

# EMC TEST REPORT

According to FCC Part 15B Class B

Project NO. : SE-02-0069

**Product** : **PRINTER**

**Model No.** : **ML-1440**

**Date of test** : January 25, 2002

**Issued Date** : January 26, 2002

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## 1. General Information

**APPLICANT** : SAMSUNG ELECTRONICS CO., LTD.

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**REGULATION(S)** : FCC Part 15B Class B

**MODEL NUMBER** : ML-1440

**VARIANT MODEL NUMBER** : -

**SERIAL NUMBER** : -

**KIND OF PRODUCT** : PRINTER

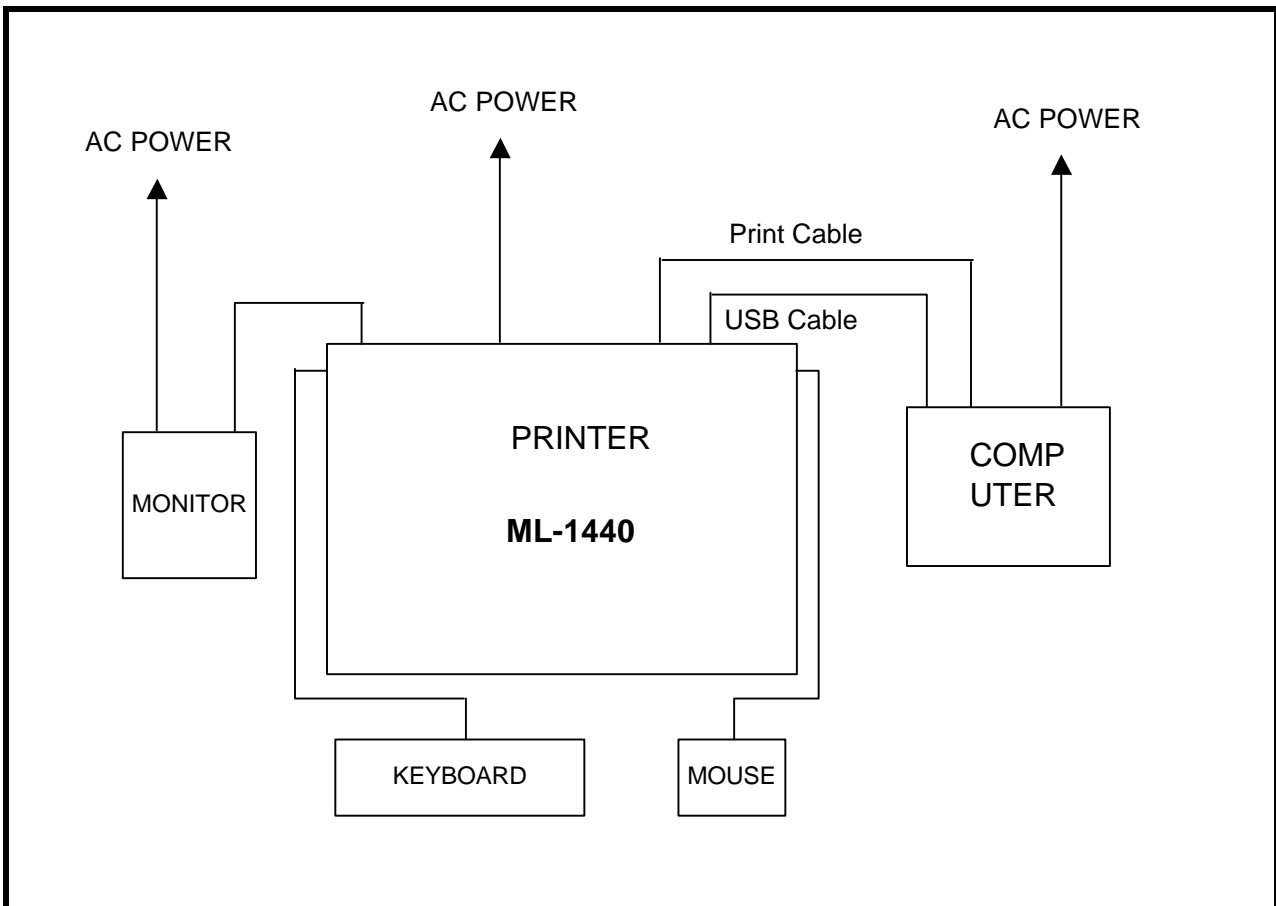
**TESTED DATE** : January 25, 2002

**TEST SITE** : SAMSUNG EMC TEST LAB.  
FCC Registration Number : 98856  
Anechoic Chamber #1

### 1.1 Product Description

The Samsung ML-1440 is supporting the PC printing through IEEE1284, USB port. It has Main System clock 66MHz, Video Clock 53.011MHz, USB 48MHz, LSU external clock 8.0282MHz

### 1.2 System Block Diagram of Test Configuration



## 2. System Test Configuration

### 2.1 Configuration of Radiated and Conducted Interference Measurement

\* Cabling was taken into consideration and test data was taken under worst case conditions.

#### 1)Conduction(Front View)



#### 2)Conduction(Rear View)



**3) Radiation(Front View)**



**4) Radiation(Rear View)**



## 2.2 Operation Environment

	Conduction	Radiation
Temperature [centigrade] :	22	23
Humidity [%] :	27	27
Power supply :	AC120V/60Hz	AC120V/60Hz

## 2.3 Justification

The system was configured in typical fashion(as a customer would normally use it) for testing.

## 2.4 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

## 2.5 Test Procedure

### 2.5.1 Conducted Emissions

EUT was placed on a platform of nominal size, 1m by 1.8m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting ground plane.

The rear of EUT,including peripherals was aligned and flush with rear of tabletop. All other surfaces of tabletop was at least 80cm from any other grounded conducting surface. I/O cables and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

Each EUT current-carrying power lead,except the ground(safety) lead, were individually connected through a LISN to the input power source.

All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.

### 2.5.2 Radiated Emissions

EUT was placed on a platform of nominal size, 1m by 1.8m, raised 80cm above the conducting ground plane.

The rear of EUT, including peripherals was aligned and flush with rear of tabletop. I/O cables that were connected to the peripherals were bundle in center.

They were folded back and forth forming a bundle 30cm to 40cm long and were hanged 40cm height to the ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

### 3. Conducted Emission Test Data

The initial step in collecting conducted data was to perform a quasi-peak scan over the measurement range using a receiver.

The final data represents worst-case emissions.

#### O Test Mode : Copy

Frequency [MHz]	Meter reading(a)		Total Loss(b) [dB]	Results (a) + (b) [dBuV]	Limits [dBuV]	Margin [dB]
	LISN Port					
	L1	L2				
7.590	34.3	<30	0.1	34.4	<b>48.0</b>	13.6
8.502	36.3	<30	0.1	36.4	<b>48.0</b>	11.6
9.048	<30	33.8	0.2	34.0	<b>48.0</b>	14.0
9.306	<30	34.1	0.2	34.3	<b>48.0</b>	13.7
17.274	<30	32.7	1.1	33.8	<b>48.0</b>	14.2
18.624	41.5	43.0	1.1	44.1	<b>48.0</b>	3.9
21.726	33.1	35.0	1.6	36.6	<b>48.0</b>	11.4

\* Results = Meter Reading(QP) + Total Loss(LISN Insertion loss + Cable loss)

\* Margin = Limits - Result

## 4. Radiated Emission Test Data

The initial step in collecting radiated data was to perform a quasi-peak scan over the measurement range using a receiver.

All modes of operation were investigated and the worst-case emission are reported.

All other emission are non-significant.

The minimum margin to the limit is as follows :

### O Test Mode : Copy

Frequency Range [MHz]	Tested Frequency [MHz]	ANT Pol.	Meter Reading [A] [dBuV/m]	Total Loss [B] [dB]	Antenna Height [Cm]	Turn table Degree [Deg]	Results [A+B] [dBuV/m]	Limits at 10m [dBuV/m]	Margin (Limit-Result) [dB]
<b>30 - 88</b>	33.300	V	14.2	17.6	130	150	31.8	<b>40.0</b>	8.2
	76.364	V	25.1	8.2	124	300	33.3	<b>40.0</b>	6.7
<b>88 - 216</b>	108.536	H	20.2	13.5	226	345	33.7	<b>43.5</b>	9.8
	109.994	V	21.5	13.4	100	157	34.9	<b>43.5</b>	8.6
	130.214	V	20.1	13.4	182	300	33.5	<b>43.5</b>	10.0
	180.580	V	21.8	11.5	100	193	33.3	<b>43.5</b>	10.2
	200.385	H	16.5	11.8	165	200	28.3	<b>43.5</b>	15.2
<b>216 - 960</b>	223.011	V	16.0	12.4	100	250	28.4	<b>46.0</b>	17.6
	372.159	V	12.3	19.0	100	46	31.3	<b>46.0</b>	14.7
	454.412	V	10.1	21.1	100	50	43.0	<b>46.0</b>	3.0
	868.111	H	14.1	26.9	250	270	41.0	<b>46.0</b>	5.0
<b>960 -</b>	999.012	H	15.7	28.0	240	260	43.7	<b>54.0</b>	10.3

\* Receiving Antenna Mode : **Horizontal, Vertical**

\* Test distance : 10m (Semi-Anechoic Chamber)

\* Results = Meter Reading + Total Loss(Antenna factor + Cable loss)

## 5. Test Equipment Used

Equipment	Model No.	Serial No.	Makers	Calibration Last calibration and Interval
Field strength meter	ESCS30	839809/002	R & S	01/ 06/18, 12Months
	<b>Firmware versions : Main 1.08, OTP 02.01, GRA 02.03</b>			
Field strength meter	ESVP	860688/015	R & S	01/ 03/20, 12Months
L.I.S.N	3825-2R	9208-1981	EMCO	01/ 03/21, 12Months
Spectrum analyzer	8566B	3340A21744	H.P	01/ 03/20, 12Months
Quasi-peak adapter	85650A	3303A01748	H.P	01/01/27, 12Months
RF Preselector	85685A	3506A01500	H.P	01/01/29, 12Months
Bi-Log Antenna	CBL6112B	2767	SCHAFFNER	01/05/23, 12Months