

## EMC TEST REPORT For FCC



Test Report No. : CTK04-F004  
Date of Issue : February 25, 2004  
Model/Type No. : Digimax 370  
Kind of Product : Digital Camera  
Applicant : Samsung Techwin Co., Ltd.  
Applicant Address : 145-3 Sangdaewon 1 dong, Chungwon-ku, Sunghnam 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, Nankai Dist., Tianjin, China  
Contact Person : Kun-Sop, Kim (Manager)  
Telephone : +82-31-740-8253  
Received Date : January 3, 2004  
Test period : Start: January 28, 2004 End: February 5, 2004  
Test Results :  In Compliance  Not in Compliance

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

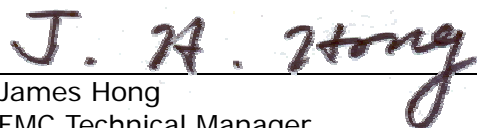
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Tested by



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EMC Test Engineer  
Date: February 25, 2004

Reviewed by



James Hong  
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Date: February 25, 2004



## REPORT REVISION HISTORY

Date	Revision	Page No
February 25, 2004	Issued (CTK04-F004)	All

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## TABLE OF CONTENTS

1.0 General Product Description .....	4
1.1 Model Differences .....	4
1.2 Device Modifications.....	5
1.3 EUT Configuration(s) .....	6
1.4 Test Software .....	6
1.5 EUT Operating Mode(s).....	6
1.6 Calibration Details of Equipment Used for Measurement .....	6
1.7 Test Facility .....	6
1.8 Measurement Procedure .....	7
1.9 Laboratory Accreditations and Listings .....	8
2.0 Emissions Test Regulations.....	9
2.1 Conducted Voltage Emissions .....	10
2.2 Radiated Electric Field Emissions.....	11
Configurations .....	12
APPENDIX A - TEST DATA.....	13
Conducted Voltage Emissions (Quasi-Peak reading) .....	13
Radiated Electric Field Emissions (Quasi-Peak reading).....	15

## 1.0 General Product Description

### 1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model Digimax 370.
- Tests performed on Model \_\_\_\_\_ were considered to be representative of Model(s) \_\_\_\_\_.

### 1.0.2 Equipment Size, Mobility and Identification

Dimensions: 106.8(W) by 55.5(H) by 32.2(D)  mm  in  
Mobility:  Hand-Held  Table-top  Floor-standing  
 -  
Serial No.: Prototype

### 1.0.3 Electrical Ratings

EUT :  
Input : 3.3Vdc  
Output : -

Adaptor :  
Input : 100-250Vac, 50/60Hz, 0.3A  
Output : 3.3Vdc, 2.0A

### 1.0.4 Test Voltage & Frequency (Using the adaptor)

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

Voltage: 120Vac  
Frequency: 60Hz

### 1.0.5 Clock & Other Frequencies Utilized

COACH 6 : 13.5MHz, 27.000MHz  
TG/CDS/AGC : 49.0909MHz  
RTC : 32.768kHz

## 1.1 Model Differences

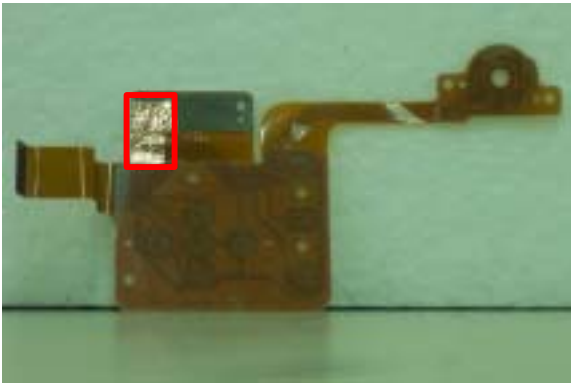
Not applicable

## 1.2 Device Modifications

The following modifications were necessary for compliance:



Gaskets are inserted additionally.



Copper tapes are inserted additionally.

### 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
Adaptor	Ault Inc.	PW137KA0300N52	-	-
Desk Top PC	Hewlett-Packard Company	PD1059P	-	DoC
Monitor	SAMSUNG	PG17HS	P013H1DN301661	DoC
Keyboard	SAMSUNG	SEM-DT35	3T011297	DoC
Mouse (PS/2 type)	SAMSUNG	OMS3CB	0303009873	DoC
Mouse (USB type)	SAMSUNG	OMS3CB	0303009875	DoC

Cable Description

#	Description	Ferrite Core	Length (m)	Other Details
1	AC power cable, Unshielded	No	1.5	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	DC output cable, Unshielded	Yes	1.5	Between the EUT and Adaptor
5	USB cable, Shielded	Yes	1.2	Between the EUT and PC
6	Monitor cable, Shielded	Yes	1.8	Between the PC and Monitor
7	Mouse cable, Shielded	No	1.5	PS/2 type
8	Mouse cable, Shielded	No	1.5	USB type
9	Keyboard cable, Shielded	No	1.5	PS/2 type

### 1.4 Test Software

- Pinging  
 Not applicable

### 1.5 EUT Operating Mode(s)

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

- Test program (H-Pattern)                       Test program (color bar)  
 Standby     Test program (customer specific)  
 Practice operation : PC mode (Downloading stored images)

### 1.6 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.

### 1.7 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.



## 1.8 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

## 1.9 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements.	 93250
JAPAN	VCCI	10 meter Open Area Test Site and one conducted site.	 R-948, C-986
KOREA	MIC	EMI (CE, RE) EMS (ESD, Burst, RS, Surge, CS, Power-Frequency Susceptibility, Voltage Dips and Short Interruptions)	 No. 51, KR0025
International	KOLAS	EMC	 NO. 119
Europe	GLAS	EMC EN 55011, EN 55022, EN 55024, EN 61326, EN 50130-4, EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, EN 61000-3-2, EN 61000-3-3	 No.13000796-02



## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- EN 50081-1:1992
- EN 55011:1998 +A1:1999       Group 1       Group 2  
 Class A       Class B
- EN 55013:1990 +A12:1994 +A13:1996 +A14:1999  
 EN 55013:2001
- EN 55014-1:1993 +A1:1997 +A2:1999       Household appliances and similar  
 Portable tools  
 Semiconductor devices
- EN 55014-1:2000  
 EN 55014-2:1997
- EN 55015:1996 +A1:1997 +A2:1999  
 EN 55015:2000
- EN 55020:1994 +A11:1996 +A13:1999 +A14:1999  
 EN 55020:1994 +A11:1996 +A12:1999 +A13:1999 +A14:1999
- EN 55022:1994 +A1:1995 +A2:1997       Class A       Class B  
 EN 55022:1998 +A1:2000       Class A       Class B
- EN 61000-3-2:1995 +A1:1998 +A2:1998  
 EN 61000-3-2:1995 +A1:1998 +A2:1998 +A14:2000  
 EN 61000-3-2:2000  
 EN 61000-3-3:1995
- VCCI V-3/99.05 : 1999       Class A       Class B
- FCC Part 15 Subpart B       Class A       Class B
- AS 3548 (1992)       Class A       Class B
- CISPR 22 (1997)       Class A       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.

## 2.1 Conducted Voltage Emissions

### Test Date

February 5, 2004

### Test Location

EMI-CE: Shielded Room

### Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002
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### Test Accessories

<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9607-2574
<input checked="" type="checkbox"/> Control PC	HP	Vectra 500	SG72000192

### Frequency Range of Measurement

- 150 kHz to 30 MHz  
 450 kHz to 30 MHz

### Instrument Settings

IF Band Width: 9 kHz

### Test Results

The requirements are:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> MET | minimum margin is 5.9 dBuV (average) at 6.27 MHz   |
| <input type="checkbox"/> NOT MET        | limit exceeded by maximum of ____ dBuV at ____ MHz |
| <input type="checkbox"/> NOT APPLICABLE |  |

### Remarks

See Appendix A for test data.

## 2.2 Radiated Electric Field Emissions

### Test Date

January 28, 2004

### Test Location

- EMI-OATS: Testing was performed at a test distance of 10 m  
 EMI-OATS: Testing was performed at a test distance of 3 m

### Test Instruments

Field Strength Meter      Rohde & Schwarz      ESVS30      826638/008

### Test Accessories

ULTRA Broadband Antenna      Rohde & Schwarz      HL562      361324/014  
 Bi-conical Antenna      Schwarzbeck      BBA9106      41-00201  
 Bi-conical Antenna      EMCO      3110B      9607-2564  
 Log-periodic Antenna      EMCO      3146      9607-4567

### Frequency Range of Measurement

30 MHz to 1 GHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

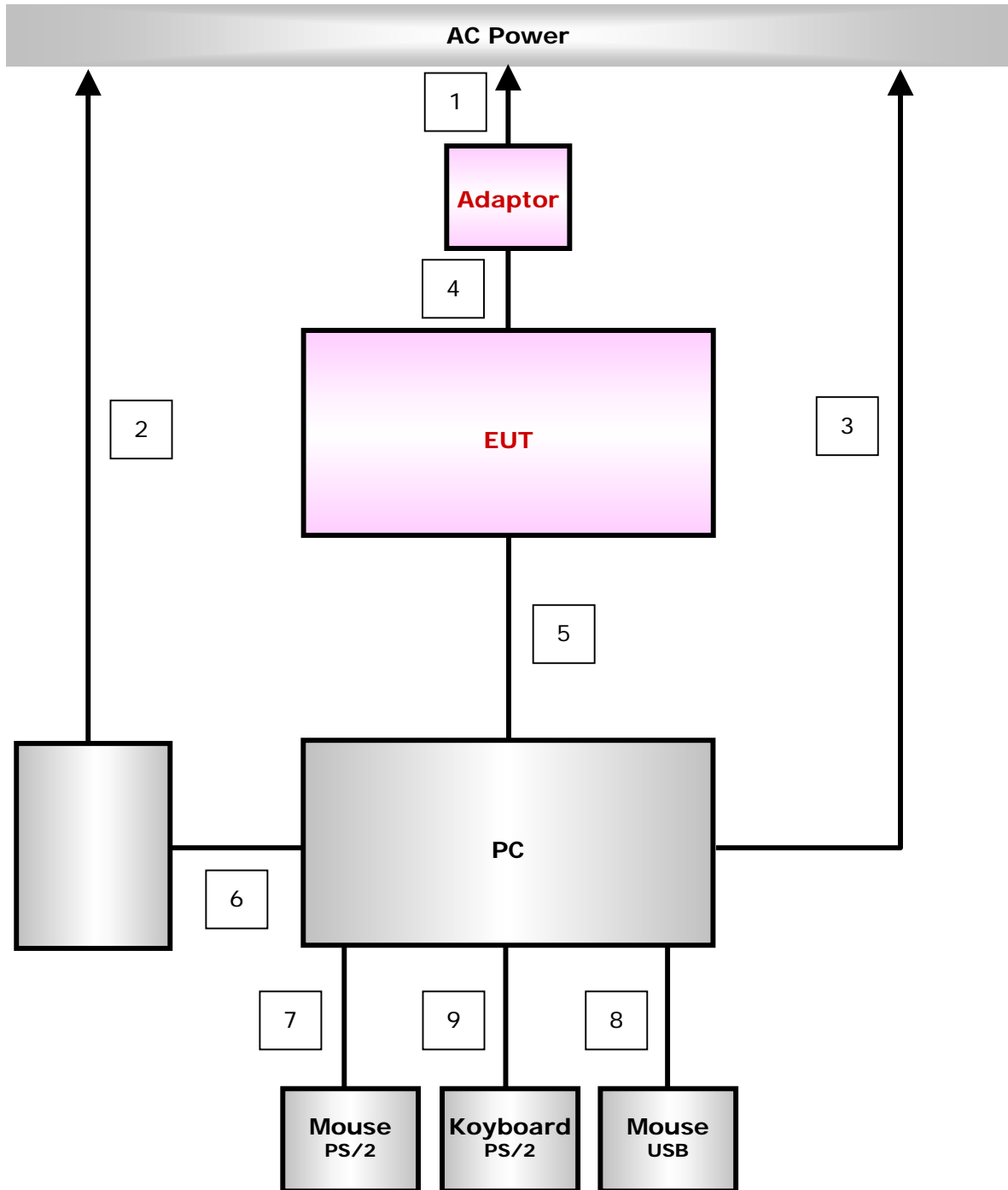
The requirements are:

- MET      minimum margin is 3.14 dBuV/m at 799.21 MHz  
 NOT MET      limit exceeded by maximum of \_\_\_\_ dBuV/m at \_\_\_\_ MHz  
 NOT APPLICABLE

### Remarks

See Appendix A for test data

## Configuration

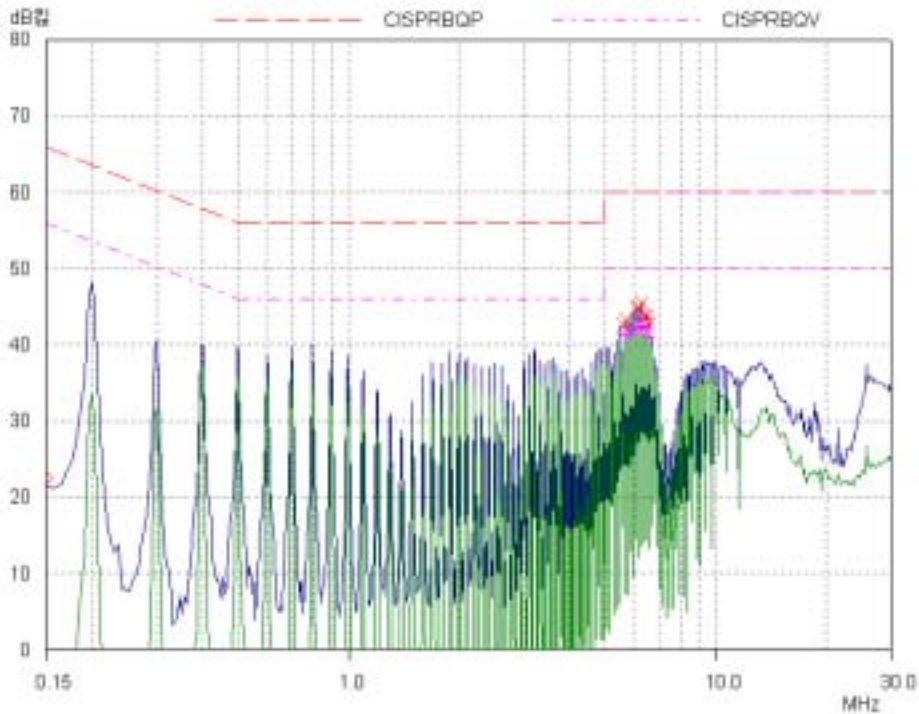
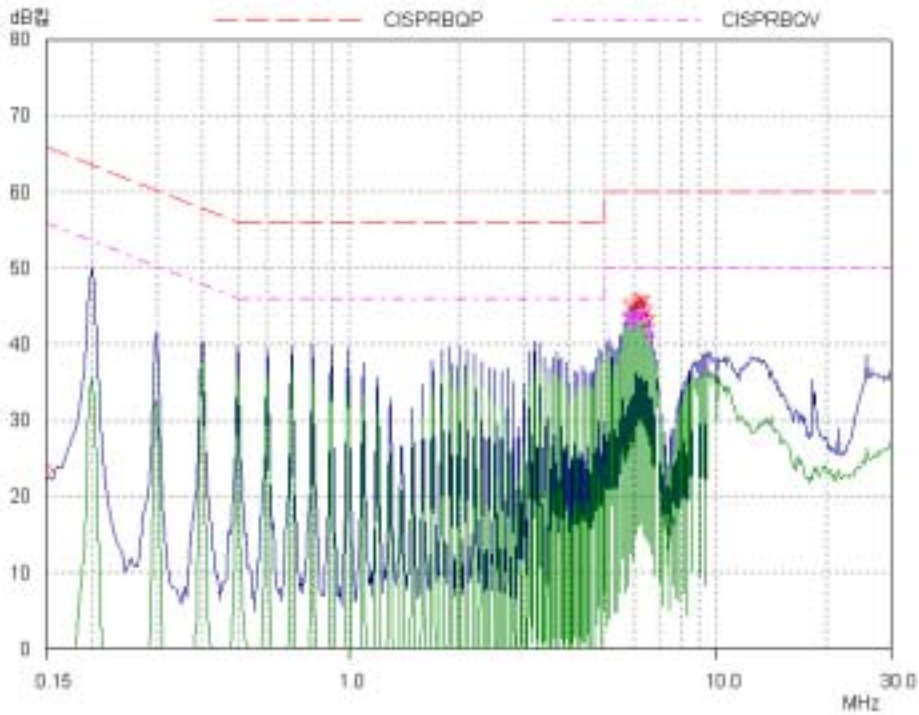


## APPENDIX A – TEST DATA

### Conducted Voltage Emissions (Quasi-Peak reading)

Frequency [MHz]	Correction Factor		Line	Quasi-peak				Average			
	LISN	Cable		Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
				[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
5.77	0.3	0.2	H	60.0	44.4	44.9	15.1	50.0	43.2	43.7	6.3
5.87	0.3	0.2	H	60.0	44.6	45.1	14.9	50.0	42.2	42.7	7.3
6.07	0.3	0.2	H	60.0	44.8	45.3	14.7	50.0	42.8	43.3	6.7
6.17	0.3	0.2	H	60.0	45.3	45.8	14.2	50.0	43.3	43.8	6.2
6.27	0.3	0.2	H	60.0	45.2	45.7	14.3	50.0	43.6	44.1	5.9
6.37	0.3	0.2	H	60.0	45.2	45.7	14.3	50.0	43.3	43.8	6.2
6.47	0.3	0.2	H	60.0	43.8	44.3	15.7	50.0	41.9	42.4	7.6
6.57	0.3	0.2	H	60.0	42.6	43.1	16.9	50.0	40.6	41.1	8.9

\* If the average limit is met when a quasi-peak detector is used, the EUT shall be deemed to meet both limit and measurement with the average detector is unnecessary.



**Radiated Electric Field Emissions (Quasi-Peak reading)**

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
98.21	14.9	V	1.0	9.00	1.90	30.0	25.84	4.16
122.73	12.6	V	1.0	9.55	2.30	30.0	24.45	5.55
147.28	15.9	V	1.0	7.70	2.48	30.0	26.08	3.92
466.01	12.2	H	1.8	15.00	4.57	37.0	31.80	5.20
627.12	9.7	V	1.3	17.40	5.30	37.0	32.39	4.61
648.04	9.3	V	2.0	17.80	5.50	37.0	32.61	4.39
692.01	8.2	H	2.2	18.20	5.82	37.0	32.25	4.75
799.21	8.1	H	4.0	19.50	6.26	37.0	33.86	3.14