | 39.1 Qp | 2.3 / 13.9 / 27.6 | 27.6 | V / 1.0 / 270.0 | -19.4 | N/A |
| 169.88 | 38.2 Qp | 1.6 / 8.5 / 27.9 | 20.4 | V / 1.0 / 0.0 | -19.6 | N/A |
| 195.33 | 36.1 Qp | 1.8 / 10.3 / 27.8 | 20.3 | V / 1.0 / 0.0 | -19.7 | N/A |
| 293.92 | 39.5 Qp | 2.1 / 12.4 / 27.8 | 26.2 | V / 1.0 / 0.0 | -20.8 | N/A |
| 300.64 | 39.1 Qp | 2.1 / 12.7 / 27.7 | 26.2 | V / 1.0 / 0.0 | -20.8 | N/A |
| 344.01 | 36.2 Qp | 2.3 / 14.4 / 27.6 | 25.2 | V / 1.0 / 270.0 | -21.8 | N/A |
| 222.94 | 33.4 Qp | 1.8 / 10.6 / 27.7 | 18.1 | V / 1.0 / 0.0 | -21.9 | N/A |
| 243.94 | 39.8 Qp | 2.0 / 11.1 / 27.8 | 25.1 | V / 1.0 / 0.0 | -21.9 | N/A |
| 300.21 | 37.4 Qp | 2.1 / 12.7 / 27.7 | 24.5 | V / 1.0 / 0.0 | -22.5 | N/A |

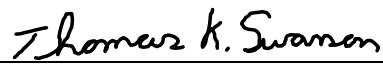
Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Radiated Electromagnetic Emissions

| | | | | |
|------------------------------|---|------------|-------------|-------------------------|
| Test Report #: | 2927 Run 02 | Test Area: | LTS 10m | |
| Test Method: | EN55022 | Test Date: | 28-May-2002 | |
| EUT Model #: | M06037 CISCO LASER SCANNING PRINTER | | EUT Power: | 60HZ/110VAC. |
| EUT Serial #: | | | | Temperature: 21 °C |
| Manufacturer: | MONARCH MARKING SYSTEMS | | | Relative Humidity: 34 % |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | | | Air Pressure: 99 kPa |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) | | | Page: 5 of 6 |
| UNINTENTIONAL RADIATOR SCAN. | | | | |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) (dB/m) (dB) | FINAL (dBuV/m) | POL / HGT / AZ (m) (DEG) | DELTA1 EN55022 A | DELTA2 N/A |
|---------------|-----------------|--|-------------------|-----------------------------|---------------------|---------------|
|---------------|-----------------|--|-------------------|-----------------------------|---------------------|---------------|

***** MEASUREMENT SUMMARY *****

| | | | | | | |
|--------|---------|-------------------|------|-----------------|-------|-----|
| 250.15 | 38.4 Qp | 2.0 / 11.4 / 27.8 | 23.9 | V / 1.0 / 0.0 | -23.1 | N/A |
| 425.31 | 31.9 Qp | 2.5 / 17.1 / 27.7 | 23.7 | V / 1.0 / 90.0 | -23.3 | N/A |
| 268.96 | 37.1 Qp | 2.0 / 12.4 / 27.8 | 23.6 | V / 1.0 / 0.0 | -23.4 | N/A |
| 344.93 | 34.4 Qp | 2.3 / 14.4 / 27.6 | 23.5 | V / 1.0 / 270.0 | -23.5 | N/A |
| 431.49 | 31.8 Qp | 2.6 / 16.8 / 27.7 | 23.4 | V / 1.0 / 0.0 | -23.6 | N/A |
| 275.10 | 35.3 Qp | 2.1 / 12.6 / 27.9 | 22.1 | V / 1.0 / 0.0 | -24.9 | N/A |
| 470.19 | 28.2 Qp | 2.8 / 17.5 / 27.6 | 20.9 | V / 1.0 / 0.0 | -26.1 | N/A |
| 474.12 | 27.7 Qp | 2.8 / 17.7 / 27.6 | 20.6 | V / 1.0 / 0.0 | -26.4 | N/A |
| 262.65 | 34.1 Qp | 2.0 / 12.1 / 27.8 | 20.5 | V / 1.0 / 0.0 | -26.5 | N/A |
| 505.07 | 27.4 Qp | 2.9 / 17.6 / 27.6 | 20.3 | V / 1.0 / 90.0 | -26.7 | N/A |
| 341.98 | 30.5 Qp | 2.3 / 14.2 / 27.6 | 19.4 | V / 1.0 / 0.0 | -27.6 | N/A |
| | | | | | | |

Tested by: RMJ



Printed

Signature

Reviewed by: TKS



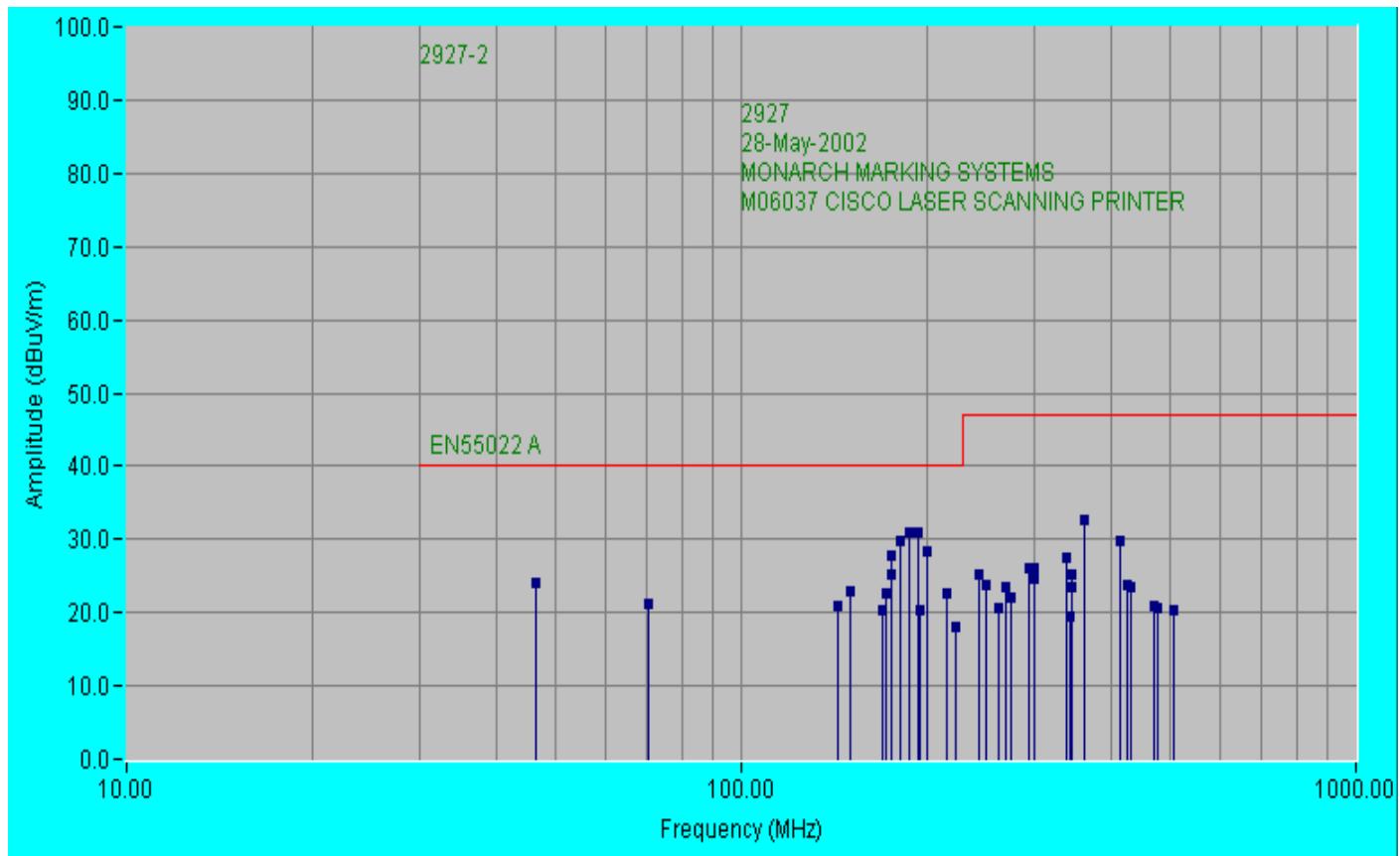
Printed

Signature

Radiated Electromagnetic Emissions

| | | | |
|------------------|---|--------------------|--------------|
| Test Report #: | 2927 Run 02 | Test Area: | LTS 10m |
| Test Method: | EN55022 | Test Date: | 28-May-2002 |
| EUT Model #: | M06037 CISCO LASER SCANNING PRINTER | EUT Power: | 60HZ/110VAC. |
| EUT Serial #: | | Temperature: | 21 °C |
| Manufacturer: | MONARCH MARKING SYSTEMS | Relative Humidity: | 34 % |
| EUT Description: | CISCO LASER SCANNING PRINTER (FHSS MODE) | Air Pressure: | 99 kPa |
| Notes: | SCANNING/PRINTING (NO ACCESS POINTS ON) UNINTENTIONAL RADIATOR SCAN. | Page: | 6 of 6 |

| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) (dB/m) (dB) | FINAL (dBuV/m) | POL / HGT / AZ (m) (DEG) | DELTA1 EN55022 A | DELTA2 N/A |
|---------------|-----------------|--|-------------------|-----------------------------|---------------------|---------------|
| | | | | | | |



Tested by: RMJ



Printed

Signature

Reviewed by: TKS



Printed

Signature

Appendix B

Constructional Data Form(s)

and/or

Product Information Form(s)



Form



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: Monarch Marking Systems, Inc, dba Paxar Corporation

Address: 170 Monarch Lane
Miamisburg, OH 45342

Contact: Jim Bacher Position: Senior Engineer

Phone: 937-865-2020 Fax: 937-865-2048

E-mail Address: jim.bacher@paxar.com

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

EUT Description Thermal Barcode Printer

EUT Name Ultra Gold

Model No.: M06037 Serial No.: 05020005

Product Options: Laser Scanner and PCMCIA 2.4GHz 802.11b Radio
Cisco LMC352, FCC id LDK102035

Configurations to be tested: Above

Test Objective

| | |
|---|--|
| <input checked="" type="checkbox"/> EMC Directive 89/336/EEC (EMC) Std: _____ | <input checked="" type="checkbox"/> FCC: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B Part _____ |
| <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 type="checkbox"/> Medical Device Directive 93/42/EEC (EMC) Std: _____ | <input type="checkbox"/> BSMI: Class <input type="checkbox"/> A <input type="checkbox"/> B |
| | <input checked="" type="checkbox"/> Canada: Class <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| | <input type="checkbox"/> Australia: Class <input type="checkbox"/> A <input type="checkbox"/> B |
| | <input checked="" type="checkbox"/> Other: France, Germany, Spain, Uk, Japan, Hong Kong |
| <input type="checkbox"/> Vehicle Directive 72/245/EEC (EMC) Std: _____ | |
| <input type="checkbox"/> FDA Reviewers Guidance for Premarket Notification Submissions (EMC) | |

TÜV Product Service Certification Requested

| | |
|---|---|
| <input type="checkbox"/> Attestation of Conformity (AoC) | <input checked="" type="checkbox"/> EMC Certification (used with Octagon Mark) |
| <input checked="" 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.)

EMC Test Plan and Constructional Data Form

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, TUV Product Service should:

- Call contact listed above, if not available then stop testing. (After hrs phone): 937-367-5107 (cell)
- Continue testing to complete test series.
- Continue testing to define corrective action.
- Stop testing.

EUT Specifications and Requirements

Length: 233.07mm Width: 88.93mm Height: 262.54mm Weight: 4.96Kg

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: 7.4VDC (If battery powered, make sure battery life is sufficient to complete testing.)

of Phases: _____

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

Other _____

Other Special Requirements

Typical Installation and/or Operating Environment

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

Retail and warehouses

EUT Power Cable

| | | | |
|---|----|---|---------------------------|
| <input type="checkbox"/> Permanent | OR | <input checked="" type="checkbox"/> Removable | Length (in meters): _____ |
| <input type="checkbox"/> Shielded | OR | <input 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: | <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"/> |
| RS232 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Foil | | 9-pin D-Sub and 3 position 3.5mm phono plug | | 2 | <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"/> |

EMC Test Plan and Constructional Data Form**EUT Software.**

Revision Level: BIOS Rev 3.01, Print Engine Rev 1.0.0.0.9, ROM DOS Rev 6.22

Description: Print engine firmware controls printing functions. DOS is the operating system for end user's application software.

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. Printer will scan a barcode every 5 seconds and print a line of 'H's.
2. The access point will ping the radio transmitter, variably set from 10ms to 1000ms.
- 3.

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

| Description | Model # | Serial # | FCC ID # |
|------------------|---------|----------|-----------|
| Printer | M06037 | | |
| Cisco Radio Card | LMC352 | | LDK102035 |
| AC Power Adapter | M06063 | | |

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> |
| 802.11b Access Point | | | |
| Gateway Portable PC | | | |

| Oscillator Frequencies | | | |
|-------------------------------|--------------------------|-------------------------------|------------------------------------|
| <i>Frequency</i> | <i>Derived Frequency</i> | <i>Component # / Location</i> | <i>Description of Use</i> |
| 32.768KHz | 25MHz | X1 on 120841 assembly | Crystal for DOS processor |
| 3.6864MHz | 3.6864MHz | X2 on 120841 assembly | Crystal for UART |
| 4.194MHz | 22.020MHz | X1 on 120708 assembly | Crystal for Print Engine Processor |
| 10MHz | 10MHz | X2 on 120919 assembly | Crystal for keyboard controller |
| 4.19MHz | 4.19MHz | X1 on 120919 assembly | Crystal for LCD display controller |
| | | | |

| Power Supply | | | |
|---------------------|----------------|-----------------|---|
| <i>Manufacturer</i> | <i>Model #</i> | <i>Serial #</i> | <i>Type</i> |
| Martek Power | PES-40-10A-1 | | <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> |
| Built into OEM power supply | | |
| | | |

EMC Test Plan and Constructional Data Form**Critical EMI Components (Capacitors, ferrites, etc.)**

| Description | Manufacturer | Part # or Value | Qty | Component # / Location |
|---|--------------|-----------------|-----|------------------------|
| Bypass capacitors and best practice on board layout | | | | |
| | | | | |
| | | | | |
| | | | | |

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

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization SignaturesCustomer 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

GENERAL INFORMATION

Test Methodology

Radiated emission testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1993), European Standard EN 55022 and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1993). For official compliance, a conformance report must be sent to and accepted by the VCCI.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-1992 procedures and using the CISPR 22 Limits.

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 dB μ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the CISPR limit.

To convert between dB μ V and μ 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 μ V/m, is arrived at by taking the reading from the spectrum analyzer (Level dB μ V), adding the antenna correction factor and cable loss factor (Factor dB) to it, then subtracting the preamp gain. This result then has the CISPR 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 μ V) | CABLE/ANT/PREAMP (dB) | FINAL (dB/m) | POL/HGT/AZ (m) | DELTA1 EN 55022 A |
|---------------|-----------------------|--------------------------|-----------------|-------------------|----------------------|
| 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 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with $50\ \Omega/50\ \mu\text{H}$ (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, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees.