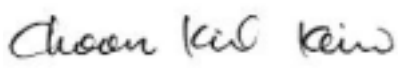
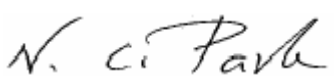
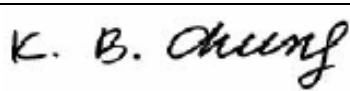


EMC Test Report

According to FCC Part 15 Subpart B

Project No.	LBE040926
Equipment under Test	
Applicant	Samsung Electronics Co. Ltd; 416 Maetan-3 Dong, Yeoung tong-Ku, Suwon City, Gyeonggi-Do, Korea, 442-742
FCC ID	A3LSCX4100
Product Name	MFP
Model Name	SCX-4100
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	Choon Kil.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

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1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co. Ltd;
Model name	SCX-4100
Applicant Address	416 Maetan3- Dong, Yeoung tong-Ku, Suwon City, Gyeonggi-Do, Korea, 443-742
Contact Person	Choon Kil.KIM
Kind of product	MFP
Valiant list	
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
General Specification	Consumables	1-piece toner cartridge system
	Power consumption	Sleep mode : 10W Standby mode : 85W Average : 350W
	Warm-up Time	42 seconds
	Toner Cartridge Life	3,000 pages (for starter, 1,000 pages) @ ISO 19752 5% Coverage
	Power requirements	110~127V, 50/60Hz, 4.0A
	Set Dimension (W x D x H)	422 x 400 x 239 mm
	Weight	Gross 10.7 kg (including consumables, accessories and package)
Scanner and	Compatibility	TWAIN standard

Copier Specifications	Scan method	CIS
	Scan resolution	600 x 600 dpi(optical)
	Scan Speed	72 seconds (Linearity, Gray Scale) 150 seconds (Color 300 dpi)
	Copy Speed	Letter : 15 copies per minute A4 : 14 copies per minute
	Copy resolution	600 x 600 dpi
Printer Specifications	Print method	Laser Beam Printing
	Print speed	Letter : 15 pages per minute A4 : 14 pages per minute
	Print resolution	600 x 600 dpi
	Emulation	SPL(GDI)
	PC interface	Compatible with USB 1.1 Specifications and IEEE1284 Parallel
	Memory	8MB
	First printing time	Standby mode : 12 seconds

Operating Frequency

- A. Video Clock : 12.992509 MHz
- B. CPU clock : 10MHz
- C. SDRAM Clock : 66MHz
- D. CIS Clock (Copy) : 4.167 MHz

1.3 Operating Mode and 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.

We found the worst case of emission level for the EUT and the operation mode of EUT was selected to the copy mode during the test.

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 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.

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 biconiLog antenna.

1.7 Test Configuration

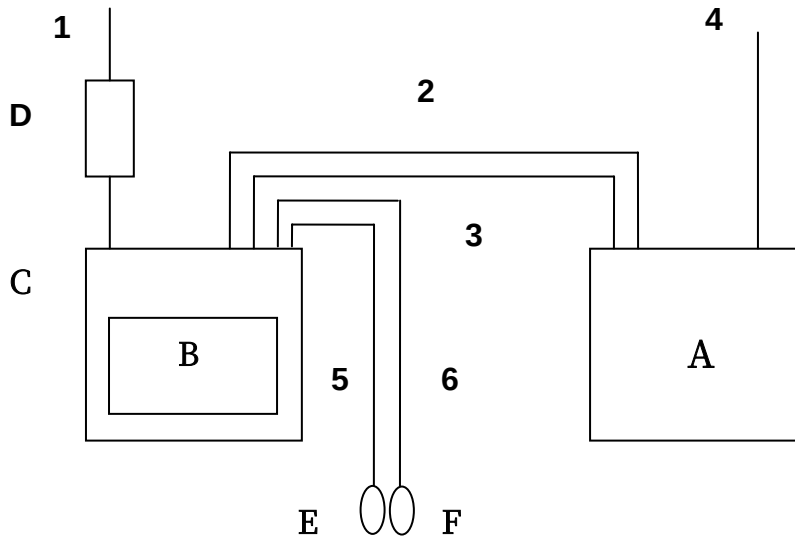
Used EUT and Peripherals

No	Device	Model Name	Serial #	Maker	Note
A	Laser Beam - Printer	SCX-4100	-	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

	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	Power	1.7	No	
5	USB Mouse	1.8	No	
6	PS2 Mouse	1.8	No	

Block Diagram



1.8 Applied Standards

List

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

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	Result
Electromagnetic Emission Test			
3.1	Conducted Emission	FCC Part15 Subpart B	Complied
3.2	Radiated Emission	FCC Part15 Subpart B	Complied

3.1 Conducted Emission

Test Information	
Test Engineer	Choon Kil.KIM
Test Date	May 10, 2004
Climate Condition	Ambient Temperature : 24.5 °C 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.
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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. Scan mode - TEST DATA & GRAPH

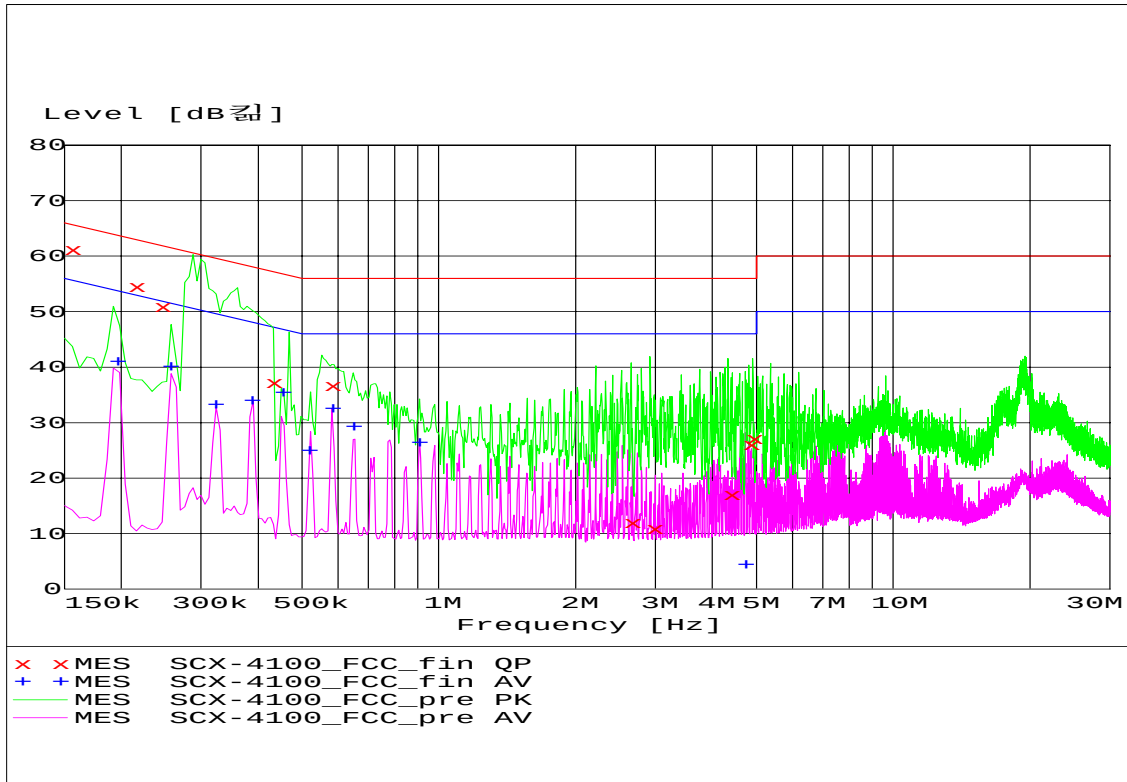
1. Average Table

Frequency	Meter Reading	Total Loss	Phase	Result	Limit	Margin
[MHz]	[dBuV]	[dB]		[dBuV]	[dBuV]	[dB]
0.195	40.2	0.6	L1	41.0	54	12.8
0.255	39.6	0.5	N	40.1	52	11.5
0.320	32.6	0.5	N	33.1	50	16.7
0.385	33.4	0.5	L1	33.9	48	14.2
0.450	34.9	0.5	N	35.4	47	11.5
0.515	24.3	0.6	N	24.9	46	21.1
0.580	31.8	0.6	L1	32.4	46	13.6
0.645	28.7	0.5	N	29.2	46	16.8
0.900	25.8	0.5	N	26.3	46	19.7
4.695	3.6	0.8	L1	4.4	46	41.6

2. Quasi Peak Table

Frequency	Meter Reading	Total Loss	Phase	Result	Limit	Margin
[MHz]	[dBuV]	[dB]		[dBuV]	[dBuV]	[dB]
0.155	60.6	0.6	N	61.20	66	4.2
0.215	53.9	0.5	L1	54.40	63	8.6
0.245	50.3	0.5	L1	50.80	62	11.1
0.430	36.6	0.5	N	37.10	57	20.2
0.580	36.1	0.6	L1	36.70	56	19.3
2.645	11.4	0.5	N	11.90	56	44.1
2.960	10.2	0.6	N	10.80	56	45.2
4.375	16.2	0.8	N	17.00	56	39.0
4.835	25.2	0.8	L1	26.00	56	30.0
4.900	26.2	0.8	N	27.00	56	29.0

- Graph -



3.2 Radiated Emission

Test Information	
Test Engineer	Choon Kil.KIM
Test Date	May 10, 2004
Climate Condition	Ambient Temperature : 19.5°C Relative Humidity : 55%
	Atmospheric Pressure 1004mbar
Test Place	10m RF Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Test Receiver	ESI26	R&S	100010	2005-02-10	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)

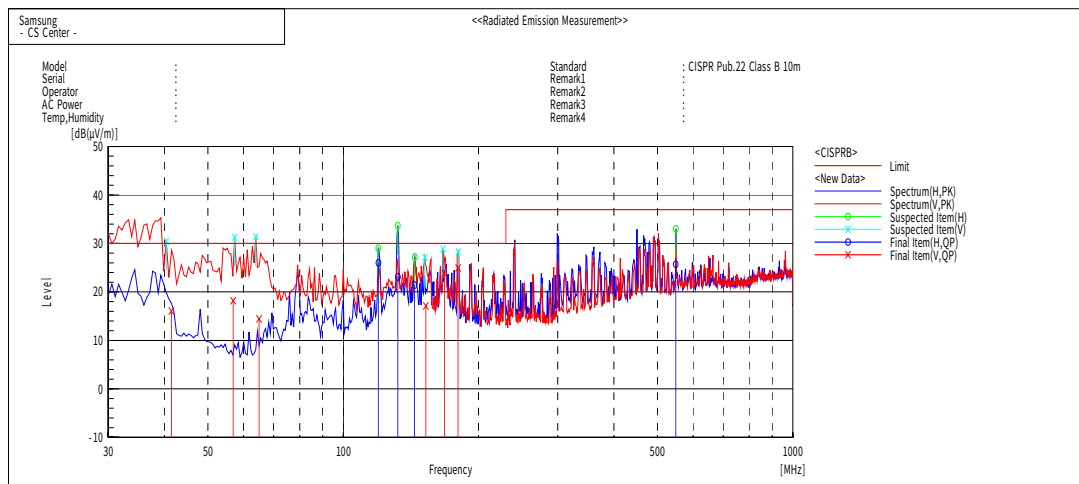
* Result = Meter Reading + Total Loss(Antenna factor + Cable loss)

* Margin = Limit – Result

1. Scan Mode - TEST DATA & GRAPH

Frequency	Level	Transd	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBuV/m	dB	dBuV/m	dB	cm	deg	
41.46	24.7	-8.6	30	13.9	115	154	VERI
56.88	32.6	-14.4	30	11.8	318	171	VERI
64.98	29.4	-15.0	30	15.6	295	36	VERI
119.72	34.1	-8.1	30	4.0	384	138	HORI
132.28	30.9	-7.8	30	6.9	373	154	HORI
143.98	29.9	-8.5	30	8.6	397	142	HORI
152.66	26.2	-9.1	30	12.9	114	8.0	VERI
167.84	33.6	-9.8	30	6.2	119	182	VERI
180.09	35.4	-10.4	30	5.0	119	188	VERI
549.17	23.1	2.6	37	11.3	180	275	HORI

- Graph -



Final Result

No.	Frequency [MHz]	(P)	S.C	Reading OP [dB(μV)]	c.f [dB(1/m)]	Result OP [dB(μV/m)]	Limit [dB(μV/m)]	Margin OP [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)

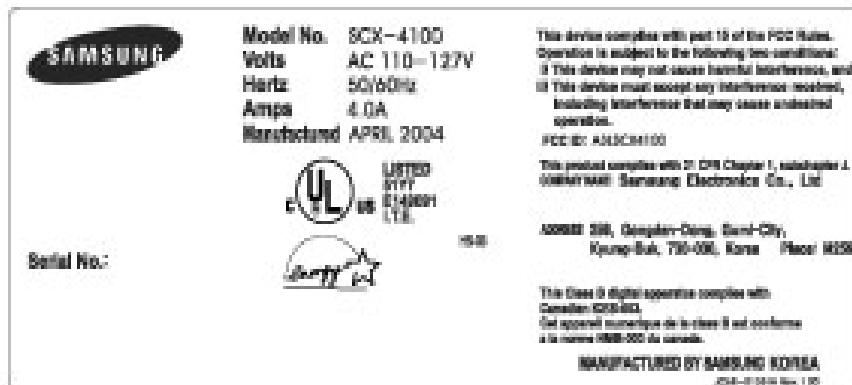
4.2 EUT Photography



Pic. 5 EUT (Front)



Pic. 6 EUT (Rear)



Pic. 7 EUT (Label)



Pic. 8 EUT (Inside)