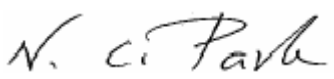
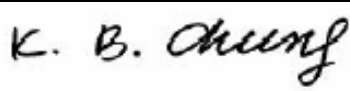


EMC Test Report

According to FCC Part 15 Subpart B

Project No.	LBE041725
Equipment under Test	
Applicant	Samsung Electronics Co. Ltd; 416 Maetan-3 Dong, Young tong-Gu, Suwon City, Gyeonggi-Do, Korea, 442-742
FCC ID	A3LCLP510N
Product Name	Laser Beam Printer
Model Name	CLP-510
Manufacturer	Samsung Electronics Co. Ltd
Date of Test	Sep 24, 2004 – Sep 30, 2004
Issued Date	Oct 04, 2004

	Name/Position	Signature
Tested by	Kyeong Dong, 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 condition
- 1.4 Test System Details
- 1.5 Equipment Modifications
- 1.6 Test Procedure
- 1.7 Test Configuration
- 1.8 Applied Standard
- 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	CLP-510
Applicant Address	416 Maetan3- Dong, Young tong-Gu, Suwon City, Gyeonggi-Do, Korea, 442-742
Contact Person	Kyeong Dong, Kim
Kind of product	Laser Beam Printer
Valiant list	CLP-510N
Manufacturer	Samsung Electronics Co.Ltd;
New / Alternative / Permissive change Information	This report is original report #

1.2 Detail Information related Product

Specification

Item	Specification	Remark
QUALITY	REAL 600 dpi, ADDRESSABLE 1200 dpi	-
RAM	64MB SDRAM (Max 192MB), MEMORY BUS 32-BIT 60MHz	-
ROM	8MB FLASH TYPE for CODE, ROM BUS 32-BIT	-
HOST INTERFACE	IEEE1284(includingECP) B-TYPE USB2.O	-
OP PANEL	16 x 2 LCD Panel, LED 7 & Key 7 (Dual color LED in On-line key), Jam Indicator LED	-
OP PANEL I/F	UART INTERFACE	-
FONT	GDI	-
OPTIONI/F	1 SLOT for EXPANSION MEMORY 1 SLOT for EXPANSION ROM 1 SLOT for NETWORK/WLAN Second cassette Feeder	-

Operating Frequency

CLP-510 or CLP-510N is supporting the IEEE1284, USB, WireLess LAN and/or LAN Printing Mode.

Both model have clock frequencies, Video(23.8807363MHz), CPU(60MHz), LPEC(23.8807363MHz), Main clock(12MHz), USB clock(30MHz), N/W clock(25MHz) and WLAN(2.4GHz).

1.3 Operating Mode and Condition

EUT was tested all operating modes as below.

Finally EUT was tested USB Printing (1200dpi, Color duplex) mode as maximum emission.

- USB Printing Mode (worst emission)

- IEEE1284 Printing Mode
- LAN Printing Mode
- WLAN Printing Mode
- Standby Mode

Test Voltage : AC 115V/60Hz

1.4 Test System Details

Items	Model name	Manufacturer	Remark
Wireless LAN	SWL-2250U	Samsung Electro-Mechanics	FCC ID : A3LSWL-2250U
Second Cassette Feeder	CLP-510S5	Samsung Electronics	-

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 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

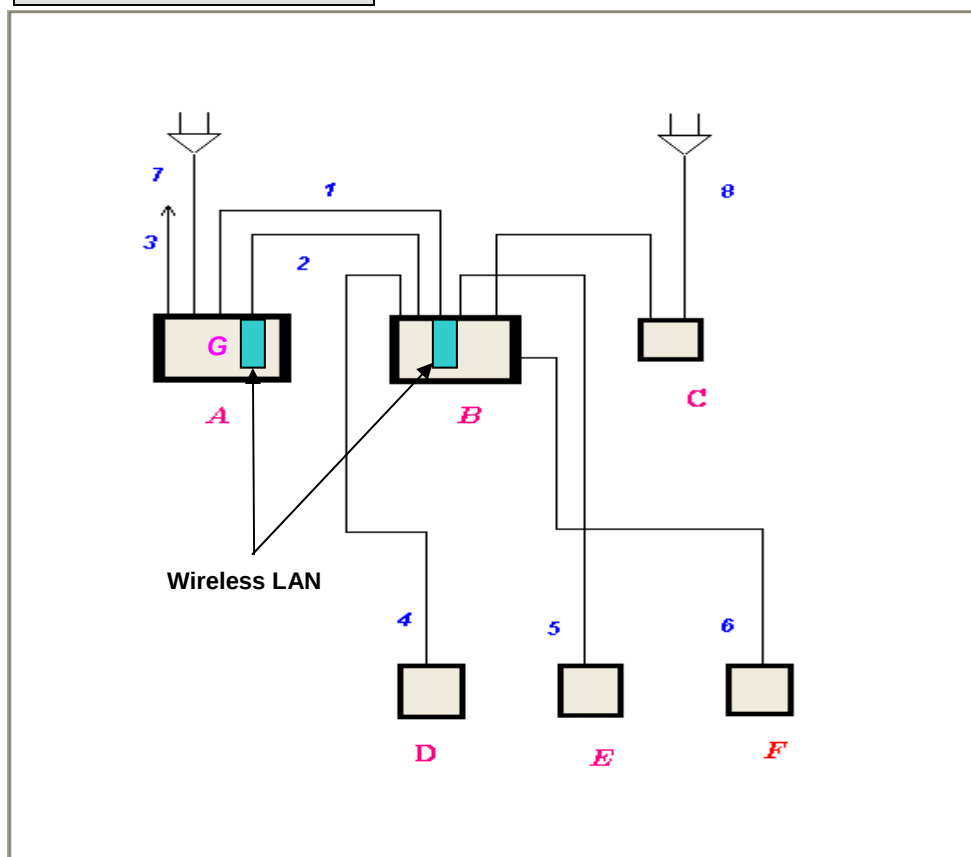
Used EUT and Peripherals

Seq	Device	Model Name	Serial #	Maker	Note(FCC ID/DoC)
A	LBP	CLP-510	N/A	Samsung	A3LCLP510N
B	Notebook PC	SV20	E3679ETC00003	Samsung	DoC
C	AC Adapter	AD-6019	CNBA44001	Acbel	For Notebook PC
D	MP3 Player	M8541	U22370Z2MJ2	Inventec	DoC
E	Joy Stick	SideWinder	3760200731616	Microsoft	DoC
F	PS/2 Mouse	M-S48a	LZA00152796	Logitech	JNZ201213
G	WLAN	SWL-2250U	-	Samsung	A3LSWL-2250U

Used Cable Description

	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Parallel (Printer)	1.8	Yes	-
2	USB	1.5	Yes	-
3	LAN (RJ45)	3.5	No	-
4	1394	1.5	Yes	-
5	USB	1.8	Yes	-
6	PS/2	1.5	No	-
7	Power	1.8	No	-
8	Power	1.8	No	-

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 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			
2.1	Conducted Emission	FCC Part15 Subpart B	Complied
2.2	Radiated Emission	FCC Part15 Subpart B	Complied

3. Description of Individual Tests

3.1 Conducted Emission

Test Information	
Test Engineer	Kyeong Dong, Kim
Test Date	October 03, 2004
Climate Condition	Ambient Temperature : 23.0 °C Relative Humidity : 52%
	Atmospheric Pressure 1011mbar
Test Place	Shield Room

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
LISN	3810/2NM	EMCO	2251	2005-02-07	12
EMI TEST RECEIVER	ESCS30	R&S	830986/004	2005-02-12	12
LISN	ESH3-Z5	R&S	831887/004	2005-08-16	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)

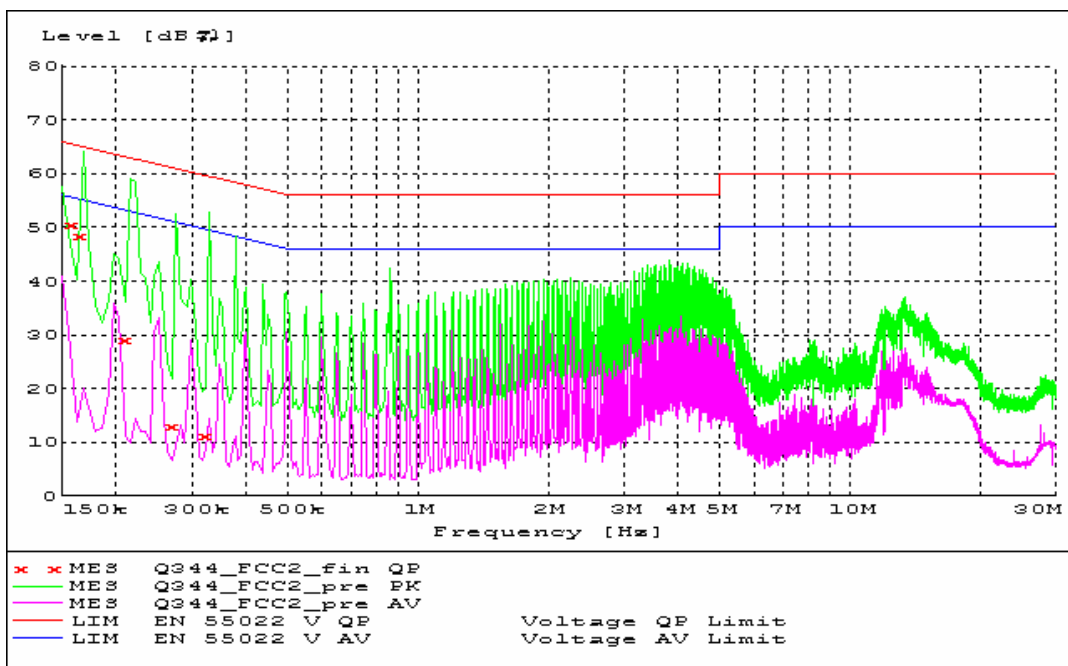
* Margin = Limit – Result

1. Duplex H printing in 1200dpi - TEST DATA & GRAPH

1. Quasi Peak Table

Frequency	Results	Total Loss	Phase	Limit	Margin
[MHz]	[dBuV]	[dB]		[dBuV]	[dB]
0.157	50.6	10.1	N	65.6	15.0
0.165	48.5	10.1	L1	65.2	16.7
0.210	29.1	10.0	L1	63.2	34.1
0.269	13.1	10.0	N	61.1	48.0
0.320	11.4	10.1	N	59.7	48.3

- Graph -



3.2 Radiated Emission

Test Information	
Test Engineer	Kyeong Dong, Kim
Test Date	October 03, 2004
Climate Condition	Ambient Temperature : 21.5℃ Relative Humidity : 48%
	Atmospheric Pressure 1012mbar
Test Place	10m RF Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Controller	HD100	HD	100/723	N/A	N/A
Preamplifier	CPA9232	Schaffner	1054	2005-02-12	12
BILOG Antenna	CBL6112B	Schaffner	2805	2005-03-12	12
Test Receiver	ESI26	R&S	100010	2005-03-16	12
Turn Table	DT430	HD	430/691/01	N/A	N/A
Antenna Mast	MA240	HD	240/678 BJ:01	N/A	N/A

Measurement Results	Pass 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 : 3m (Semi-Anechoic Chamber)

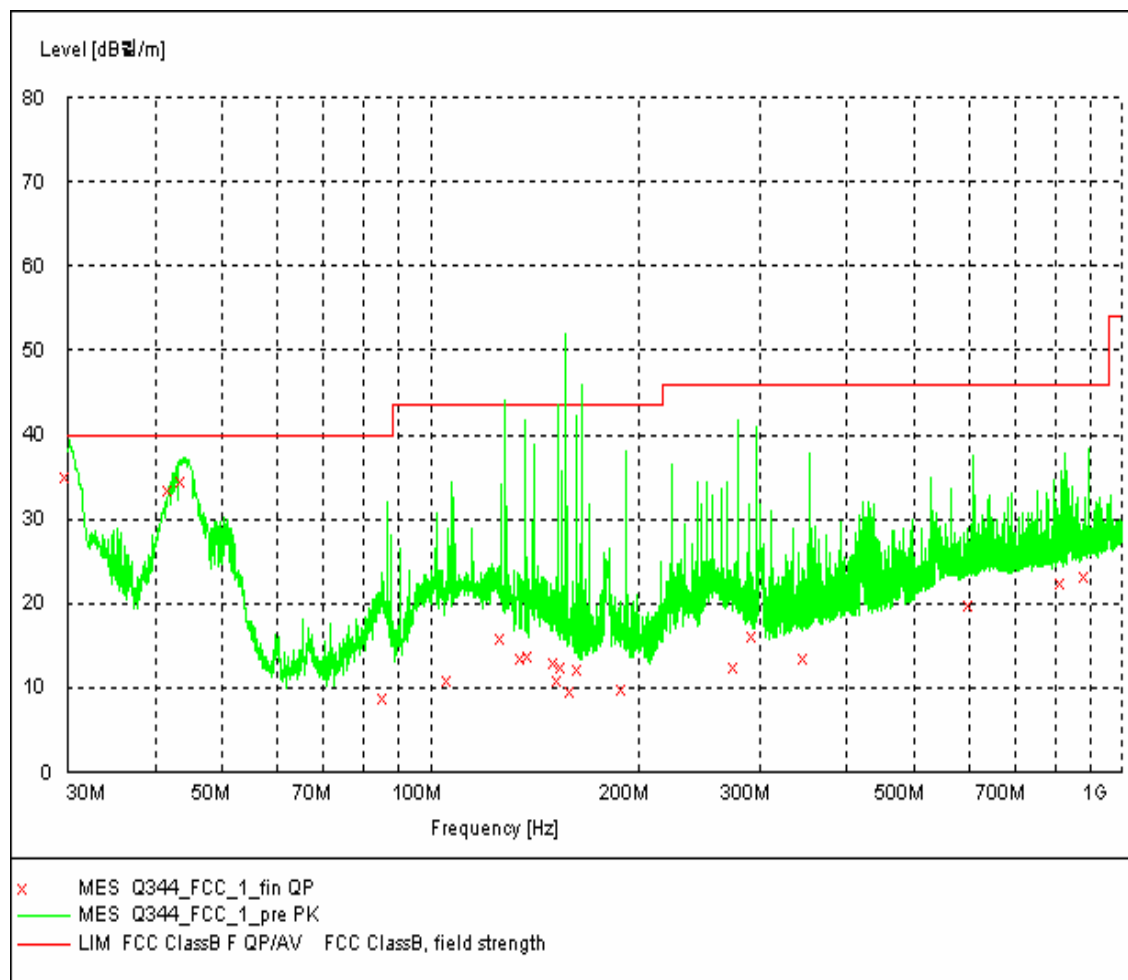
* Result = Meter Reading + Total Loss(Antenna factor + Cable loss – Amp. gain)

* Margin = Limit – Result

1. Duplex H printing in 1200dpi

Frequency	Level	Transd	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBμV/m	dB	dBμV/m	dB	cm	deg	
30.160000	35.10	1.0	40.0	4.9	109.0	262.00	VERTICAL
42.480000	33.50	-5.3	40.0	6.5	100.0	262.00	VERTICAL
44.240000	34.50	-6.1	40.0	5.5	100.0	270.00	VERTICAL
86.880000	8.90	-7.8	40.0	31.1	380.0	225.00	HORIZONTAL
107.280000	10.80	-4.2	43.5	32.7	100.0	109.00	VERTICAL
128.640000	15.80	-3.8	43.5	27.7	177.0	26.00	HORIZONTAL
137.040000	13.60	-4.2	43.5	29.9	206.0	240.00	HORIZONTAL
140.880000	13.90	-4.4	43.5	29.6	366.0	179.00	HORIZONTAL
152.880000	13.10	-5.2	43.5	30.4	206.0	0.00	HORIZONTAL
155.120000	11.00	-5.3	43.5	32.5	308.0	318.00	HORIZONTAL
156.800000	12.60	-5.4	43.5	30.9	179.0	119.00	HORIZONTAL
162.400000	9.50	-5.6	43.5	34.0	266.0	291.00	VERTICAL
165.440000	12.30	-5.6	43.5	31.2	180.0	43.00	HORIZONTAL
192.160000	9.80	-6.1	43.5	33.7	123.0	115.00	VERTICAL
278.720000	12.60	-0.7	46.0	33.4	312.0	11.00	HORIZONTAL
296.080000	16.10	-0.2	46.0	29.9	254.0	171.00	HORIZONTAL
352.560000	13.50	1.5	46.0	32.5	133.0	15.00	VERTICAL
608.640000	19.80	8.3	46.0	26.2	133.0	5.00	VERTICAL
826.960000	22.30	11.1	46.0	23.7	155.0	333.00	VERTICAL
894.400000	23.30	12.1	46.0	22.7	138.0	264.00	VERTICAL

- Graph -



4. Appendix

4.1 Test Photography



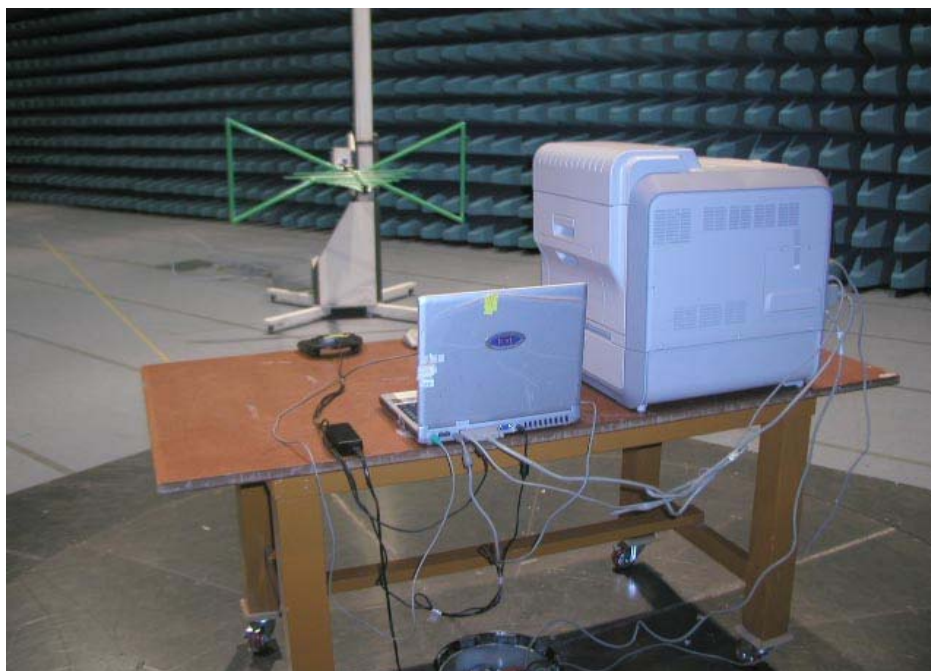
Pic. 1 Conducted Emission (Front)



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)

 Model No. : CLP-510 Volts : AC110-127V Hertz : 50/60Hz Amps: 10A Manufactured JULY 2004 Samsung Electronics Co.,Ltd. 259, Gongdan-Dong, Gumi-City, Kyung-Buk, 730-030, Korea Place : M259 Serial No.:	 	LISTED 51Y7 E149091 I.T.E. HS-03	FCC ID : A3LCLP510N (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 class 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 class B est conforme a la norme NMB-003 du canada. This product complies with 21 CFR Chapter 1 , subchapter J.
			MADE IN KOREA JC68-01168A00

 Model No. : CLP-510N Volts : AC110-127V Hertz : 50/60Hz Amps: 10A Manufactured JULY 2004 Samsung Electronics Co.,Ltd. 259, Gongdan-Dong, Gumi-City, Kyung-Buk, 730-030, Korea Place : M259 Serial No.:	 	LISTED 51Y7 E149091 I.T.E. HS-03	FCC ID : A3LCLP510N (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 class 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 class B est conforme a la norme NMB-003 du canada. This product complies with 21 CFR Chapter 1 , subchapter J.
			MADE IN KOREA JC68-01168A00

Pic. 7 EUT (Label)



Pic. 8 EUT (Inside)