

## EMC TEST REPORT For FCC



Test Report No. : 2005080015

Date of Issue : August 9, 2005

FCC ID : NLMDIGIMAXI50MP3

Model/Type No. : Digimax i50 MP3

Kind of Product : Digital Camera

Applicant : Samsung Techwin Co., Ltd.

Applicant Address : 145-3 Sangdaewon 1-Dong, Jungwon-Gu, Sunnam-City,  
Kyungki-Do, Korea

Manufacturer : 1) Samsung Techwin Co., Ltd.  
2) Tianjin Samsung Opto-Electronics Co., LTD.

Manufacturer Address : 1) 42, Sungju-dong, Changwon City, Kyungnam, Korea  
2) 7 Pingchang Road, Nabkai Dist., Tianjin, China

Contact Person : Kun-Sop, Kim (Manager)

Telephone : +82-31-740-8253

Received Date : August 3, 2005

Test period : Start : August 6, 2005 End : August 6, 2005

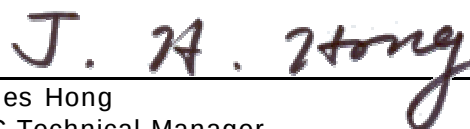
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

The test results presented in this report relate only to the object tested.

CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by

Reviewed by



Young-Kug, Song  
EMC Test Engineer  
Date: August 9, 2005

James Hong  
EMC Technical Manager  
Date: August 9, 2005

## REPORT REVISION HISTORY

| Date           | Revision            | Page No |
|----------------|---------------------|---------|
| August 9, 2005 | Issued (2005080015) | All     |
|                |                     |         |
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## 1.0 General Product Description

### 1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model Digimax i50 MP3.
- ☐ Tests performed on Model \_\_\_\_\_ were considered to be representative of Model(s) \_\_\_\_\_.

### 1.0.2 Equipment Size, Mobility and Identification

Dimensions: Approx. 92.3 by 60.2 by 17.7 ☒ mm ☐ inch

Mobility: ☒ Hand-held ☐ Table-top ☐ Built-in

☐ Traveling ☐ Floor-standing

Serial No.: Prototype

### 1.0.3 Electrical Ratings

|         |         |                               |
|---------|---------|-------------------------------|
| Adaptor | Input:  | 100-240 Vac, 50/60 Hz, 0.15 A |
|         | Output: | 4.2 Vdc, 750 mA               |
| EUT     | Input:  | 4.2 Vdc                       |
|         | Output: | -                             |

### 1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage: 120 Vac  
Frequency: 60 Hz

### 1.0.5 Clock & Other Frequencies Utilized

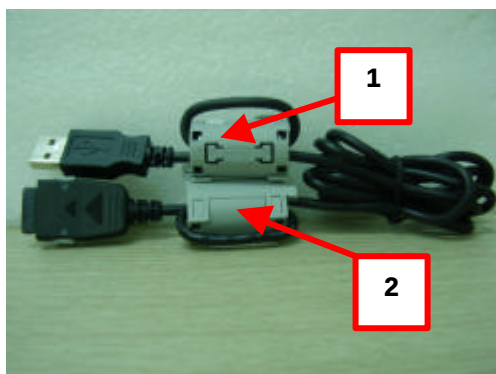
32.768 kHz, 12 MHz, 54 MHz

## 1.1 Model Differences

Not applicable

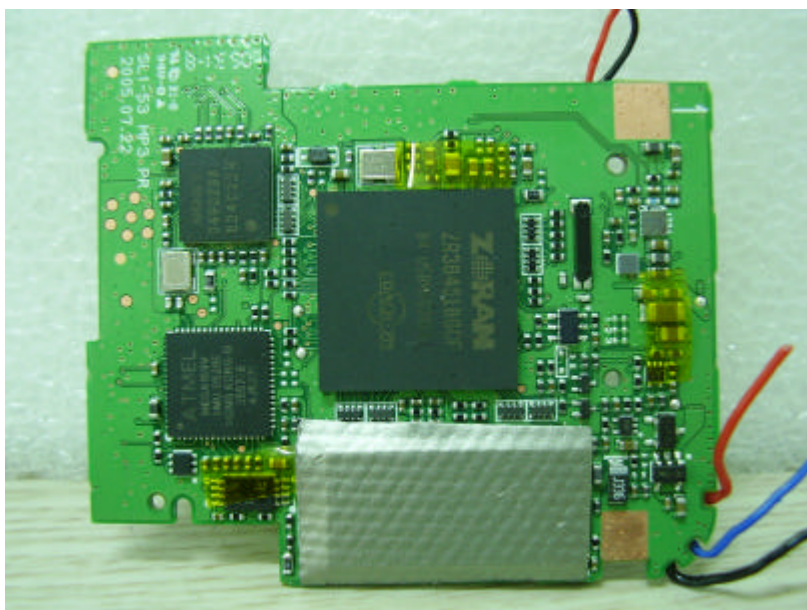
## 1.2 Device Modifications

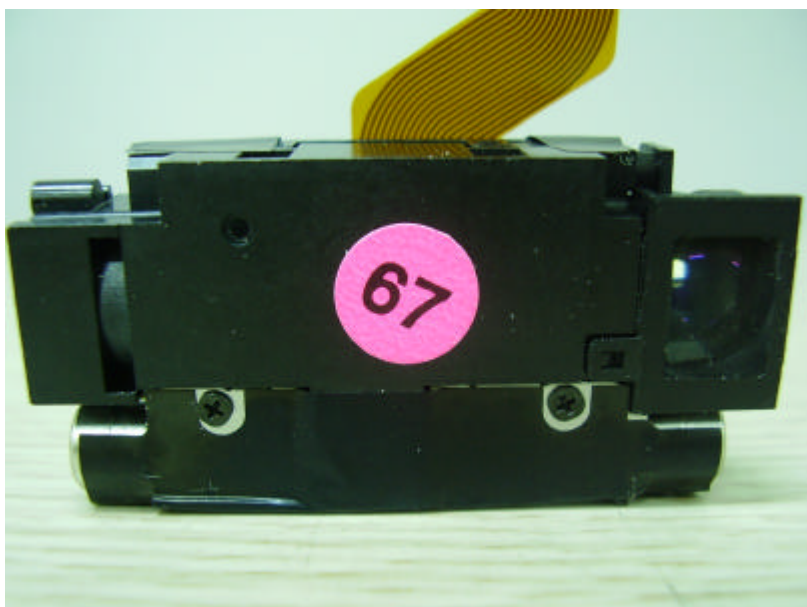
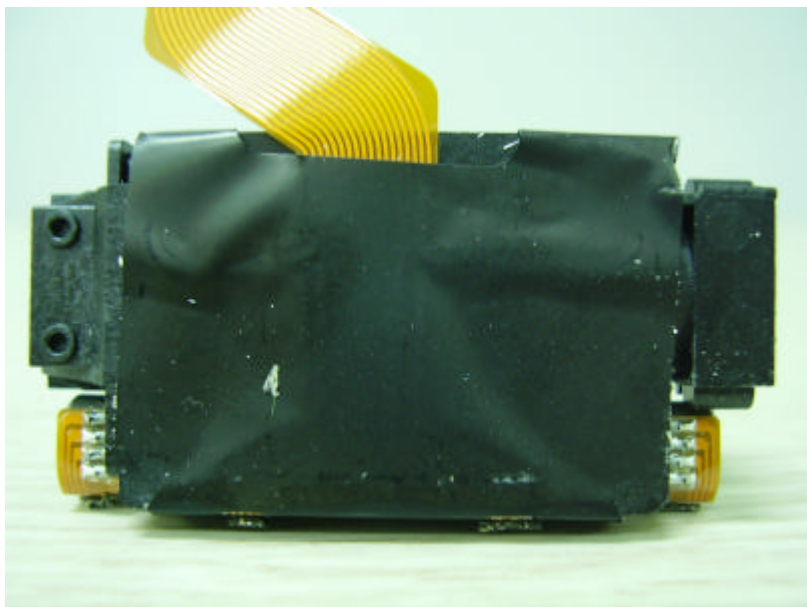
The following modifications were necessary for compliance:



Ferrite Cores were inserted additionally.

| Core location | Manufacturer    | Part No.      | Number of Cable Turn |
|---------------|-----------------|---------------|----------------------|
| 1             | TDK Corporation | ZCAT2032-0930 | 1                    |
| 2             | TDK Corporation | ZCAT2032-0930 | 1                    |





### 1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

| Device                    | Manufacturer                           | Model No.         | Serial No.     | FCC ID or DoC |
|---------------------------|----------------------------------------|-------------------|----------------|---------------|
| Battery Charger (for EUT) | TIANJIN DONGIN ELECTRONIC CO., LTD.    | SAC-41            | T5305383       | -             |
| Cradle (for EUT)          | SAMSUNG TECHWIN CO., LTD.              | SCC-S2            | -              | -             |
| Earphone                  | CRESYN                                 | MP-STW320         | -              | -             |
| Personal Computer         | HEWLETT-PACKARD COMPANY                | HP Pavilion t812k | KRJ50403HK     | DoC           |
| LCD Monitor               | TIANJIN SAMSUNG ELECTRONICS DISPLAY    | 176T-DZ/KOR       | N372HVEX225526 | DoC           |
| Adaptor (for LCD Monitor) | Anam Instruments (Shen Zhen) Co., Ltd. | AP04214-UV        | -              | -             |
| Keyboard (PS/2 type)      | HEWLETT-PACKARD COMPANY                | 5219              | BN50107686     | E5XKB5209     |
| Mouse (PS/2 type)         | HEWLETT-PACKARD COMPANY                | N3+ Optical       | K045205991     | DoC           |
| Mouse (USB type)          | SAMSUNG                                | OMS3CB            | 0303009883     | DoC           |
| Printer (Parallel type)   | Seiko Epson Corp.                      | Stylus Color 460  | BWCE136524     | DoC           |

☒ Cable Description

| #  | Description                             | Ferrite Core | Length (m) | Other Details                       |
|----|-----------------------------------------|--------------|------------|-------------------------------------|
| 1  | Adaptor Power Cable, Unshielded         | No           | 1.8        | Connect to AC power                 |
| 2  | AC power cable, Unshielded              | No           | 1.8        | Connect to AC power                 |
| 3  | AC power cable, Unshielded              | No           | 1.8        | Connect to AC power                 |
| 4  | Battery Charger power Cable, Unshielded | No           | 1.5        | Connect to AC power                 |
| 5  | DC In Cable, Unshielded                 | Yes          | 1.5        | Between the LCD Monitor and Adaptor |
| 6  | Monitor cable, Shielded                 | Yes          | 1.5        | Between the PC and LCD Monitor      |
| 7  | Printer cable, Shielded                 | No           | 1.5        | Between the PC and Printer          |
| 8  | Keyboard cable, Shielded                | No           | 1.5        | PS/2 type                           |
| 9  | Mouse cable, Shielded                   | No           | 1.5        | PS/2 type                           |
| 10 | Mouse cable, Shielded                   | No           | 1.5        | USB type                            |
| 11 | USB cable, Shielded                     | Yes          | 1.2        | Between the EUT and PC              |
| 12 | Earphone cable, Unshielded              | No           | 1.5        | Connect to EUT                      |
| 13 | DC In Cable, Unshielded                 | Yes          | 1.0        | Between the EUT and Battery Charger |

### 1.4 Test Software

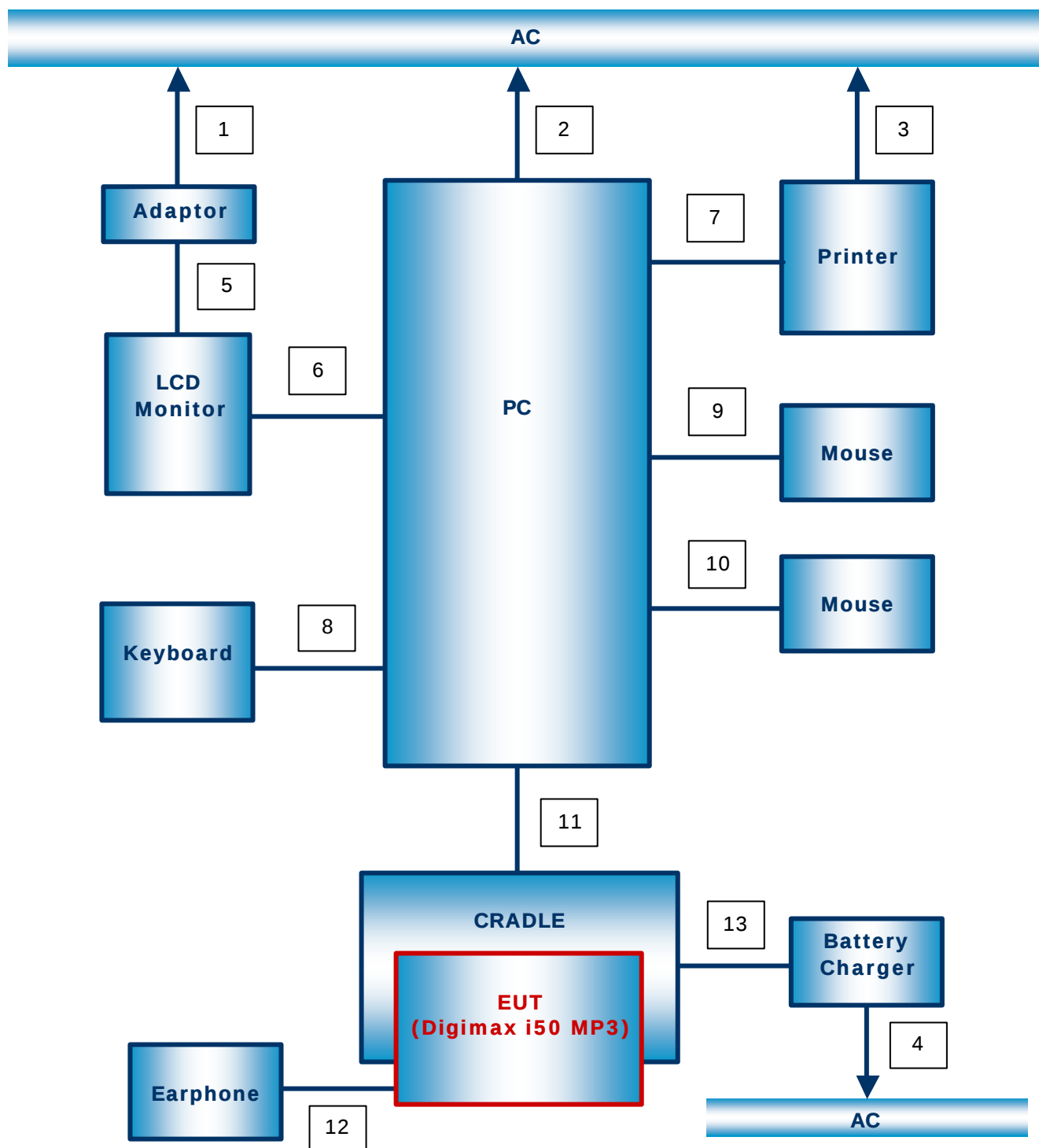
- ☐ EMC Test V 1.0  
☐ Display Test Patterns – V1.5  
☐ Ping.exe  
☒ Not applicable

### 1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

- ☐ Standby  
☐ Display circles pattern  
☒ Practice operation – USB downloading mode.  
     AV output monitoring mode.  
     MP3 playing mode.

## 1.6 Configuration



## **1.7 Calibration Details of Equipment Used for Measurement**

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

## **1.8 Test Facility**

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## **1.9 Measurement Procedure**

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)  
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

\* Measurement procedures was In accordance with ANSI C63.4-2001 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

## 1.10 Laboratory Accreditations and Listings

| Country       | Agency | Scope of Accreditation                                                                                                                                                                                                                                                                      | Logo                                                                                                    |
|---------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| USA           | FCC    | 3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.                                                                                                                                                                                            | <br>93250            |
| JAPAN         | VCCI   | 10 meter Open Area Test Site and one conducted site.                                                                                                                                                                                                                                        | <br>R-948, C-986     |
| KOREA         | MIC    | EMI (10 meter Open Area Test Site and two conducted sites)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)                                                                                                                                                         | <br>No. 51, KR0025   |
| International | KOLAS  | EMC                                                                                                                                                                                                                                                                                         | <br>NO. 119         |
| Europe        | GLAS   | EMC<br>EN 55011, EN 55022, EN 61000-6-3,<br>EN 61000-6-4, EN 61000-3-2,<br>EN 61000-3-3,<br>EN 61000-6-1, EN 61000-6-2,<br>EN 50130-4, EN 55024,<br>EN 61204-3, EN 60601-1-2,<br>EN 61000-4-2, EN 61000-4-3,<br>EN 61000-4-4, EN 61000-4-5,<br>EN 61000-4-6, EN 61000-4-8,<br>EN 61000-4-11 | <br>No.13000796-02 |

## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- |                                                                                                                            |                                  |                                             |
|----------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------|
| <input type="checkbox"/> EN 61000-6-3:2001                                                                                 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 61000-6-4:2001                                                                                 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 50083-2:2001                                                                                   |                                  |                                             |
| <input type="checkbox"/> EN 55011:1998 +A1:1999                                                                            | <input type="checkbox"/> Group 1 | <input type="checkbox"/> Group 2            |
|                                                                                                                            | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 55011:1998 +A1:1999 +A2:2002                                                                   | <input type="checkbox"/> Group 1 | <input type="checkbox"/> Group 2            |
|                                                                                                                            | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 55013:1990 +A12:1994 +A13:1996 +A14:1999                                                       |                                  |                                             |
| <input type="checkbox"/> EN 55013:2001                                                                                     |                                  |                                             |
| <input type="checkbox"/> EN 55014-1:2000                                                                                   |                                  |                                             |
| <input type="checkbox"/> EN 55014-1:2000 +A1:2001                                                                          |                                  |                                             |
| <input type="checkbox"/> EN 55015:2000                                                                                     |                                  |                                             |
| <input type="checkbox"/> EN 55015:2000 +A1:2001                                                                            |                                  |                                             |
| <input type="checkbox"/> EN 55022:1994 +A1:1995 +A2:1997                                                                   | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 55022:1998                                                                                     | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 55022:1998 +A1:2000                                                                            | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 55022:1998 +A1:2000 +A2:2003                                                                   | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> EN 61000-3-2:2000                                                                                 |                                  |                                             |
| <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001                                                                        |                                  |                                             |
| <input type="checkbox"/> VCCI V-3/2004.04                                                                                  | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input type="checkbox"/> AS/NZS 3548:1995 +A1:1997 +A2:1997                                                                | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |
| <input checked="" type="checkbox"/> FCC Part 15 Subpart B                                                                  | <input type="checkbox"/> Class A | <input checked="" type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> CISPR 22:1997                                                                          | <input type="checkbox"/> Class A | <input checked="" type="checkbox"/> Class B |
| The unit was tested to CISPR 22 and complied with the alternate methods allowed by FCC under paragraphs 15.107 and 15.109. |                                  |                                             |
| <input type="checkbox"/> CISPR 22:1997 +A1:2000                                                                            | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B            |

## 2.1 Conducted Voltage Emissions

### Test Date

August 6, 2005

### Test Location

Shielded Room

### Test Equipment

|                                     | Name of Equipment    | Manufacturer    | Model No. | Serial No. | Due Date   |
|-------------------------------------|----------------------|-----------------|-----------|------------|------------|
| <input checked="" type="checkbox"/> | Field Strength Meter | Rohde & Schwarz | ESHS30    | 828144/002 | 2006-02-01 |
| <input checked="" type="checkbox"/> | LISN                 | EMCO            | 3825/2    | 9607-2574  | 2005-09-03 |
| <input checked="" type="checkbox"/> | LISN                 | EMCO            | 3825/2    | 9409-2246  | 2005-09-03 |

### Frequency Range of Measurement

150 kHz to 30 MHz

### Test Results

The requirements are:

☒ MET

| Frequency (MHz) | Measured Data (dBuV) | Margin (dB) | Remark     |
|-----------------|----------------------|-------------|------------|
| 0.37            | 53.7                 | 4.8         | Quasi-peak |

☐ NOT MET

| Frequency (MHz) | Measured Data (dBuV) | Margin (dB) | Remark |
|-----------------|----------------------|-------------|--------|
|                 |                      |             |        |

☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.

## 2.2 Radiated Electric Field Emissions

### Test Date

August 6, 2005

### Test Location

☒ Testing was performed at a test distance of 10 meter Open Area Test Site

### Test Equipment

|                                     | Name of Equipment       | Manufacturer    | Model No. | Serial No. | Due Date   |
|-------------------------------------|-------------------------|-----------------|-----------|------------|------------|
| <input checked="" type="checkbox"/> | Field Strength Meter    | Rohde & Schwarz | ESVS30    | 829673/015 | 2005-11-15 |
| <input checked="" type="checkbox"/> | ULTRA Broadband Antenna | Rohde & Schwarz | HL562     | 361324/014 | 2006-05-27 |
| <input type="checkbox"/>            | Biconical Antenna       | EMCO            | 3110      | 9202-1510  | 2006-04-13 |
| <input type="checkbox"/>            | Log-periodic Antenna    | EMCO            | 3146      | 9607-4567  | 2006-04-08 |

### Frequency Range of Measurement

30 MHz to 1 GHz

### Test Results

The requirements are:

☒ MET

| Frequency (MHz) | Measured Data (dBuV/m) | Margin (dB) | Remark     |
|-----------------|------------------------|-------------|------------|
| 648.25          | 33.5                   | 3.5         | Quasi-peak |

☐ NOT MET

| Frequency (MHz) | Measured Data (dBuV/m) | Margin (dB) | Remark |
|-----------------|------------------------|-------------|--------|
|                 |                        |             |        |

☐ NOT APPLICABLE

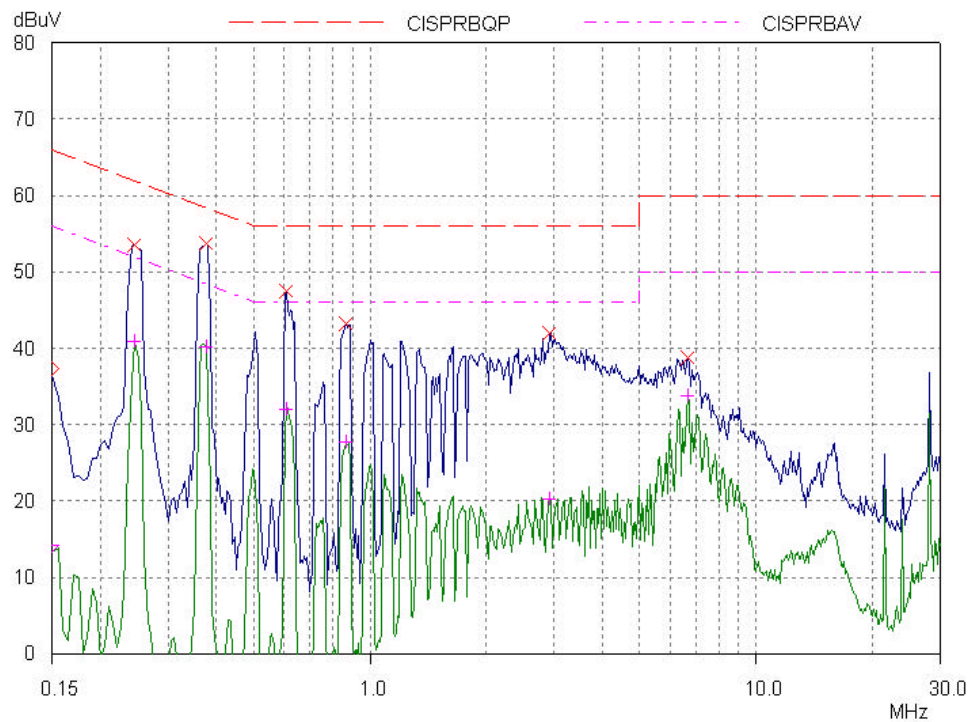
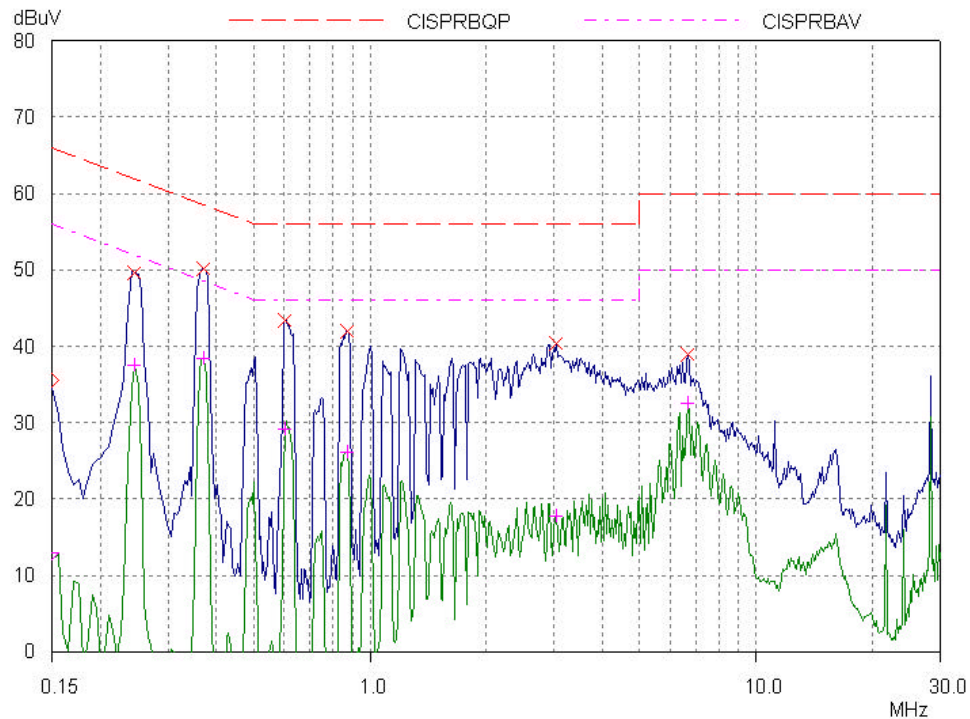
### Remarks

See Appendix A for test data

## APPENDIX A – TEST DATA

### Conducted Voltage Emissions

| Frequency<br><br>[MHz] | Correction<br>Factor |       | Line | Quasi-peak |         |        |        | Average |         |        |        |
|------------------------|----------------------|-------|------|------------|---------|--------|--------|---------|---------|--------|--------|
|                        |                      |       |      | Limit      | Reading | Result | Margin | Limit   | Reading | Result | Margin |
|                        | LISN                 | Cable |      | [dBuV]     | [dBuV]  | [dBuV] | [dB]   | [dBuV]  | [dBuV]  | [dBuV] | [dB]   |
| 0.24                   | 0.1                  | 0.1   | N    | 62.1       | 53.3    | 53.5   | 8.6    | 52.1    | 40.6    | 40.8   | 11.3   |
| 0.37                   | 0.1                  | 0.1   | N    | 58.5       | 53.5    | 53.7   | 4.8    | 48.5    | 39.9    | 40.1   | 8.4    |
| 0.60                   | 0.1                  | 0.1   | N    | 56.0       | 47.2    | 47.4   | 8.6    | 46.0    | 31.8    | 32.0   | 14.0   |
| 0.87                   | 0.1                  | 0.1   | N    | 56.0       | 42.9    | 43.1   | 12.9   | 46.0    | 27.4    | 27.6   | 18.4   |
| 2.90                   | 0.1                  | 0.2   | N    | 56.0       | 41.6    | 41.9   | 14.1   | 46.0    | 20.0    | 20.3   | 25.7   |
| 3.02                   | 0.1                  | 0.2   | H    | 56.0       | 40.0    | 40.3   | 15.7   | 46.0    | 17.5    | 17.8   | 28.2   |



## Radiated Electric Field Emissions

| Frequency<br>[MHz] | Reading<br>[dBuV / m] | Pol. | Height<br>[m] | Correction<br>Factor |       | Limits<br>[dBuV / m] | Result<br>[dBuV / m] | Margin<br>[dB] |
|--------------------|-----------------------|------|---------------|----------------------|-------|----------------------|----------------------|----------------|
|                    |                       |      |               | Antenna              | Cable |                      |                      |                |
| 108.36             | 13.0                  | V    | 1.0           | 9.5                  | 1.9   | 30.0                 | 24.4                 | 5.6            |
| 216.34             | 14.2                  | H    | 3.3           | 8.0                  | 2.8   | 30.0                 | 24.9                 | 5.1            |
| 227.77             | 12.1                  | H    | 4.0           | 8.3                  | 2.8   | 30.0                 | 23.2                 | 6.8            |
| 648.25             | 10.7                  | H    | 3.5           | 17.8                 | 5.0   | 37.0                 | 33.5                 | 3.5            |
| 720.42             | 8.3                   | V    | 1.0           | 18.8                 | 5.2   | 37.0                 | 32.3                 | 4.7            |
| 756.75             | 8.3                   | H    | 3.8           | 19.0                 | 5.3   | 37.0                 | 32.6                 | 4.4            |