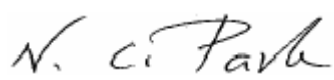


EMC Test Report (Permissive II Change Report)

According to FCC Part 15 Subpart B

Project No.	LBE050549
Equipment under Test	
Applicant	Samsung Electronics Co., Ltd 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, Korea, 443-742
FCC ID	A3LML-2550
Product Name	Laser Beam Printer
Model Name	ML-2552W
Variant Model	ML-2551N, Phaser 3450B, Phaser 3450D, Phaser 3450DN, Phaser 3450 9025, 9025N, ML-2550
Manufacturer	1) Samsung Electronics Co., Ltd. 259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, 730-030, KOREA 2) Samsung Electronics Slovakia s.r.o Hviezdoslavova 807 SK-924 27 Galanta SLOVAKIA 3) Shandong Samsung Telecommunications Co., Ltd. #264209, Samsung Road, Weihai Hi-Tech IDZ Shandong Province CHINA
Date of Test	March 16, 2005
Issued Date	March 17, 2005

	Name/Position	Signature
Tested by	Kyeong Dong, Kim Test Engineer	
Reviewed by	No Cheon, Park Manager of EMC Lab.	
Authorized by	Seung Kyu, Cha 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

3. FCC filing Registration Number : 873282

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Annex A. Picture of SMPS

1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co., Ltd.
Model name	ML-2552W
Applicant Address	416 Maetan3- Dong, Yeoung tong-Gu, Suwon-Si, Gyeonggi-Do, 443-742, Korea
Contact Person	Kyeong Dong, Kim
Kind of product	Laser Beam Printer
Variant list	ML-2551N, Phaser 3450B, Phaser 3450D, Phaser 3450DN, Phaser 3450, 9025, 9025N, ML-2550
Manufacturer	1) Samsung Electronics Co., Ltd. 259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, 730-030, KOREA 2) Samsung Electronics Slovakia s.r.o Hviezdoslavova 807 SK-924 27 Galanta SLOVAKIA 3) Shandong Samsung Telecommunications Co., Ltd. #264209, Samsung Road, Weihai Hi-Tech IDZ Shandong Province CHINA
New / Alternative / Permissive change Information	This report is permissive II change report for adding SMPS with AC 220-240V rating power (Refer to Annex A) and 2 manufacturers, Samsung Electronics Slovakia s.r.o. and Shandong Samsung Telecommunications Co., Ltd. - Original test report No. : LBE030992

1.2 Detail Information related Product

Specification

Item	Specification	Remark
Print Speed	Up to 24PPM (A4), Up to 25PPM(Letter)	-
Printing Resolution	1200 x 1200 dpi	-
Memory	Basic 32MB, Max. 160MB	-
CPU	Power PC 603e compatible interface controller	-
Interface	IEEE1284 1Port, USB2.0 1Port, Ethernet 10/100 Base Tx(option for ML-2550), IEEE 802.11b Wireless LAN (option for ML-2550, ML-2551N), Serial Interface(Optional)	-
Power Consumption	AC 100~127V(USA, Canada)/ AC 220-240V(Others), 50/60Hz	-
External Dimensions	386mm X 436mm X 326mm	-

Operating Frequency

Video(23.8MHz), CPU(80MHz), Main Clock/VClk/USB Clk(12MHz), N/W clock:25MHz,
Wireless LAN BW =2.4GHz

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.

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

ML-2552W is supporting the IEEE1284, USB, LAN, Wireless LAN printing mode.

In each test mode, finally we found worst case emission that is above configuration with the Worst case components(in the above table). So, the data of the maximum EUT operation, USB printing was reported.

- Power Input

Voltage : AC 220V

Frequency : 60Hz

1.4 Test System Details

N/A

1.5 Equipment Modifications

No equipment modifications were required.

1.6 Test Procedure

1.6.1 Conducted Emission

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 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.

Frequency Band [MHz]	Instrument	Detector	Resolution Bandwidth	Video Bandwidth
0.15 to 30	EMI Receiver	Quasi-Peak	9kHz	-
		Average	9kHz	-

1.6.2 Radiated Emission

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.

Also, the EMI Receiver was scanned from 1000 to 1800MHz using linearly polarization Double ridge horn antennas were used. The explanation of measuring instrument setup when Respective function is used in any frequency band is as following;

Frequency Band [MHz]	Instrument	Detector	Resolution Bandwidth	Video Bandwidth
30 to 1000	EMI Receiver	Quasi-Peak	120kHz	-
Above 1000	EMI Receiver	Peak	1MHz	1MHz

1.7 Test Configuration

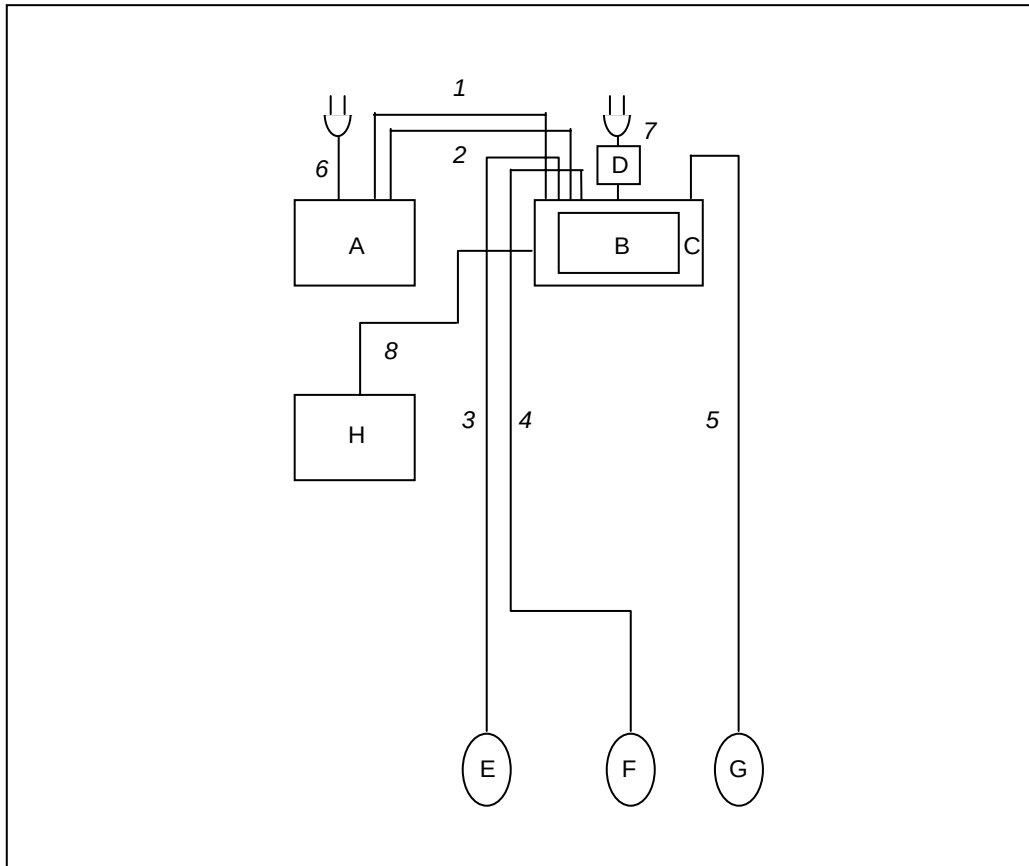
Used EUT and Peripherals

Seq	Device	Model Name	Serial #	Maker	Note	FCC ID
A	LBP	ML-2552W	-	Samsung	EUT	A3LML-2550
B	Note PC	PP03L	TW-04P102-7016-23K-J0V7	DELL	-	DoC
C	Docking	PRX	MX-02B599-41011-24B-07R8	DELL	-	DoC
D	Adaptor	ADP-90FB Rev.B	TH-06G356-17971-23M-6VX6	Delta	For Note PC	-
E	Mouse	Win Mouse-300	JP9506053	WIN	Serial	IOW CM-2905
F	Mouse	Scroll Mouse P801	01063726	KYE SYSTEMS	PS/2	FSUGMZFT
G	Mouse	M-UR69	LNR24400138	Logitech	USB	DoC
H	USB Floppy Disk Drive	MSFD-20U	20001405	SONY	USB	DoC

Used Cable Description

	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	USB	1.8	Yes	From EUT to PC
2	Parallel	1.8	Yes	Same as above
3	Serial	1.8	No	-
4	PS/2	1.8	No	-
5	USB	1.8	Yes	-
6	Power	1.8	No	For EUT
7	Power	1.8	No	-
8	USB	0.4	Yes	-

Block Diagram



1.8 Applied Standards

List

Product or Generic Standards	Basic Standards
FCC Part15	ANSI C63.4 : 2003

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.

This EMC Testing Lab. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Agreement (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.

Conducted Emission : $\pm 1.9\text{dB}$

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

2. Summary of Test Results

Result : PASS

The equipment under test 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 Part 15 Sub. B	Complied
3.2	Radiated Emission	FCC Part 15 Sub. B	Complied

3.1 Conducted Emission

Test Information	
Test Engineer	Kyeong Dong, Kim
Test Date	March 16, 2005
Climate Condition	Ambient Temperature : 23.5 °C Relative Humidity : 45%
	Atmospheric Pressure 1024mbar
Test Place	Shielded Room #2

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
EMI TEST RECEIVER	ESCS30	R&S	830986/004	2006-02-17	12
LISN	ESH3-Z5	R&S	100263	2005-05-25	12
LISN	ESH3-Z5	R&S	831887/004	2005-08-31	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

3.1.1 TEST DATA & GRAPH

3.1.1.1 Quasi Peak Table

MEASUREMENT RESULT: "ML-2552W_fin QP"

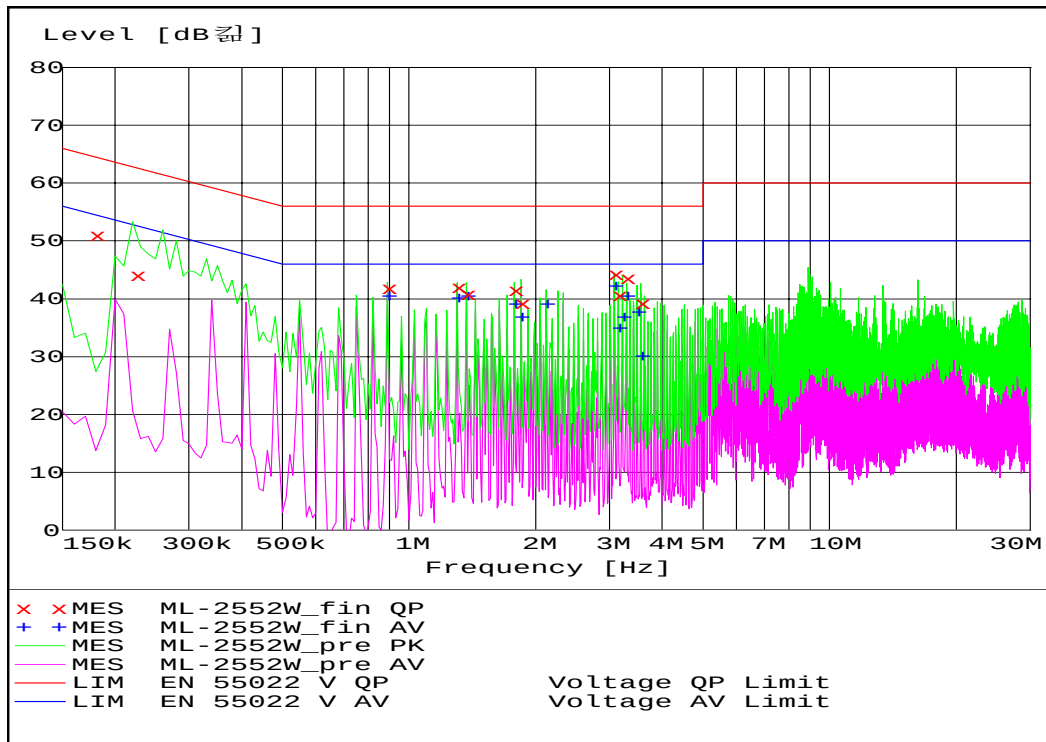
Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.180000	50.90	0.6	65	14.1	N	GND
0.225000	44.00	0.5	63	19.0	N	GND
0.890000	41.70	0.5	56	14.3	N	GND
1.300000	41.90	0.6	56	14.1	N	GND
1.370000	40.80	0.6	56	15.2	L1	GND
1.780000	41.40	0.6	56	14.6	N	GND
1.850000	39.20	0.6	56	16.8	L1	GND
3.080000	44.10	0.6	56	11.9	N	GND
3.145000	40.60	0.6	56	15.4	N	GND
3.285000	43.50	0.6	56	12.5	N	GND
3.560000	39.10	0.7	56	16.9	L1	GND

3.1.1.2 Average Table

MEASUREMENT RESULT: "ML-2552W_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.890000	40.30	0.5	46	5.7	N	GND
1.300000	40.10	0.6	46	5.9	N	GND
1.370000	40.30	0.6	46	5.7	L1	GND
1.780000	39.00	0.6	46	7.0	N	GND
1.845000	36.70	0.6	46	9.3	N	GND
2.120000	39.00	0.5	46	7.0	L1	GND
3.080000	42.20	0.6	46	3.8	N	GND
3.145000	34.90	0.6	46	11.1	N	GND
3.215000	36.70	0.6	46	9.3	L1	GND
3.285000	40.40	0.6	46	5.6	N	GND
3.490000	37.70	0.7	46	8.3	L1	GND
3.555000	30.00	0.7	46	16.0	N	GND

3.1.1.3 Graph



3.2 Radiated Emission

Test Information	
Test Engineer	Kyeong Dong, Kim
Test Date	March 16, 2005
Climate Condition	Ambient Temperature : 20.8℃ Relative Humidity : 52%
	Atmospheric Pressure 1023mbar
Test Place	10m Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Test Receiver	ESI26	R&S	100147	2005-10-04	12
Turn Table	DT430	HD	430/691/01	N/A	N/A
Antenna Mast	MA240	HD	240/678 BJ:01	N/A	N/A
Controller	HD100	HD	100/723	N/A	N/A
Preamplifier	CPA9232	Schaffner	1053	2005-08-14	12
BILOG Antenna	CBL6112B	Schaffner	2804	2005-11-09	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 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.

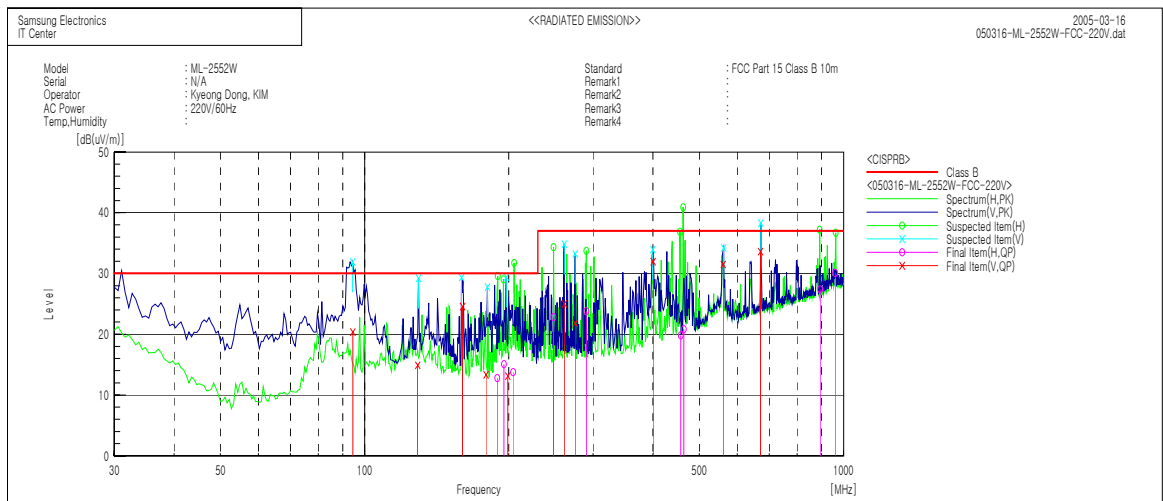
* Receiving Antenna Mode : Horizontal, Vertical

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

* Result = Meter Reading + c.f (Antenna factor + Cable loss - Amp. Gain)

* Margin = Limit – Result

Samsung Electronics Co., Ltd
IT Center



Final Result

No.	Frequency [MHz]	(P)	S.C	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	94.483	V	S	30.6	-10.2	20.4	30.0	9.6	154.0	312.0	
2	129.037	V	S	22.6	-7.7	14.9	30.0	15.1	104.0	45.0	
3	160.165	V	S	33.9	-9.4	24.5	30.0	5.5	106.0	313.0	
4	179.255	V	S	23.6	-10.3	13.3	30.0	16.7	101.0	103.0	
5	189.249	H	S	23.0	-10.2	12.8	30.0	17.2	273.0	308.0	
6	195.514	H	S	25.3	-10.2	15.1	30.0	14.9	270.0	334.0	
7	199.026	V	S	23.3	-10.2	13.1	30.0	16.9	105.0	23.0	
8	204.199	H	S	23.9	-10.1	13.8	30.0	16.2	395.0	359.0	
9	248.056	H	S	28.8	-6.0	22.8	37.0	14.2	229.0	243.0	
10	261.042	V	S	29.9	-4.9	25.0	37.0	12.0	100.0	97.0	
11	275.110	V	S	27.5	-5.7	21.8	37.0	15.2	100.0	206.0	
12	290.261	H	S	29.3	-5.5	23.8	37.0	13.2	229.0	245.0	
13	400.266	V	S	34.1	-2.1	32.0	37.0	5.0	342.0	86.0	
14	457.304	H	S	20.6	-0.8	19.8	37.0	17.2	384.0	180.0	
15	464.205	H	S	21.6	-0.8	20.8	37.0	16.2	364.0	236.0	
16	560.648	V	S	28.4	3.1	31.5	37.0	5.5	271.0	114.0	
17	671.102	V	S	30.6	3.0	33.6	37.0	3.4	204.0	180.0	
18	894.334	H	S	21.1	6.3	27.4	37.0	9.6	398.0	274.0	
19	960.855	H	S	22.7	7.4	30.1	37.0	6.9	396.0	197.0	

4. Appendix

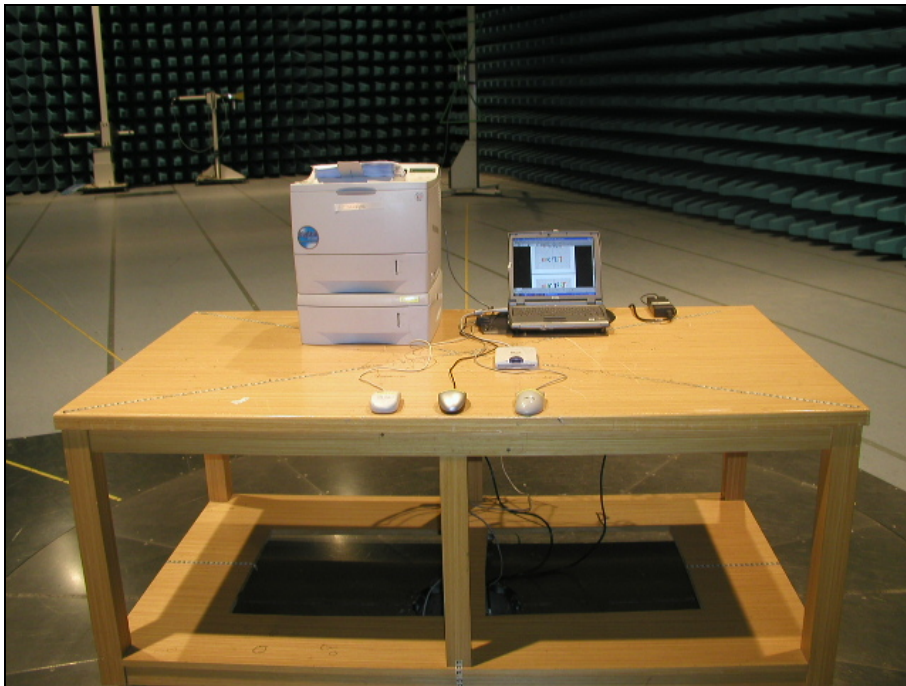
4.1 Test Photography



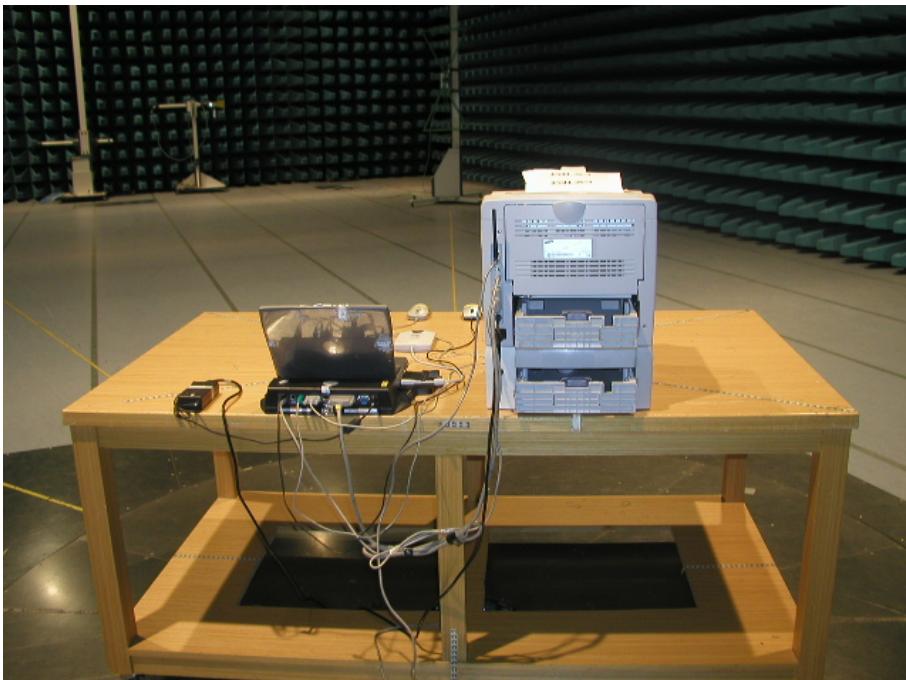
Picture 1- Conducted Emission (Front)



Picture 2- Conducted Emission (Rear)



Picture 3- Radiated Emission (Front)



Picture 4- Radiated Emission (Rear)

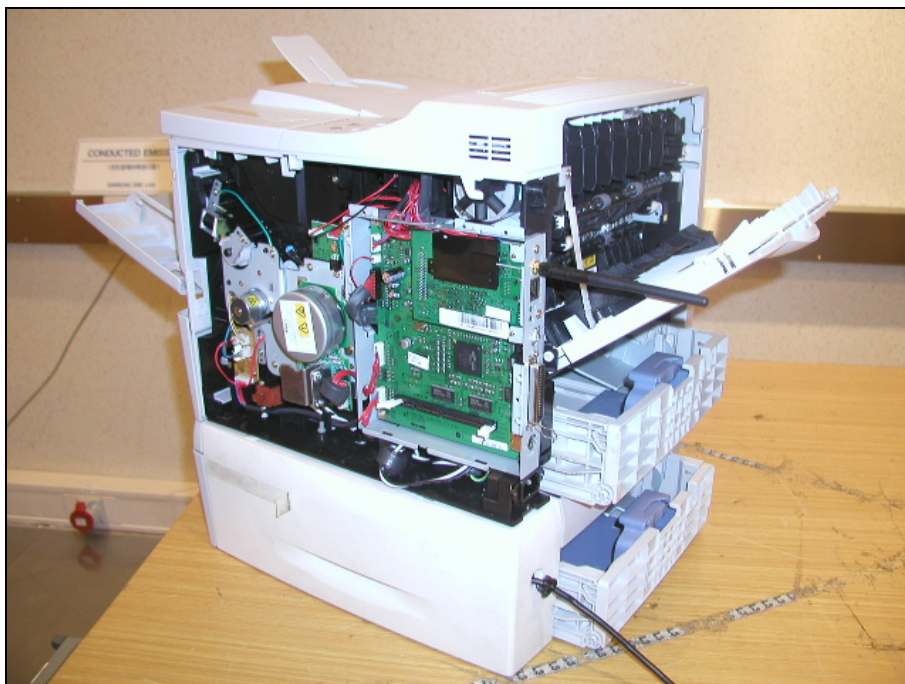
4.2 EUT Photography



Picture 5- EUT (Front)



Picture 6- EUT (Rear) & Label Location



Picture 7- EUT (Inside)

 Samsung Electronics Co., Ltd. 259, Gongdan-Dong, Gumi-City, Kyung-Buk, 730-030, Korea Place: M259	Model No. : ML-2550 Volts: AC 220-240V Hertz: 50/60Hz Amps: 5.5A Manufactured: MARCH 2005	FCC ID: A3LML-2550 (Printer) FCC ID: A3LSWL-2250U (WLAN) This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: i) This device may not cause harmful interference, and ii) This device must accept any interference received, including interference that may cause undesired operation. This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada. Canadian Certification Number(RSS-210): 649E-SWL2250U (WLAN) This Class B digital apparatus complies with Canadian ICES-003 Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada. This product complies with 21 CFR Chapter 1, subchapter J. MADE IN KOREA JC68-01065A
Serial No.:	 LISTED 51Y7 E149091 I.T.E HS-03	

Picture 8- Label of Samsung Electronics Co., Ltd.

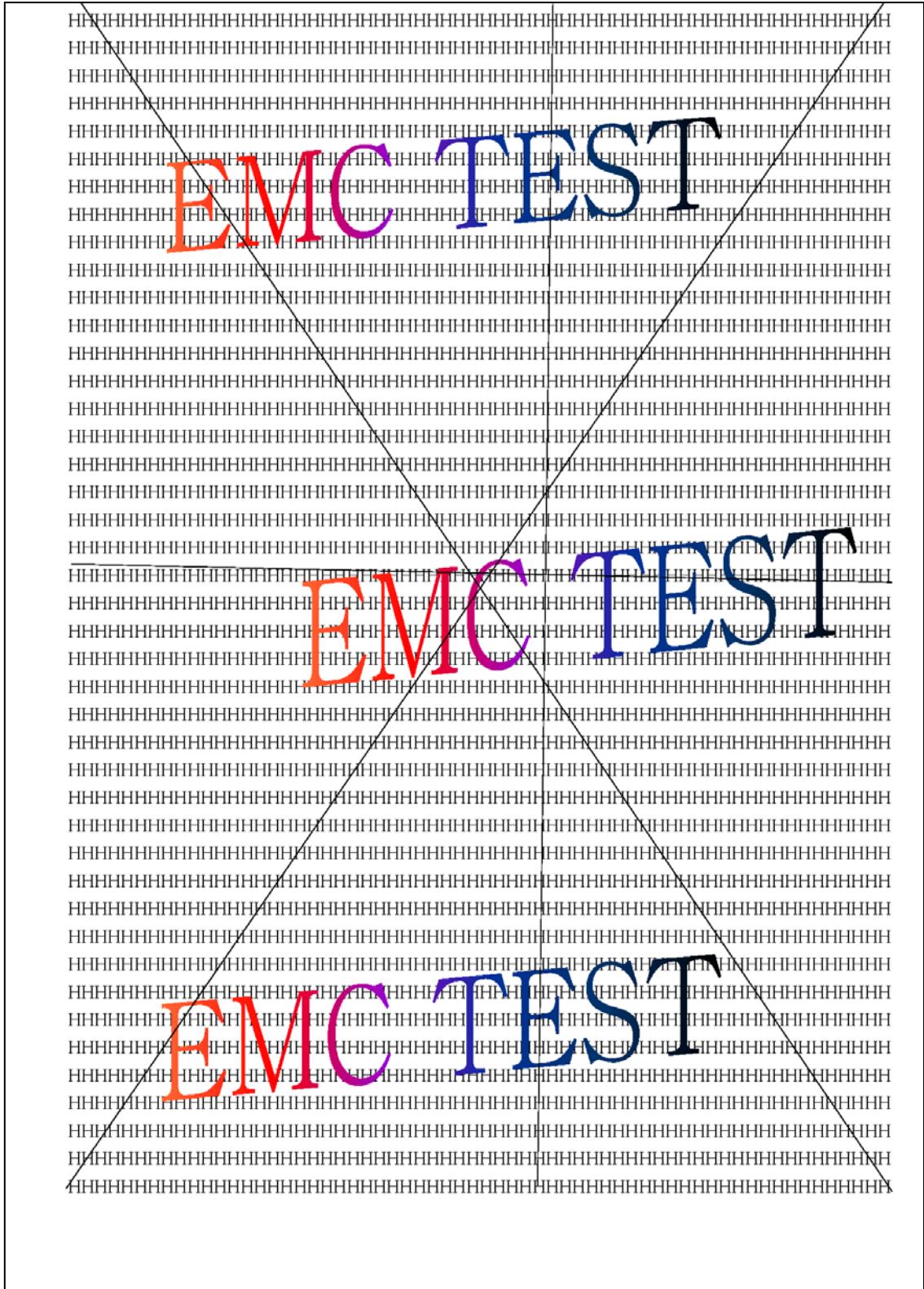
 Samsung Electronics Slovakia s.r.o. Hviezdoslavova 807 SK-924 27 Galanta SLOVAKIA	Model No. : ML-2550 Volts: AC 220-240V Hertz: 50/60Hz Amps: 5.5A Manufactured: MARCH 2005	FCC ID: A3LML-2550 (Printer) FCC ID: A3LSWL-2250U (WLAN) This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: i) This device may not cause harmful interference, and ii) This device must accept any interference received, including interference that may cause undesired operation. This Class B digital apparatus meets all requirements of the Canadian interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada. Canadian Certification Number(RSS-210):649E-SWL2250U (WLAN) This Class B digital apparatus complies with Canadian ICES-003 Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada. This product complies with 21 CFR Chapter 1, subchapter J.
	 LISTED 51Y7 E149091 I.T.E HS-03	Serial No.:
MADE IN SLOVAKIA JC68-01065A		

Picture 9- Label of Samsung Electronics Slovakia s.r.o.

 Shandong Samsung Telecommunications Co., Ltd. #264209, Samsung Road, Weihai Hi-Tech IDZ Shandong Province CHINA	Model No. : ML-2550 Volts: AC 220-240V Hertz: 50/60Hz Amps: 5.5A Manufactured: MARCH 2005	FCC ID: A3LML-2550 (Printer) FCC ID: A3LSWL-2250U (WLAN) This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: i) This device may not cause harmful interference, and ii) This device must accept any interference received, including interference that may cause undesired operation. This Class B digital apparatus meets all requirements of the Canadian interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada. Canadian Certification Number(RSS-210):649E-SWL2250U (WLAN) This Class B digital apparatus complies with Canadian ICES-003 Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada. This product complies with 21 CFR Chapter 1, subchapter J.
	 LISTED 51Y7 E149091 I.T.E HS-03	Serial No.:
MADE IN CHINA JC68-01065A		

Picture 10- Label of Shandong Samsung Telecommunications Co., Ltd.

4.3 Test Pattern



Annex A

- Picture of SMPS (220V-240V, 50/60Hz)

