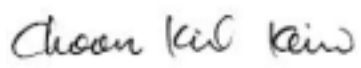
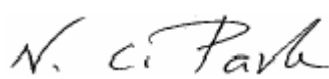
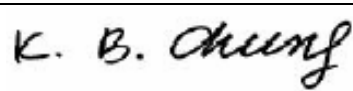


EMC Test Report

According to FCC Part 15 Subpart B

Project No.	LBE040736
Equipment under Test	Laser Beam Printer
Applicant	Samsung Electronics Co. Ltd; 416 Maetan-3 Dong, YeoungTong-Ku, Suwon City, Kyungki-Do, Korea, 442-742
FCC ID	A3LML2252W
Product Name	LBP
Model Name	ML-2252W
Manufacturer	Samsung Electronics Co. Ltd 259, Gongdan-Dong, Gumi-City, Kyung-Buk, 730-030, Korea
Date of Test	May 10, 2004
Issued Date	May 10, 2004

	Name/Position	Signature
Tested by	CK KIM Test Engineer	
Reviewed by	No Cheon, Park Manager of EMC Lab.	
Authorized by	Kyu Baek, Chung Chief of EMC Lab.	

1. This test reports does not constitute an endorsement by NIST/NVLAP or U.S Government.
2. This test report is to certify that the tested device properly complies with the requirements of FCC Rules and Regulations Part 15 Subpart B Unintentional Radiators.

All tests necessary to show compliance to the requirements were and these results met the specifications requirement.

This laboratory is registered by the NIST/NVLAP, U.S.A.

The test reported herein have been performed in accordance
with its terms of registration.



NVLAP LAB CODE 200623-0

Table of Contents

1. General Information

- 1.1 Basic Information Related Product
- 1.2 Detail Information Related Product
- 1.3 Operating Mode and Test Condition
- 1.4 Test System Details
- 1.5 Equipment Modifications
- 1.6 Test Procedure
- 1.7 Test Configurations
- 1.8 Applied Standards
- 1.9 Test Facility

2. Summary of Test Results

3. Description of individual tests

- 3.1 Conducted Emission
- 3.2 Radiated Emission

4. Appendix

- 4.1 Test Photography
- 4.2 EUT Photography

1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co. Ltd;
Model name	ML-2252W
Applicant Address	Samsung Electronics Co. Ltd; 416 Maetan3- Dong, Yeoung tong-Ku, Suwon City, Gyeonggi-Do, Korea, 443-742
Contact Person	CK KIM
Kind of product	LBP
Valiant list	ML-2250, ML-2251N, ML-2251NP
Manufacturer	Samsung Electronics Co. Ltd; 259, Gongdan-Dong, Gumi-City, Kyung-Buk, 730-030 Korea
New / Alternative / Permissive change Information	This report is original report #

1.2 Detail Information related Product

Specification

Item	Specification	Remark
Print speed	Up to 20 ppm in A4 (22 ppm in Letter)	
Resolution	Up to 1200 x 1200 dpi effective output	
First Printing Time	10 seconds	
Warm-up Time	Less than 40 seconds	
Power Consumption	350W average during operation Less than 11W in sleep mode	
Noise Level	Less than 39 dBA(Standby) Less than 51 dB (Printing)	
Toner Cartridge Life	5000 pages at ISO 19752 5% Coverage (Ships with 3000 pages starter Toner Cartridge)	

Power Rating	AC 110~127V, 50/60Hz	
Weight	10 Kg (Including consumable)	
External Dimensions	358 x 452 x 278 mm (14.1" x 17.8" x 10.9")	
Emulation	PCL6, SPL, IBM Pro-Printer, EPSON, PostScript 3 (Option)	
Random Access Memory	16 MB (Max. 144 MB)	

Operating Frequency

Wireless LAN 2.4GHz

1.3 Operating Mode and Test Condition

The system was configured for testing in typical fashion use. Cable were attached to each of the available I/O port. Where applicable, peripherals were attached to the I/O cables.

This EUT have Wireless Printing server function so Host PC link to EUT and transfer print file formation "H" character document continuously.

1.4 Test System Details

1.5 Equipment Modifications

No equipment modifications were required.

1.6 Test Procedure

1.6.1 Disturbance Voltage at Mains

EUT was placed on a platform nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting grounding 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 bindle 30cm to 40cm long and were handed 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.

1.6.2 Radiated disturbance

EUT was placed on a platform of nominal size, 1m by 1.5m, 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 and the run table azimuth was varied to obtain the maximum signal strength

The system configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found.

The spectrum was scanned from 30 to 1000 MHz using biconi-Log antenna.

1.7 Test Configurations

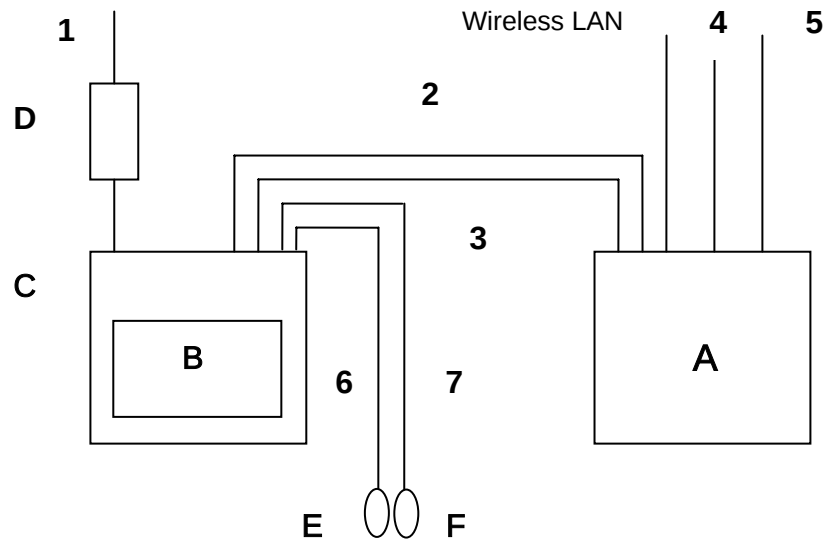
Used EUT and Peripherals

Seq	Device	Model Name	Serial #	Maker	Note
A	Laser Beam - Printer	ML-2252W	-	Samsung	
B	PC	PP03L	TW-04P102- 7016-23K-J0V7	DELL	Doc
C	DOCKING	PRX	00065BEA0748	DELL	
D	AC ADAPTOR	V85	TH-06G356- 17971-23M-6VX6	DELL	
E	USB Mouse	M-UR69	LNA22400020	Logitech	Doc
F	PS2 Mouse	MSW-5	None	Mass Corp.	Doc

Used Cable Description

No	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Power	1.7	No	
2	Parallel (Printer)	1.8	Yes	
3	USB Cable	1.8	Yes	
4	LAN (RJ45)	3.0	Yes	
5	Power	1.7	No	
6	USB Mouse	1.8	No	
7	PS2 Mouse	1.8	No	

Block Diagram



1.8 Applied Standards

List

Product or Generic Standards	Basic Standards
FCC Part15	ANSI C63.4 : 2000

Performance Criteria

- A. normal performance within the specification limits
- B. temporary degradation or loss of function or performance which is self-recoverable
- C. temporary degradation or loss of function or performance which require operator intervention or system reset

1.9 Test Facility

General Information

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 22, 16-1, 16-2, 11.

This EMC Testing Lab. 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).

This Lab. is operated as testing laboratory in accordance with the requirements of ISO/IEC 17025:1998.

Accreditation and Listing



Uncertainty

(According to NAMAS Pub.NIS81)

Samsung IT EMC Test Lab.

Disturbance voltage at Mains : $\pm 1.9\text{dB}$

Radiated disturbance Bi-Log Antenna : $\pm 5.1\text{dB}$

2. Summary of Test Results

Result : PASS

The equipment under test(EUT) has been found to comply with the applied standards.

Section of the Product Standard		Applied Standard	FCC Part15 Subpart B
Electromagnetic Emission Test			
3.1	Conducted Emission	ANSI C63.4	
3.2	Radiated Emission	ANSI C63.4	

3. Description of Individual Tests

3.1 Conducted Emission

Test Information	
Test Engineer	CK KIM
Test Date	May 10, 2004
Climate Condition	Ambient Temperature :24.5 Relative Humidity : 48%
	Atmospheric Pressure 1005mbar
Test Place	Shield Room

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
LISN	ESH3-Z5	R&S	100263	2004-07-16	12
EMI TEST RECEIVER	ESCS30	R&S	830986/004	2005-02-12	12
LISN	ESH3-Z5	R&S	831887/004	2004-10-01	12

Measurement Results	Passed The Measured emissions of the EUT have found to be below the specified limits.
----------------------------	---

Test Data & Graph

The Initial step in collecting conducted data was to perform a peak and average scan over the measurement range using a receiver

The find data represents worst-case emissions.

* QP : Quasi-peak, AV: Average

* Result = Meter Reading(QP or AV) + Total Loss(LISN Insertion loss + Cable loss)

* Margin = Limit – Result

1. Printing Operation - TEST DATA & GRAPH

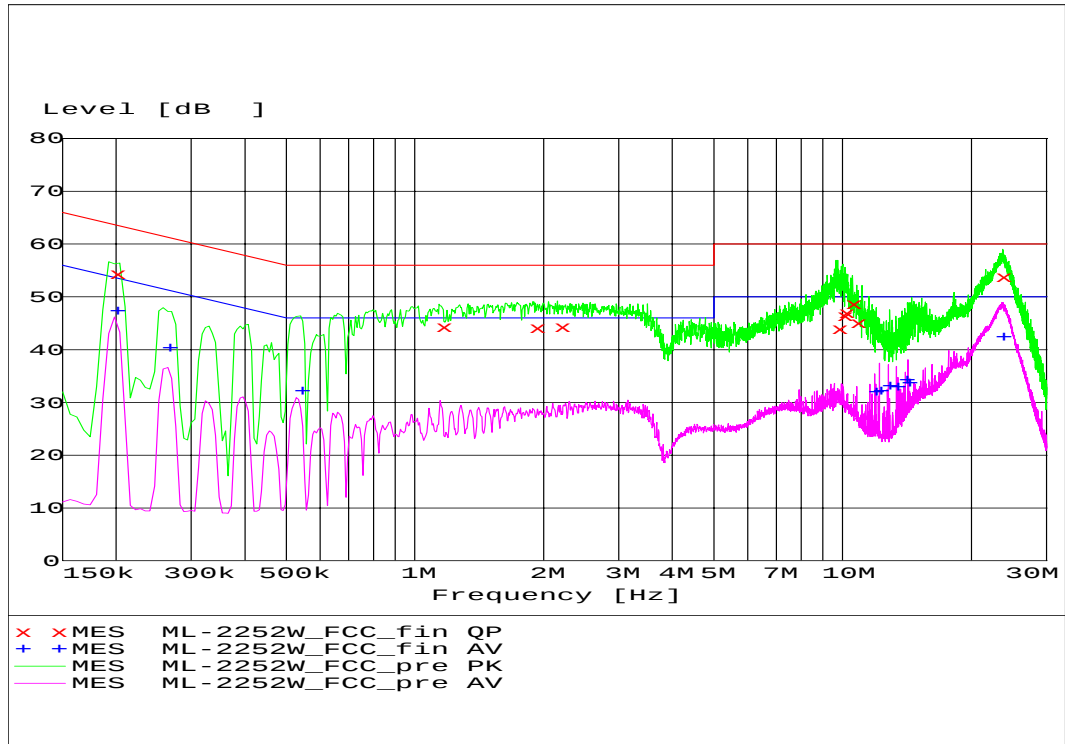
1. Average Table

Frequency	Meter Reading	Total Loss	Phase	Result	Limit	Margin
[MHz]	[dBuV]	[dB]		[dBuV]	[dBuV]	[dB]
0.20	46.6	0.6	N	47.2	54	6.4
0.26	39.8	0.5	N	40.3	51	11.0
0.54	31.5	0.6	N	32.1	46	13.9
11.89	30.7	1.3	N	32.0	50	18.0
12.20	30.9	1.3	N	32.2	50	17.8
12.81	31.7	1.4	L1	33.1	50	16.9
13.35	31.6	1.4	N	33.0	50	17.0
14.03	32.7	1.5	N	34.2	50	15.8
14.21	31.2	1.5	N	33.7	50	16.3
23.59	40.6	1.8	L1	42.4	50	5.8

2. Quasi Peak Table

Frequency	Meter Reading	Total Loss	Phase	Result	Limit	Margin
[MHz]	[dBuV]	[dB]		[dBuV]	[dBuV]	[dB]
0.20	53.8	0.6	N	54.4	64	9.3
1.16	43.7	0.6	N	44.3	56	11.7
1.92	43.5	0.6	N	44.1	56	11.9
2.19	43.7	0.5	N	44.2	56	11.8
9.77	42.9	1.0	N	43.9	60	16.1
10.05	45.4	1.0	N	46.4	60	13.6
10.15	46.0	1.0	N	47.0	60	13.0
10.53	47.5	1.1	N	48.6	60	11.4
10.80	43.8	1.2	L1	45.0	60	15.0
23.65	52.0	1.8	L1	53.8	60	6.2

- Graph -



3.2 Radiated Emission

Test Information	
Test Engineer	CK KIM
Test Date	May 10, 2004
Climate Condition	Ambient Temperature : 19.5 Relative Humidity : 55%
	Atmospheric Pressure 1001mbar
Test Place	10m RF Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Test Receiver	ESI26	R&S	830986/004	2005-02-12	12
Turn Table	DT430	HD	430/691/01	N/A	N/A
Antenna Mast	MA240	HD	240/678 BJ:01	N/A	N/A
BILOG Antenna	CBL6112B	Schaffner	2804	2004-06-26	12
Controller	HD100	HD	100/723	N/A	N/A

Measurement Results	Passed No Operation errors were detected during or after the applied test.
----------------------------	--

Test Data & Graph

The initial step in collecting radiated data was to perform a peak scan over the measurement range using a receiver. All modes of operation were investigated and the worst-case emission are reported

The minimum margin to the limit is as follows:

All other emission are non-significant.

* Receiving Antenna Mode : Horizontal, Vertical

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

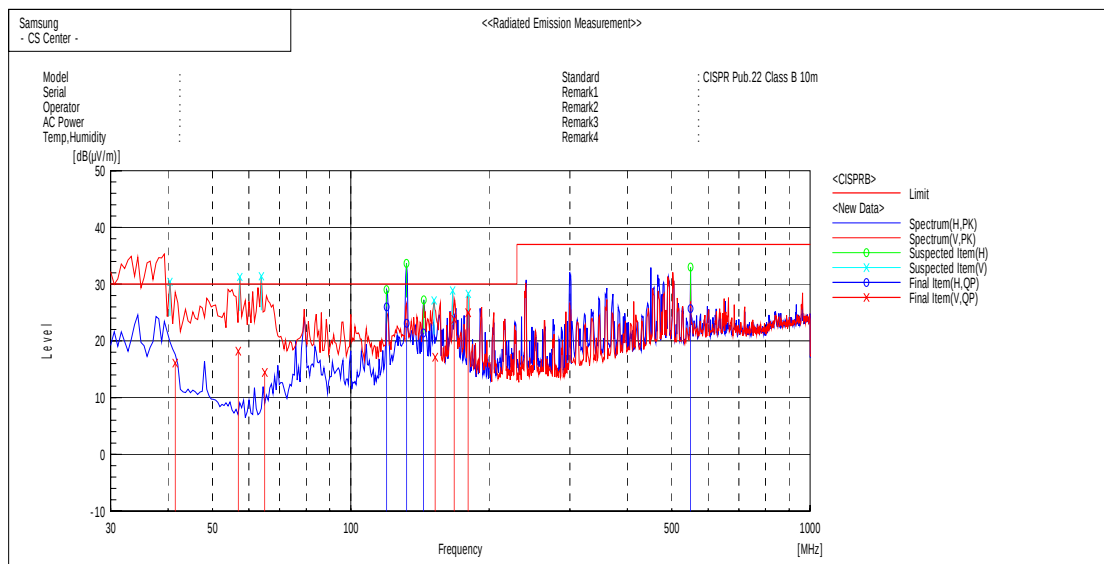
* Result = Meter Reading + Total Loss(Antenna factor + Cable loss)

* Margin = Limit – Result

1. Printing Operation - TEST DATA & GRAPH

Freq.	Level	Transd.	Limits	Marjin	Height	Azimuth	Pol.
MHz	dBuV/m	dB	dBuV/m	dB	cm	deg	VERTI
41.463	24.7	-8.6	30.0	13.9	115	154	VERTI
56.889	32.6	-14.4	30.0	11.8	318	171	VERTI
64.984	29.4	-15.0	30.0	15.6	295	36	HORI
119.728	34.1	-8.1	30.0	4.0	384	138	HORI
132.281	30.9	-7.8	30.0	6.9	373	154	HORI
143.984	29.9	-8.5	30.0	8.6	397	142	VERTI
152.661	26.2	-9.1	30.0	12.9	114	8	VERTI
167.849	33.6	-9.8	30.0	6.2	119	182	VERTI
180.099	35.4	-10.4	30.0	5.0	119	188	VERTI
549.173	23.1	2.6	37.0	11.3	180	275	HORI

- Graph -



Final Result

No.	Frequency [MHz]	(P)	S.C	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]	Remark
1	41.463	V	S	24.7	-8.6	16.1	30.0	13.9	115.0	154.0	
2	56.889	V	I	32.6	-14.4	18.2	30.0	11.8	318.0	171.0	
3	64.984	V	S	29.4	-15.0	14.4	30.0	15.6	295.0	36.0	
4	119.728	H	I	34.1	-8.1	26.0	30.0	4.0	384.0	138.0	
5	132.281	H	I	30.9	-7.8	23.1	30.0	6.9	373.0	154.0	
6	143.984	H	I	29.9	-8.5	21.4	30.0	8.6	397.0	142.0	
7	152.661	V	S	26.2	-9.1	17.1	30.0	12.9	114.0	8.0	
8	167.849	V	S	33.6	-9.8	23.8	30.0	6.2	119.0	182.0	
9	180.099	V	S	35.4	-10.4	25.0	30.0	5.0	119.0	188.0	
10	549.173	H	S	23.1	2.6	25.7	37.0	11.3	180.0	275.0	

4. Appendix

4.1 Test Photography



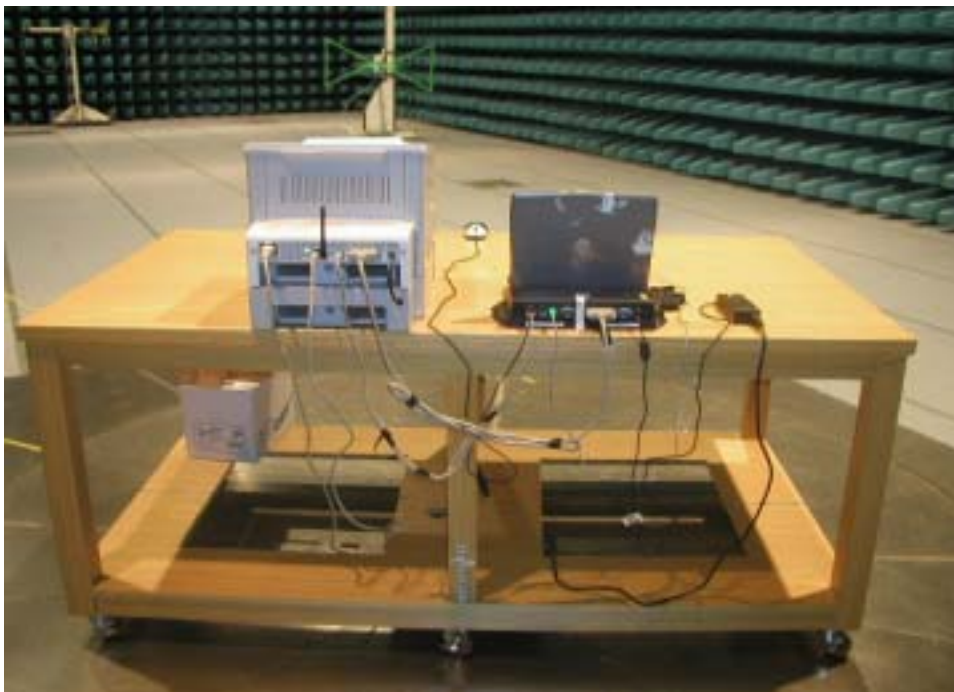
Pic. 1 Conducted Emission (Front)



Pic. 2 Conducted Emission (Rear)



Pic. 3 Radiated Emission (Front)



Pic. 4 Radiated Emission (Rear)

4.2 EUT Photography



Pic. 5 EUT (Front)



Pic. 6 EUT (Rear)



Pic. 7 EUT (Label)



Pic. 8 EUT (Inside)