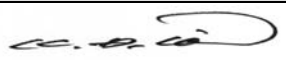
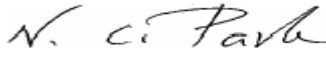
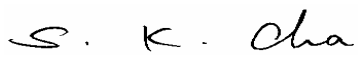


EMC Test Report

According to FCC Part 15 Subpart B

Project No.	LBE050711
Equipment under Test	
Applicant	Samsung Electronics Co., Ltd. 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, Korea, 443-742
FCC ID	A3LSP20MPP
Product Name	Laser Beam Printer
Model Name	SP20MPP
Manufacturer	1) Samsung Electronics Co., Ltd. 259, Gongdan-Dong, Gumi-City, Gyongsandbuk-Do, 730-030 KOREA 2) Shandong Samsung Telecommunications Co., Ltd. #264209, Samsung Road, Weihai Hi-tech IDZ Shandong Province CHINA 3) Intops(Weihai) Electronics Co., Ltd. 3, Huoju Road, Weihai Hi-tech IDZ Shandong Province CHINA 4) Weihai Shin Heung Digital Electronics Co. 98, Samsung Road, Weihai Hi-tech Industry Development Zone, Shandong Province CHINA
Date of Test	April 1, 2005
Issued Date	April 12, 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.

3. FCC filing Registration Number : 873282



NVLAP LAB CODE 200623-0

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- 1.7 Test Configuration
- 1.8 Applied Standard
- 1.9 Test Facility

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3. Description of individual tests

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- 3.2 Radiated Emission

4. Appendix

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- 4.2 EUT Photography

1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co., Ltd.
Model name	SP20MPP
Applicant Address	416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, Korea, 443-742
Contact Person	Kyeong Dong, Kim
Kind of product	Laser Beam Printer
Variant list	SP20MPP (Brand : Samsung) : Basic Model SP20MPU (Brand : Samsung) : Only USB Port Phaser 3122 (Brand : Xerox) : same as SP20MPP except for Model No.
Manufacturer	1) Samsung Electronics Co., Ltd. 259, Gongdan-Dong, Gumi-City, Gyongsandbuk-Do, 730-030 KOREA 2) Shandong Samsung Telecommunications Co., Ltd. #264209, Samsung Road, Weihai Hi-tech IDZ Shandong Province CHINA 3) Intops(Weihai) Electronics Co., Ltd. 3, Huoju Road, Weihai Hi-tech IDZ Shandong Province CHINA 4) Weihai Shin Heung Digital Electronics Co. 98, Samsung Road, Weihai Hi-tech Industry Development Zone, Shandong Province CHINA
New / Alternative / Permissive change Information	New

1.2 Detail Information related Product

Specification

Item	Specification	Remark
Print Speed	Up to 20PPM (A4), Up to 22PPM(Letter)	-
Printing Resolution	Up to 1200 x 600 dpi	-
Memory	8MB(Nonexpendable)	-
Toner Cartridge Life	2000 pages (for starter, 1000 pages) @ IDC 5% coverage	-
Interface	IEEE1284 1Port, USB1.1 1Port	-
Power Consumption	AC 100~127V(USA, Canada), 50/60Hz, 4.5A	-
Weight	5.8 Kg	
External Dimensions	358mm X 299mm X 217mm (W X D X H)	-

Operating Frequency

System Clock : 75MHz

Main Clock : 12MHz

V / USB Clock : 48MHz

VDO Frequency : 80MHz

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.

Host PC link to EUT and transfer print file formation "H" character document continuously.

This Printer is supporting the IEEE1284 and USB 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.

1.4 Test System Details

Refer to 1.2

1.5 Equipment Modifications

No equipment modifications were required.

1.6 Test Procedure

1.6.1 Disturbance Voltage at Mains

The 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 80	EMI Receiver	Quasi-Peak	9kHz	-
		Average	9kHz	-

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.

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

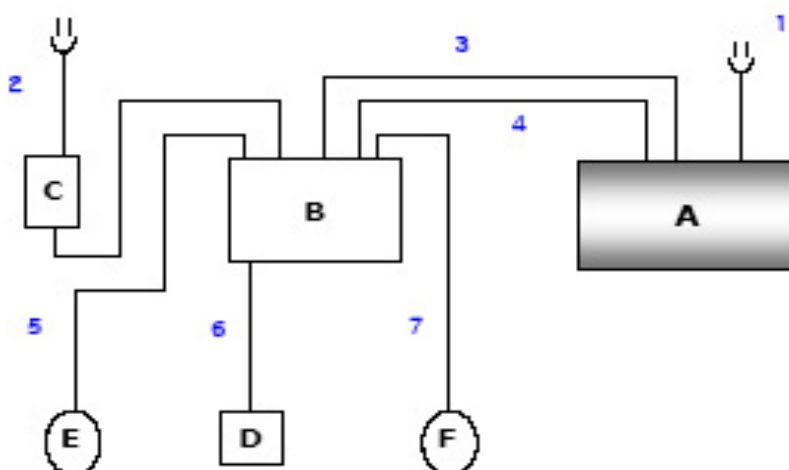
Used EUT and Peripherals

Seq	Device	Model Name	Serial #	Maker	Note
A	LBP	SP20MPP	-	Samsung	EUT
B	Note PC	PP03L	04P102-70161-23K-J0V7	DELL	DoC
C	AC Adapter	ADP-90FB	TH-06G356-17974-23M-6VX6	DELTA Electronics	-
D	USB FDD	MSFD-20U	20001405	SANYO MOTER	DoC
E	Serial Mouse	Serial Mouse	0988578	Microsoft	FCC ID : C3KMS1
F	USB Mouse	M-UV69a	HCA40801497	Logitech	DoC

Used Cable Description

	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Power	1.7	N	For EUT
2	Power	1.8	N	For Note PC
3	Parallel	1.7	Y	-
4	USB	1.8	Y	-
5	Serial	1.8	Y	-
6	USB	1.0	Y	-
7	USB	1.8	Y	-

Block Diagram



1.8 Applied Standards

List

Product or Generic Standards	Basic Standards
FCC Part15 B	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(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	ANSI C63.4 : 2003	Complied
3.2	Radiated Emission	ANSI C63.4 : 2003	Complied

3.1 Conducted Emission

Test Information	
Test Engineer	Kyeong Dong, Kim
Test Date	April 1, 2005
Climate Condition	Ambient Temperature : 26.0 °C Relative Humidity : 33%
	Atmospheric Pressure 1014mbar
Test Place	Shield Room

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

1. TEST DATA & GRAPH

1.1 Quasi Peak

MEASUREMENT RESULT: "ML-2015_fin QP"

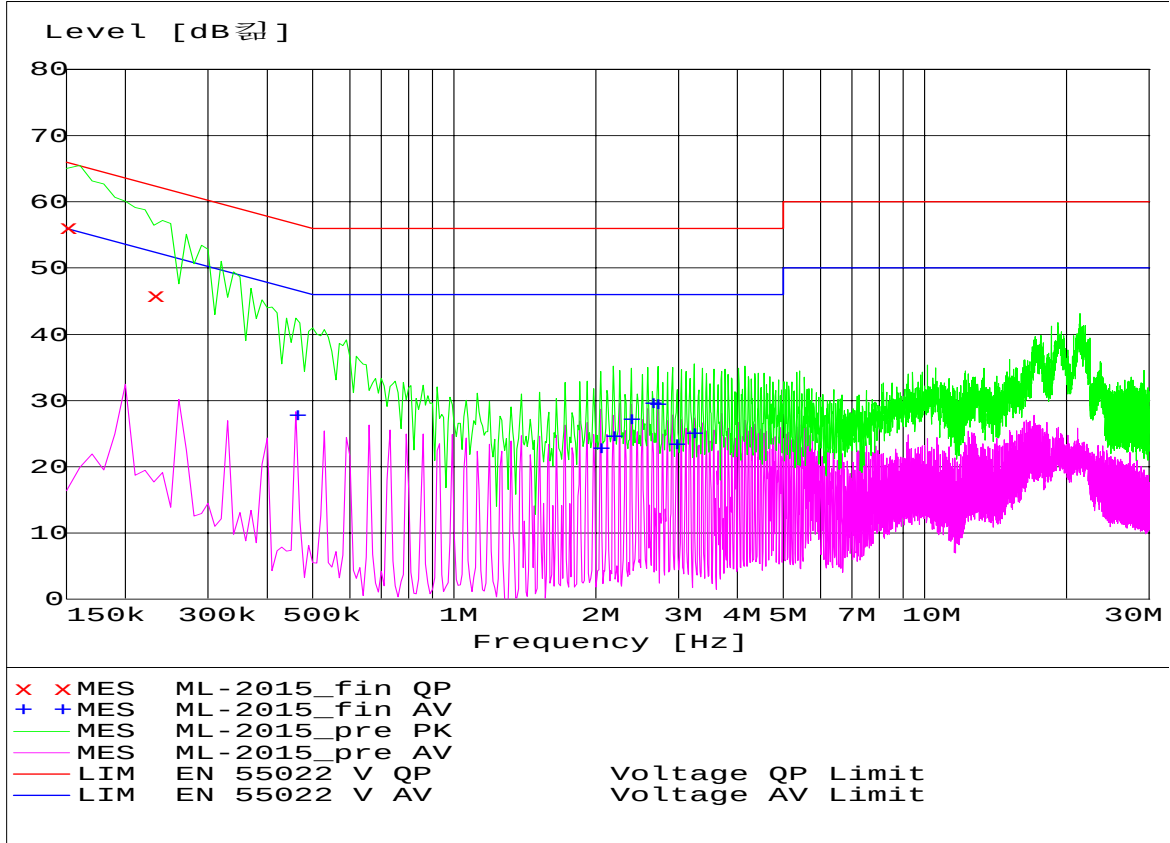
Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.150000	56.00	0.6	66	10.0	L1	GND
0.230000	45.70	0.5	62	16.3	L1	GND

1.2 Average

MEASUREMENT RESULT: "ML-2015_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.460000	27.70	0.5	47	19.3	L1	GND
2.035000	22.60	0.5	46	23.4	N	GND
2.165000	24.50	0.5	46	21.5	N	GND
2.360000	27.00	0.5	46	19.0	N	GND
2.620000	29.50	0.5	46	16.5	N	GND
2.685000	29.40	0.5	46	16.6	N	GND
2.950000	23.20	0.6	46	22.8	N	GND
3.210000	24.90	0.6	46	21.1	N	GND

- Graph -



3.2 Radiated Emission

Test Information	
Test Engineer	Kyeong Dong, Kim
Test Date	April 1, 2005
Climate Condition	Ambient Temperature : 20.5℃ Relative Humidity : 49%
	Atmospheric Pressure 1008mbar
Test Place	10m Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Test Receiver	ESIB-26	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 No Operation errors were detected during or after the applied test.
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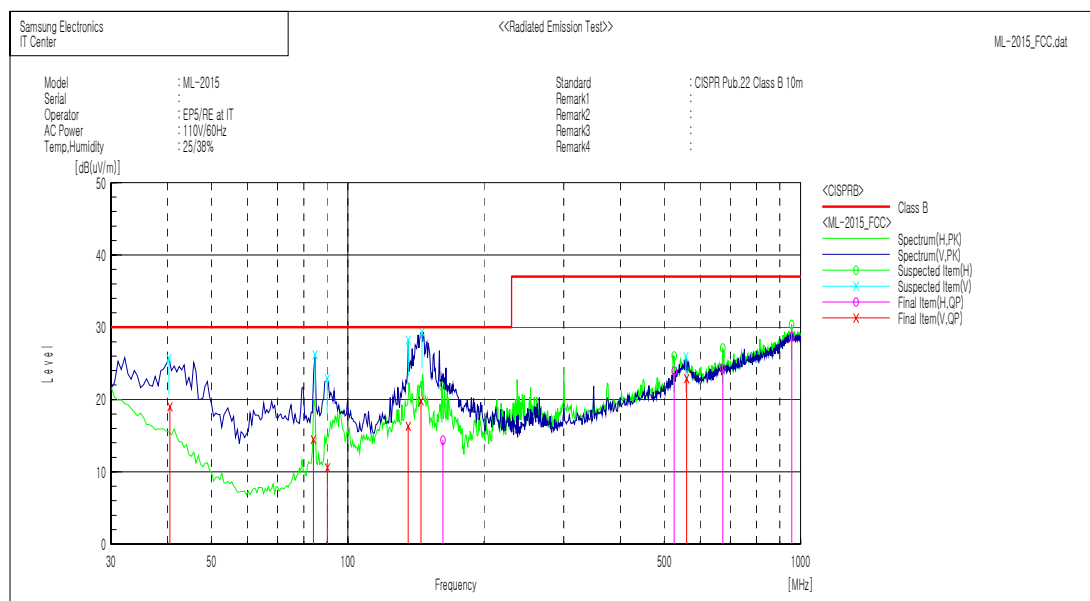
Test Data & Graph

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-Amp. Gain)
- * Margin = Limit – Result

Samsung Electronics Co., Ltd
IT Center



Final Result

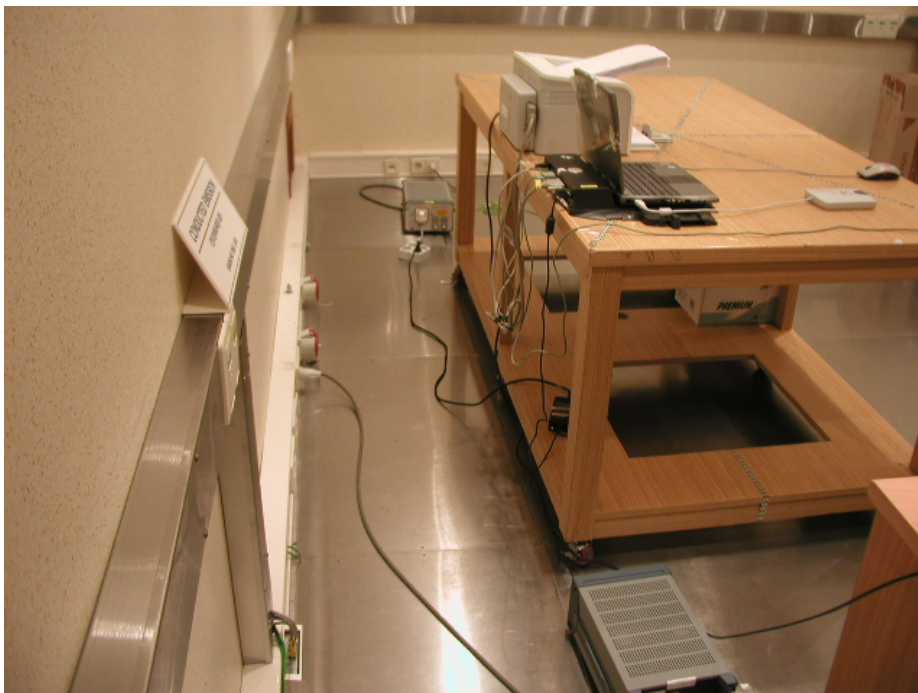
No.	Frequency [MHz]	(P)	S.C	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	40.481	V	S	26.2	-7.2	19.0	30.0	11.0	131.0	345.0	
2	83.992	V	S	26.4	-11.9	14.5	30.0	15.5	152.0	302.0	
3	90.171	V	S	21.5	-10.9	10.6	30.0	19.4	126.0	128.0	
4	135.974	V	S	24.3	-8.0	16.3	30.0	13.7	116.0	86.0	
5	145.053	V	S	28.4	-8.6	19.8	30.0	10.2	107.0	79.0	
6	162.232	H	S	24.0	-9.6	14.4	30.0	15.6	308.0	158.0	
7	525.852	H	S	21.9	2.0	23.9	37.0	13.1	131.0	101.0	
8	560.438	V	S	19.8	3.1	22.9	37.0	14.1	395.0	13.0	
9	673.434	H	S	21.2	3.1	24.3	37.0	12.7	120.0	96.0	
10	956.520	H	S	21.3	7.4	28.7	37.0	8.3	398.0	17.0	

4. Appendix

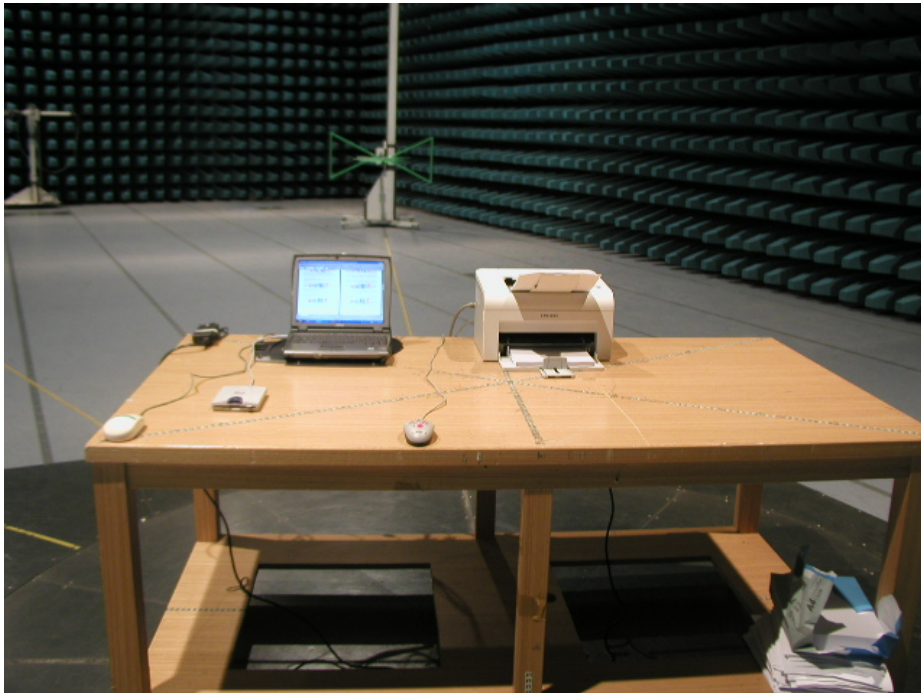
4.1 Test Photography



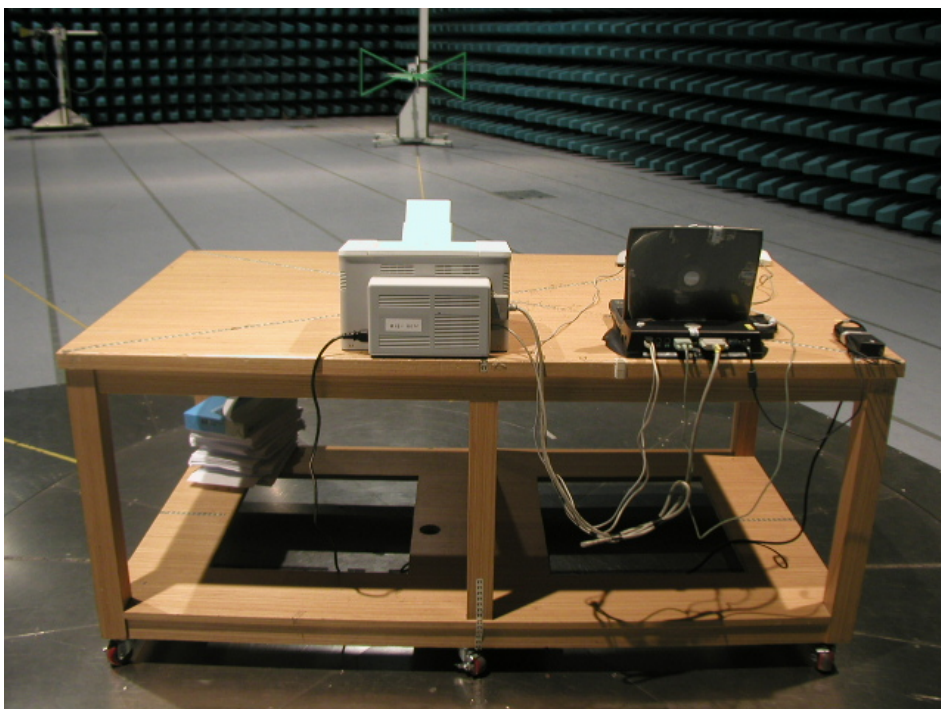
Picture 1. Conducted Emission (Front)



Picture 2. Conducted Emission (Rear)



Picture 3. Radiated Emission (Front)



Picture 4. Radiated Emission (Rear)

4.2 EUT Photography



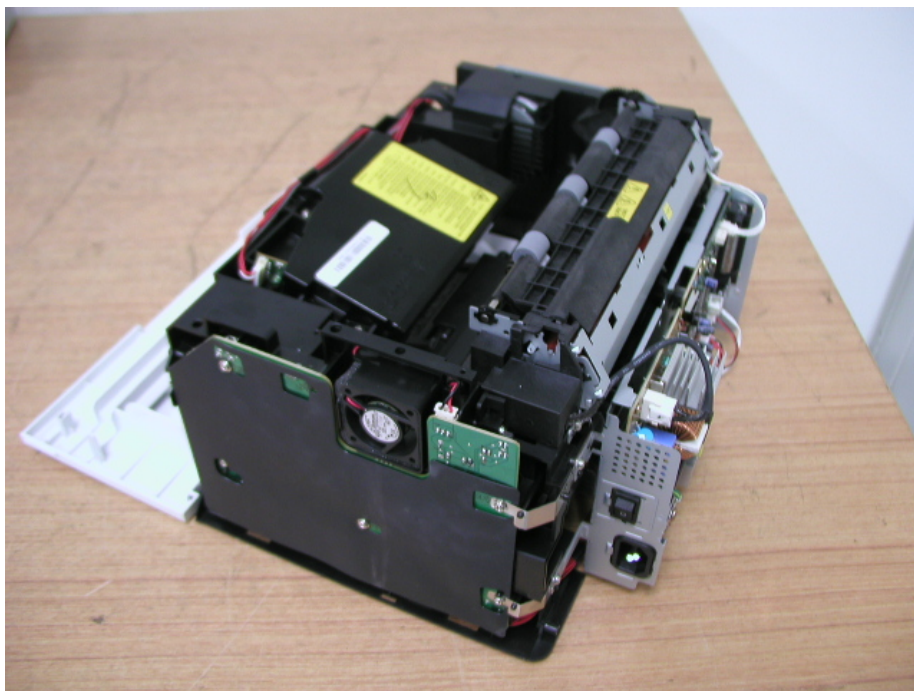
Picture 5. EUT (Front)



Picture 6. EUT (Front Open)



Picture 7. EUT (Rear) & Label Location



Picture 8. EUT (Inside)

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M259  ENERGY STAR Serial No.	Model: ML-2015 Type No.: SP20MPP Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.
MADE IN KOREA REV.00		

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M259  ENERGY STAR Serial No.	Model: ML-2010 Type No.: SP20MPU Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.
MADE IN KOREA REV.00		

Picture 9. Label of Samsung Electronics Co., Ltd.
(SP20MPP / SP20MPU)

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M264  Serial No.	Model: ML-2015 Type No.: SP20MPP Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.

MADE IN CHINA REV.00

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M264  Serial No.	Model: ML-2010 Type No.: SP20MPU Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.

MADE IN CHINA REV.00

 Xerox Corporation El Segundo, CA 90245 Made in China	Phaser™ 3122 Volts : 110-127V~ Hertz: 50/60Hz Amps: 4.5A Manufactured:	FCC ID: A3LSP20MPP This product complies with FDA radiation performance standard, 21 CFR sub-chapter J. Part 1010 + 1040 PLACE:M264 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.
	Serial Number: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.	 LISTED 51Y7 E149091 I.T.E. REV.00 (A)

Picture 10. Label of Shandong Samsung Telecommunications Co., Ltd.
(SP20MPP / SP20MPU / Phaser 3122)

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M003  Serial No.	Model: ML-2015 Type No.: SP20MPP Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.

MADE IN CHINA REV.00

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M003  Serial No.	Model: ML-2010 Type No.: SP20MPU Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.

MADE IN CHINA REV.00

 Xerox Corporation El Segundo, CA 90245 Made in China	Phaser™ 3122 Volts : 110-127V~ Hertz: 50/60Hz Amps: 4.5A Manufactured:	FCC ID: A3LSP20MPP This product complies with FDA radiation performance standard, 21 CFR sub-chapter J. Part 1010 + 1040 PLACE:M003 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.
	Serial Number: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.	 LISTED 51Y7 E149091 I.T.E.

REV.00 (A)

Picture 11. Label of Intops(Weihai) Electronics Co., Ltd.
(SP20MPP / SP20MPU / Phaser 3122)

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M098  Serial No.	Model: ML-2015 Type No.: SP20MPP Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.

MADE IN CHINA REV.00

 Samsung Electronics Co., Ltd Suwon, Korea, 443-742 Place: M098  Serial No.	Model: ML-2010 Type No.: SP20MPU Voltz: AC 110-127V Hertz: 50/60Hz Amps: 4.5A Manufactured:	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. FCC ID: A3LSP20MPP
	 LISTED 51Y7 E149091 I.T.E.	This product complies with 21 CFR Chapter 1, subchapter J. 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.

MADE IN CHINA REV.00

 Xerox Corporation El Segundo, CA 90245 Made in China	Phaser™ 3122 Volts : 110-127V~ Hertz: 50/60Hz Amps: 4.5A Manufactured:	FCC ID: A3LSP20MPP This product complies with FDA radiation performance standard, 21 CFR sub-chapter J. Part 1010 + 1040 PLACE:M098 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.
	Serial Number: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.	 LISTED 51Y7 E149091 I.T.E.

REV.00 (A)

Picture 12. Label of Weihai Shin Heung Digital Electronics Co.
(SP20MPP / SP20MPU / Phaser 3122)