

EMC Test Report

According to FCC Part 15 Subpart B

Project No.	LBE052977
Equipment under Test	
Applicant	Samsung Electronics Co., Ltd 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742 Korea
FCC ID	A3LGH30CPN
Product Name	Laser Printer
Model Name	CLP-300N
Manufacturer	1) Samsung Electronics Co.,Ltd. 259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, 730-030 Korea 2) Shandong Samsung Telecommunications Co., Ltd. 264209, Samsung Road, Weihai Hi-Tech IDZ, Shandong Province, China
Date of Test	Dec 26, 2005 ~ Jan 03, 2006
Issued Date	Jan 05, 2006

	Name/Position	Signature
Tested by	Young Hun. Cheong Test Engineer	J. Y. H
Reviewed by	No Cheon, Park Manager of EMC Lab.	N. C. Park
Authorized by	Seung Kyu, Cha Chief of EMC Lab.	S. K. Cha

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 : KR0004

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1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co., Ltd
Model name	CLP-300N
Applicant Address	416 Maetan3- Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742, Korea
Contact Person	Young Hun. Cheong
Kind of product	Laser Printer
Valiant list	CLP-300, Phaser 6110
Manufacturer	1) Samsung Electronics Co.,Ltd. 259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, 730-030 Korea 2) Shandong Samsung Telecommunications Co., Ltd. 264209, Samsung Road, Weihai Hi-Tech IDZ, Shandong Province, China
New / Alternative / Permissive change Information	1. SMPS board change (V0.90 -> V0.93) 2. Main board change (V0.3 -> V1.1) 3. HVPS board change (V4.0 -> V4.3) 4. Sheath change 5. Addition of new factory in china 6. Addition of new Model

1.2 Detail Information related Product

Specification

Item	Specification and Description
Print Speed	Black and White : Up to 16 PPM in A4(17 PPM in Letter) Color : Up to 4 PPM in A4
Resolution	Up to 2400 x 600 dpi effective output
First print out time	From Ready Black and White : Less than 14 seconds Color : Less than 26 seconds From ColdBoot Black and White : Less than 45 seconds Color : Less than 57 seconds

Warm-up time	Less than 35 seconds
Power Rating	220 ~ 240 VAC, 3A, 50/60 Hz
Power Consumption	Average : 350 W Power Save mode : Less than 17 W
Noise Level	Printing mode Black and white : Less than 48 dBA Color : Less than 48 dBA Standby mode : Less than 35 dBA
Consumable life	Black Toner Cartridge : Approx. 2,000 A4/Letter pages at 5% Coverage Yellow/Magenta/Cyan Toner Cartridge : Approx. 1,000 A4/Letter pages at 5% Coverage
Duty cycle	Monthly : Up to 24,200 images
Weight	13.6 kg (including consumables)
Package weight	Paper : 2 Kg, Plastic : 900 g
External dimensions (W x D x H)	390 x 344 x 265 mm(15.4 x 13.6 x 10.4 in)
Operating Environment	Temperature : 50 ~ 90 °F (10 ~ 32.5°C) Humidity : 20 ~ 80 % RH
Printer Language	SPL-C
Memory	CLP-300 : 32MB CLP-300N : 64MB Phaser6110 : 32MB (without N/W Model) and 64MB (with N/W Model)
Interface	CLP-300 : USB 2.0 CLP-300N : USB 2.0, Ethernet 10/100 Base TX Phaser6110 : USB 2.0 (without N/W Model) and USB 2.0, Ethernet

	10/100 Base TX (with N/W Model)
OS compatibility	Windows 98/Me/NT/2000/XP/2003 Various Linux OS Mac OS 10.3 ~ 10.4 Windows NT 4.0 is only supported on the CLP-300N

Operating Frequency

Video(15.922 MHz), SDRAM(100 MHz), USB (12 MHz), CPU (300MHz), Network (25MHz)

1.3 Operating Mode and Condition

The system was configured for testing in typical fashion use. Cables were attached to each of the available I/O Ports. Where applicable, peripherals were attached to the I/O cables. The mode of operation utilized for testing was selected to best simulate typical EUT use. The EUT is supporting the USB and 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.

- USB Printing Mode (worst emission)

- LAN Printing Mode
- Standby Mode

- Power Input

Voltage : AC 110V

Frequency : 60Hz

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

EUT was placed on a platform nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The rear of tabletop was located 40 cm 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 80 cm 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 30 cm to 40 cm long and were handed at a 40 cm 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	9 kHz	-
		Average	9 kHz	-

1.6.2 Radiated disturbance

EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm 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 40 cm long and were hanged 40 cm 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 MHz to 1000 MHz using biconi-Log antenna.

Frequency Band [MHz]	Instrument	Detector	Resolution Bandwidth	Video Bandwidth
30 to 1 000	EMI Receiver	Quasi-Peak	120 kHz	-
Above 1 000	EMI Receiver	Peak	1 MHz	1 MHz

1.7 Test Configuration

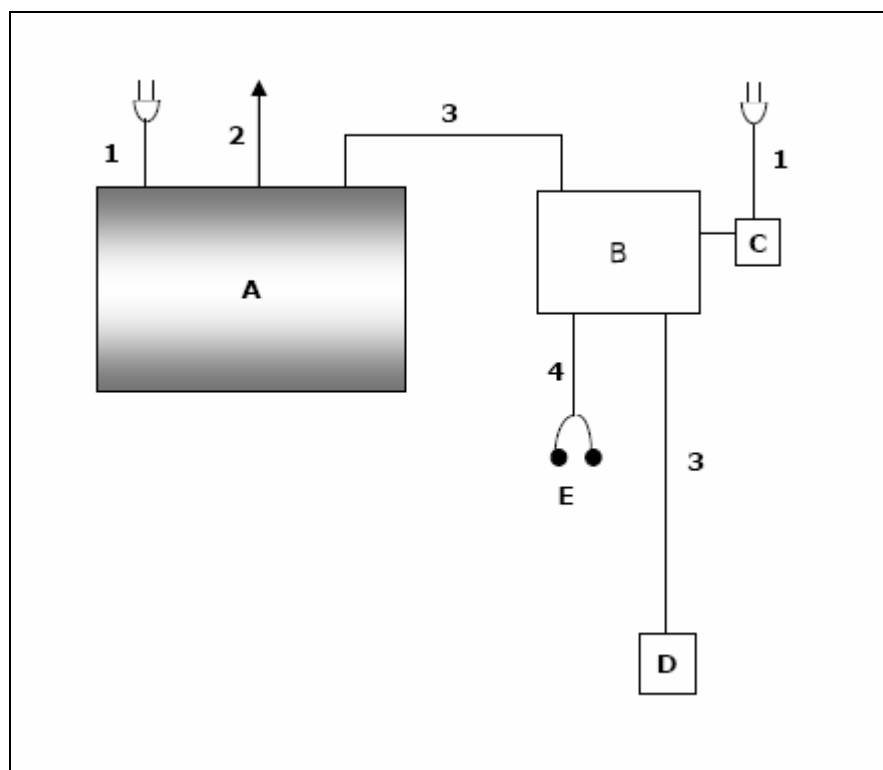
Used EUT and Peripherals

Mark	Item	Model No.	Serial No.	Manufacturer	Remark
A	Laser Printer	CLP-300N	-	Samsung	FCC ID: A3LGH30CPN
B	Notebook PC	SX15	630B93CY300149J	Samsung	DoC
C	AC Adapter	AD-6019	CNBA4400162ABJ6R 531704	Samsung	-
D	Joystick	-	3760200731854	Microsoft	DoC
E	Headset	Axis-202	-	Labtec	-

Used Cable Description

No	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Power	1.8	No	EUT-
2	LAN(RJ45)	3.5	No	-
3	USB	1.8	Yes	-
4	Headset	1.0	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 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 CISPR 16-4 and Lab. 34)

Conducted Emission : $\pm 3.3\text{dB}$

Radiated Emission Bi-Log Antenna : $\pm 4.3\text{dB}$

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 : 2003	Complied
3.2	Radiated Emission	ANSI C63.4 : 2003	Complied

3.1 Conducted Emission

Test Information	
Test Engineer	Young Hun. Cheong
Test Date	Dec 27, 2005
Climate Condition	Ambient Temperature : 22.0 °C Relative Humidity : 33 %
	Atmospheric Pressure 1021 hPa
Test Place	Shielded Room #2

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
EMI TEST RECEIVER	ESCI	R&S	100136	2006-04-17	12
TWO-LINE V-NETWORK	ENV216	R&S	100116	2006-09-08	12
TWO-LINE V-NETWORK	ENV216	R&S	100117	2006-08-18	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. - TEST DATA & GRAPH

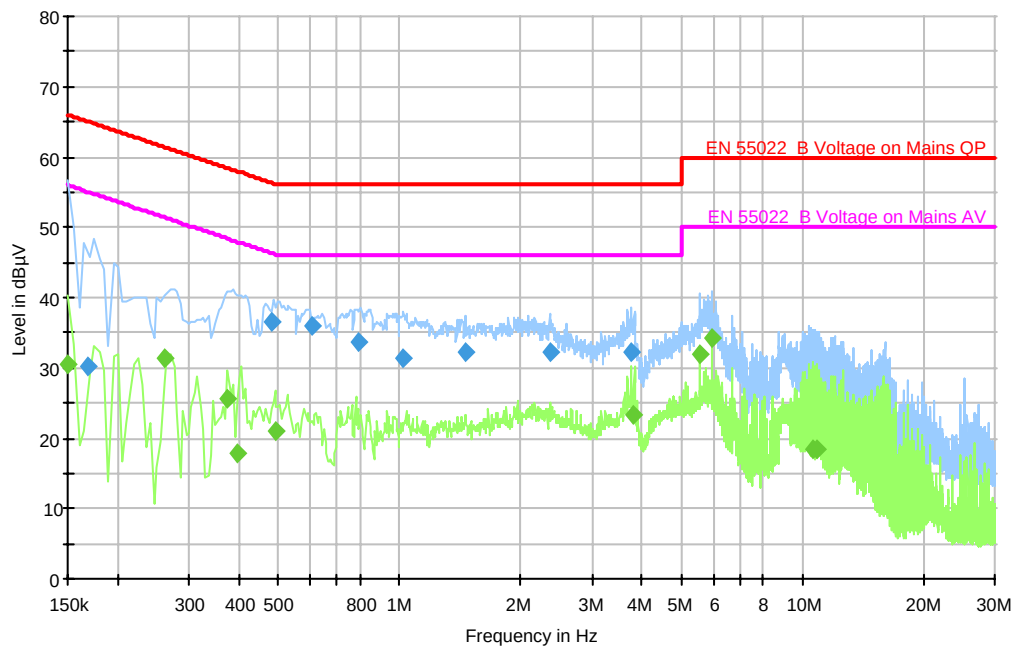
Final Measurement Detector 1

Frequency (MHz)	Quasi Peak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.167 500	30.2	L1	9.6	34.9	65.1
0.481 500	36.7	L1	9.6	19.6	56.3
0.607 500	35.9	N	9.6	20.1	56.0
0.792 500	33.6	N	9.6	22.4	56.0
1.017 500	31.2	L1	9.6	24.8	56.0
1.456 500	32.3	L1	9.6	23.7	56.0
2.355 500	32.2	N	9.6	23.8	56.0
3.762 500	32.3	N	9.6	23.7	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150 000	30.5	N	9.6	25.5	56.0
0.262 500	31.5	L1	9.6	19.9	51.4
0.375 500	25.5	L1	9.6	22.8	48.4
0.397 500	17.9	L1	9.6	30.0	47.9
0.490 500	21.1	N	9.6	25.0	46.2
3.817 500	23.2	L1	9.6	22.8	46.0
5.580 500	31.9	L1	9.6	18.1	50.0
5.951 500	34.4	L1	9.6	15.6	50.0
10.572 500	18.5	L1	9.7	31.5	50.0
10.834 500	18.4	L1	9.7	31.6	50.0

- Graph -



3.2 Radiated Emission

Test Information	
Test Engineer	Young Hun. Cheong
Test Date	Dec 26, 2005
Climate Condition	Ambient Temperature : 24.7 °C Relative Humidity : 30 %
	Atmospheric Pressure 1 022 hPa
Test Place	10m Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
EMI Test Receiver	ESI-26	R&S	100289	2006-04-11	12
EMI Test Receiver	ESI-26	R&S	100291	2006-04-12	12
Ant. Mast	MA4000	inn-co	-	N/A	N/A
Ant. Mast	MA4000	inn-co	-	N/A	N/A
Mast Controller	CO2000	inn-co	-	N/A	N/A
Amplifier	310N	SONOMA	251674	2006-03-08	12
Amplifier	310N	SONOMA	251677	2006-03-08	12
RF Selector	NS4900	TOYO	-	N/A	N/A
Bi-log Antenna	CBL6141A	SCHAFFNER	4266	2006-05-24	12
Bi-log Antenna	CBL6141A	SCHAFFNER	4268	2006-05-24	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 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 emissions are reported. All other emission are non-significant.

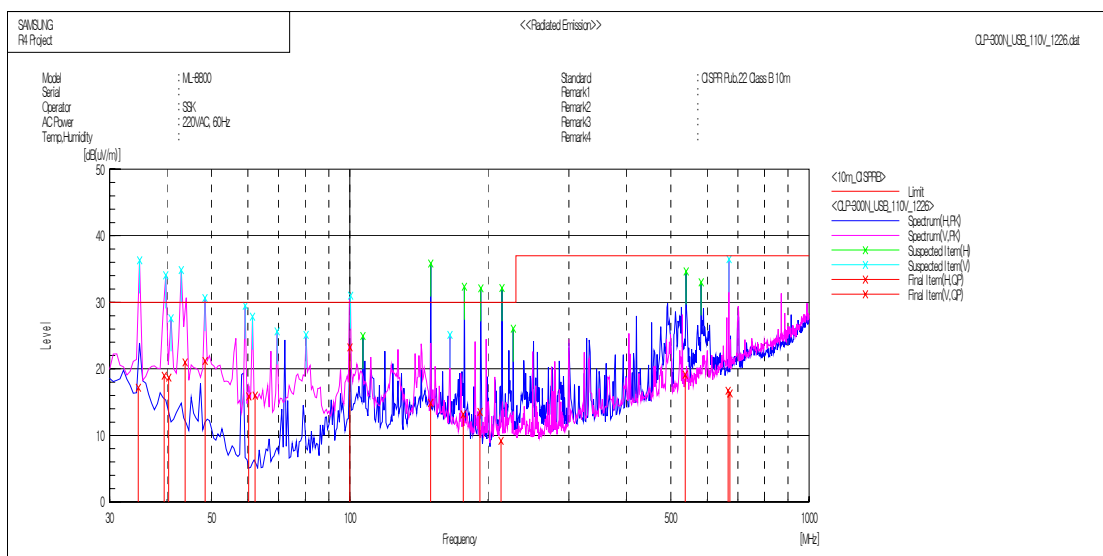
The minimum margin to the limit is as follows:

All other emission are non-significant.

- * Receiving Antenna Mode : Horizontal, Vertical
- * Test distance : 10m (RF Semi Anechoic Chamber)
- * Result = Meter Reading + c.f (Antenna factor + Cable loss)
- * Margin = Limit – Result

1. Normal Running

- Graph & Data -



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	System	Remark
	[MHz]	QP	[dB(1/m)]	QP	[dB(uV/m)]	QP	[cm]	[deg]		
1	149.988	H	32.5	-17.6	14.9	30.0	15.1	400.0	53.8	1
2	34.645	V	26.2	-9.0	17.2	30.0	12.8	100.0	98.8	2
3	39.439	V	30.5	-11.5	19.0	30.0	11.0	283.0	330.6	1
4	43.817	V	34.5	-13.5	21.0	30.0	9.0	295.0	359.0	2
5	176.679	H	32.5	-19.3	13.2	30.0	16.8	400.0	0.3	1
6	213.359	H	26.5	-17.3	9.2	30.0	20.8	318.0	335.1	2
7	192.073	H	32.6	-19.1	13.5	30.0	16.5	327.0	198.7	1
8	100.057	V	42.9	-19.7	23.2	30.0	6.8	128.0	320.0	2
9	672.284	V	23.1	-6.8	16.3	37.0	20.7	269.0	28.0	1
10	48.437	V	36.9	-15.7	21.2	30.0	8.8	249.0	272.6	2
11	537.334	H	29.5	-10.4	19.1	37.0	17.9	189.0	359.5	1
12	666.266	V	22.7	-6.0	16.7	37.0	20.3	275.0	110.1	2
13	62.208	V	37.7	-21.7	16.0	30.0	14.0	169.0	90.3	1
14	60.217	V	37.0	-21.1	15.9	30.0	14.1	291.0	359.2	2
15	40.354	V	30.6	-11.9	18.7	30.0	11.3	231.0	333.1	2

■ Test Data (1GHz~2GHz)

Freq. [Mhz]	Reading [dBuV/m]	c.f [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Azimuth [*]	Polarization
1257.00	61.97	-12.96	49.01	74	24.99	100.0	122.0	HORIZONTAL
1503.00	60.83	-11.9	48.93	74	25.07	100.0	243.0	VERTICAL
1531.00	59.51	-11.9	47.61	74	26.39	100.0	2.0	VERTICAL
1537.00	62.52	-11.9	50.67	74	23.33	100.0	1.0	HORIZONTAL
1565.00	61.55	-11.9	49.65	74	24.35	100.0	239.0	VERTICAL

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)

 Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M259	Model:	CLP-300N	FCC ID: A3LGH30CPN	(Printer)
	Volts:	AC 110-127V	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:	
	Hertz:	50/60Hz	i) This device may not cause harmful interference, and	
	Amps:	5A	ii) This device must accept any interference received, including interference that may cause undesired operation.	
	Manufactured: AUGUST 2005		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.	
	  LISTED 51Y7 E149091 I.T.E.		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.	
Serial No.:	MADE IN KOREA PV2.01			

 Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M259	Model:	CLP-300	FCC ID: A3LGH30CPN	(Printer)
	Volts:	AC 110-127V	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:	
	Hertz:	50/60Hz	i) This device may not cause harmful interference, and	
	Amps:	5A	ii) This device must accept any interference received, including interference that may cause undesired operation.	
	Manufactured: AUGUST 2005		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.	
	  LISTED 51Y7 E149091 I.T.E.		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.	
Serial No.:	MADE IN KOREA PV2.01			

 Xerox Corporation Wilsonville, OR 97070 Made in Korea Manufactured: DECEMBER 2005	Model:	Phaser™ 6110	FCC ID: A3LGH30CPN	
	Volts :	110-127V~	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:	
	Hertz:	50/60Hz	i) This device may not cause harmful interference, and	
	Amps:	5A	ii) This device must accept any interference received, including interference that may cause undesired operation.	
This product complies with FDA radiation performance standard, 21 CFR sub-chapter J. Part 1010 + 1040, PLACE:M259 S/N:		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.		
		  	LISTED 51Y7 E149091 I.T.E.	REV.00(2)

Pic. 7 EUT (Label KOREA)

 Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place: M264	Model:	CLP-300N	FCC ID: A3LGH30CPN
	Volts:	AC 110-127V	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. 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 CHINA PV2.01
	Hertz:	50/60Hz	
	Amps:	5A	
	Manufactured:	AUGUST 2005	
 	LISTED	51Y7	
		E149091	
		I.T.E.	
Serial No.:			

 Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place: M264	Model:	CLP-300	FCC ID: A3LGH30CPN
	Volts:	AC 110-127V	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. 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 CHINA PV2.01
	Hertz:	50/60Hz	
	Amps:	5A	
	Manufactured:	AUGUST 2005	
 	LISTED	51Y7	
		E149091	
		I.T.E.	
Serial No.:			

 Xerox Corporation Wilsonville, OR 97070 Made in China Manufactured: DECEMBER 2005 This product complies with FDA radiation performance standard, 21 CFR sub-chapter J. Part 1010 + 1040, PLACE: M264 S/N:	Model:	Phaser™ 6110	FCC ID: A3LGH30CPN
	Volts :	110-127V~	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 complies with Canadian ICES-003 Cet appareil numérique de la classe "B" est conforme à la norme NMB-003 du Canada.
	Hertz:	50/60Hz	
	Amps:	5A	
	Manufactured:	DECEMBER 2005	
			  
			LISTED 51Y7 E149091 I.T.E.
			REV.00 (2)

Pic. 8 EUT (Label CHINA)



Pic 9. Label location