

EMC TEST REPORT

Samsung Electronics Co., Ltd.

416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742 Korea
(Tel: 031 277 7752, Fax: 031 277 7753)
NVLAP Code : 200623-0



1. Applicant

- Name of organization : Samsung Electronics Co., Ltd.
- Address : 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742 Korea

2. Purpose for the report : Approval for EMC

3. Kind of product : Printer (Model name: SCX-4725FN)

4. Date of test : 2006.07.12 ~ 2006.07.15

5. Applied standard : FCC Part 15, Subpart B

6. Report No. : LBE062064 Issue 1

7. FCC ID : A3LSCX4725FN

8. Test result : Complied

The equipment under test has found to be compliant with the applied standards.
(Refer to the attached test result for more detail.)

Tested by

Name : Young Hun, Jeong

Reviewed by

Name : No Cheon, Park

This report is the test result about the sphere accredited by KOLAS which signed the Mutual Recognition Arrangement of International Laboratory Accreditation Cooperation.

2006.07.23

Samsung Electronics Co., Ltd.
Chief of CS Management Center

TEST RESULT

Test Report No. : LBE062064

Applicant / Address : Samsung Electronics Co., Ltd.
416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do
443-742 Korea

Manufacture / Address :

- 1) **Samsung Electronics Co., Ltd.**
259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do,
Korea 730-030
- 2) **Samsung Electronics (Shandong) Digital Printing Co., Ltd.**
264209, Samsung Road, Weihai Hi-Tech. IDZ,
Shandong Province, P.R.China
- 3) **Weihai Shin Heung Digital Electronics Co., Ltd.**
98, Samsung Road, Weihai Hi-Tech. IDZ,
Shandong Province, P.R.China

EUT :

- 1. Product name : Printer
- 2. Model name : SCX-4725FN
- 3. Brand name : Samsung
- 4. Variant model : SCX-4725F

Test Method : ANSI C 63.4:2003

Test Result : **Complied**
The equipment under test has found to be compliant with the applied standards

Test Lab. : CS Management Center, Samsung Electronics Co., Ltd.



Tested by : Young Hun, Jeong

Reviewed by : No Cheon, Park

Date of Issue : 2006.07.23

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1. General information

1.1 Basic information related product

Applicant	Samsung Electronics Co., Ltd.
Model name	SCX-4725FN
Applicant address	416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do 443-742 Korea
Contact person	Young Hun, Jeong
Kind of product	Printer
Valiant model	SCX-4725F
Manufacturer	1) Samsung Electronics Co., Ltd. 259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, Korea 730-030 2) Samsung Electronics (Shandong) Digital Printing Co., Ltd. 264209, Samsung Road, Weihai Hi-Tech. IDZ, Shandong Province, P.R.China 3) Weihai Shin Heung Digital Electronics Co., Ltd. 98 ,Samsung Road, Weihai Hi-Tech. IDZ, Shandong Province, P.R.China
Rated power	110~127 VAC, 50/60 Hz, 5.5 A
New / Alternative / Permissive change information	New

1.2 Detail Information related product

1.2.1 Specification

Item	Specification and Description
Processor	CHORUSm (ARM920T, 300MHz)
Standard System memory	32MB (not expandable)
Resolution	Up to 1200 x 1200 dpi effective output
Copy Quality mode	Text : 600x300dpi (ADF, Platen) Text/Photo : 600x300dpi (ADF, Platen) Photo : 600x300dpi (ADF), 600X600 (Platen)
Paper Handling	ADF : Up to 30 Sheets Tray : Up to 250 Sheets Manual Tray: 1 sheet
Power Rating	110~127 VAC, 5.5A, 50/60 Hz
Power Consumption	Power save mode : Less than 13.5 Watts Stand by mode : Less than 70 Watts Printing : Less than 400 Watts ADF Copy mode : Less than 320 Watts
Printer Language	PCL6, PS3(SCX-4725FN only), SPL(for Linux only)
PC Interfaces	USB2.0, Ethernet 10/100 Base Tx(SCX-4725FN Only)
OS compatibility	Windows 98/Me/NT4.0/2000/XP/2003 Server Various Linux OS(via USB interface only) Mac OS 10.3 ~ 10.4(SCX-4725FN only)
Modes of Operation	USB Printing, Network Printing(SCX-4725FN Only), ADF Scan, ADF Copy, Fax RX, Fax TX
Intended Class for Emissions	Class B

■ Clock Frequency List

Main Clock	: 12 MHz
Video Clock	: 22.5035 MHz
CPU Internal Clock	: 300 MHz
SDRAM Clock	: 100 MHz
USB Device Clock	: 12 MHz
Network Clock	: 25 MHz
CIS	: 4.167 MHz

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.

This EUT is supporting the USB and Network(LAN) printing, FAX, Scan, and Copy.

In each test mode, finally we found worst case emission that is above configuration with the Worst case components. So, the data of the maximum EUT operation, ADF Copy, was reported.

1.4 Equipment modifications

No equipment modification

1.5 Test procedure

1.5.1 Conducted emission

The 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]	Equipment	Detector	Resolution Bandwidth	Video Bandwidth
0.15 to 30	EMI Receiver	Quasi-Peak	9 kHz	-
		Average	9 kHz	-

1.5.2 Radiated emission

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.

The I/O cables that were connected to the peripherals were bundle in center.

They were folded back and forth forming a bundle 30 cm 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 turn 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 1 000 MHz using biconiLog antenna.

Also, the EMI Receiver was scanned from 1 000 to 2 000 MHz 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 1 000	EMI Receiver	Quasi-Peak	120 kHz	-
Above 1 000	EMI Receiver	Peak	1 MHz	1 MHz

1.6 Test configuration

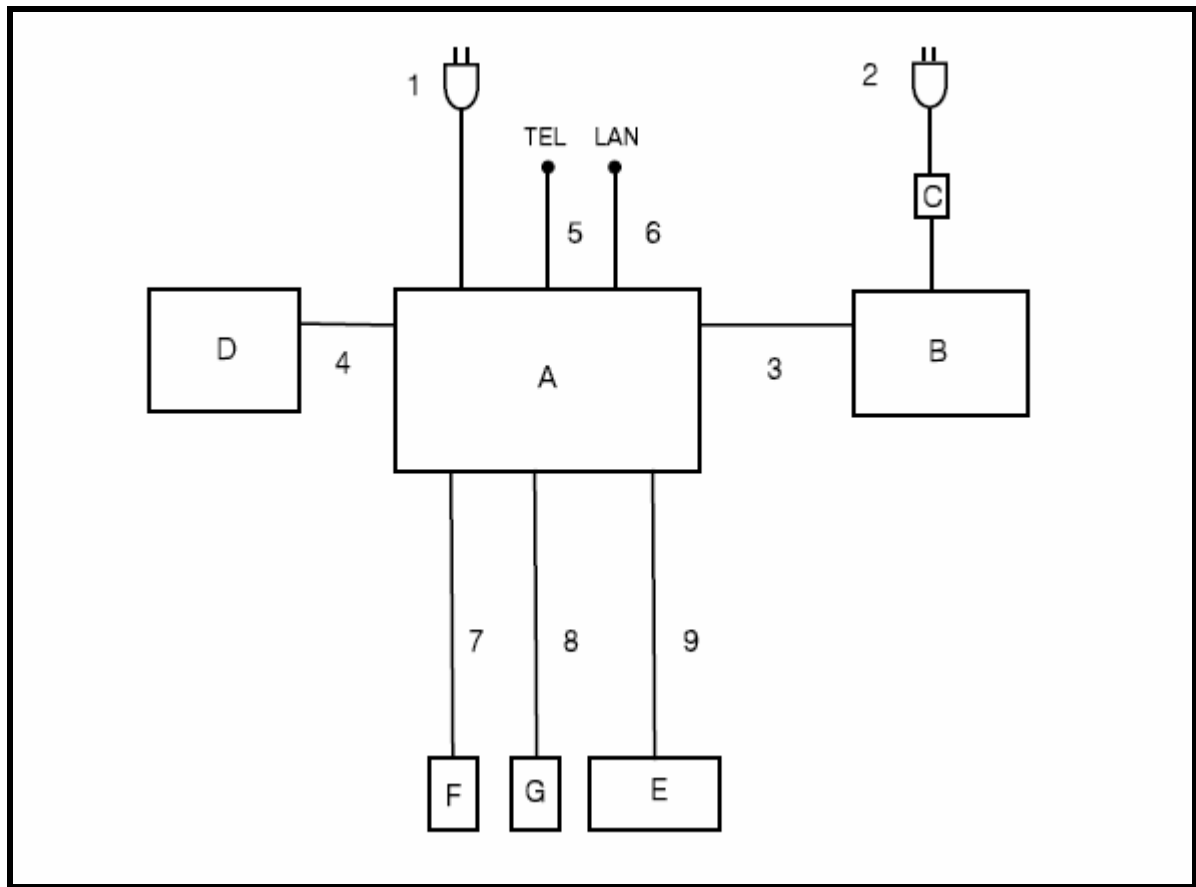
1.6.1 Used EUT and peripherals

Seq	Device	Model Name	Serial #	Maker	FCC ID
A	Printer	SCX-4725FN	-	Samsung	A3LSCX 4725FN
B	Note PC	P29	674E93AYC00024E	Samsung	DoC
C	Adapter	AD-6019	LNBA4400162ABJ6F583 1268	Samsung	-
D	Phone	SP-F131N	KKCW300487	Novita	DoC
E	Keyboard	SDM-4510UH	4M036201	Samsung	DoC
F	Sirial Mouse	-	1406874	Microsoft	C3KMS1
G	USB Mouse	M-uv69a	HCA50702135	Logitech	DoC

1.6.2 Used cable description

No	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Power	1.8	No	EUT
2	Power	1.8	No	Note PC
3	USB	1.5	No	-
4	TEL (ext)	1.8	No	Phone
5	TEL	2.0	Yes	-
6	LAN	1.8	Yes	-
7	Sirial Mouse	1.5	Yes	Note PC
8	USB Mouse	1.5	Yes	Note PC
9	Keyboard	1.5	Yes	Note PC

1.6.3 Block diagram



1.7 Applied Standards

Test standard	Test method
FCC Part 15, Subpart B, Class B	ANSI C 63.4:2003

Performance Criteria

- A. normal performance within the specification limits
- B. temporary degradation or less of function or performance which is self-recoverable
- C. temporary degradation or less of function or performance which require operator intervention or system reset

1.8 Test Facility

1.8.1 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.

1.8.2 Accreditation and listing



1.8.3 Measurement uncertainty

(According to CISPR 16-4 and Lab. 34)

Test item	Measurement uncertainty
Conducted emission	± 3.3 dB
Radiated emission	± 4.3 dB

2. Summary of test results

Result : Complied

The equipment under test(EUT) has been found to comply with the applied standards.

Section of the product standard		Applied standard	Test result
Electromagnetic Emission Test			
3.1	Conducted Emission	FCC Part 15, Subpart B	Complied
3.2	Radiated Emission	FCC Part 15, Subpart B	Complied

3. Description of individual tests

3.1 Conducted emission

3.1.1 Test information

Test engineer	Young Hun, Jeong
Test date	July 15, 2006
Climate condition	Ambient temperature : 21.5 °C, Relative humidity : 34 % Atmospheric pressure 101.3 kPa
Test place	Shielded room # 1

3.1.2 Test equipment

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Field strength meter	ESCI	R&S	100086	2007-03-28	12
L.I.S.N	ENV216	R&S	100116	2006-09-08	12
L.I.S.N	ENV216	R&S	100117	2006-08-18	12

EUT Test Setup

The EUT was set up as per normal use on a wooden table, 0.4 m from a vertical ground reference plane,
At least 0.8 m from other conduction surfaces and 0.8 m from the LISN.

See photo.

Test Result

Measurement Results	Complied The measured emissions of the EUT have found to be below the specified limits.
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Test Data

■ Operating Mode : copy

[Graph and Data]

Test Information

EUT Name: SCX-4725FN
Serial Number:
Test Description:
Operating Conditions: Copy
Operator Name:
Comment:

Hardware Setup: Voltage with 2-Line-LISN - [EMI conducted]

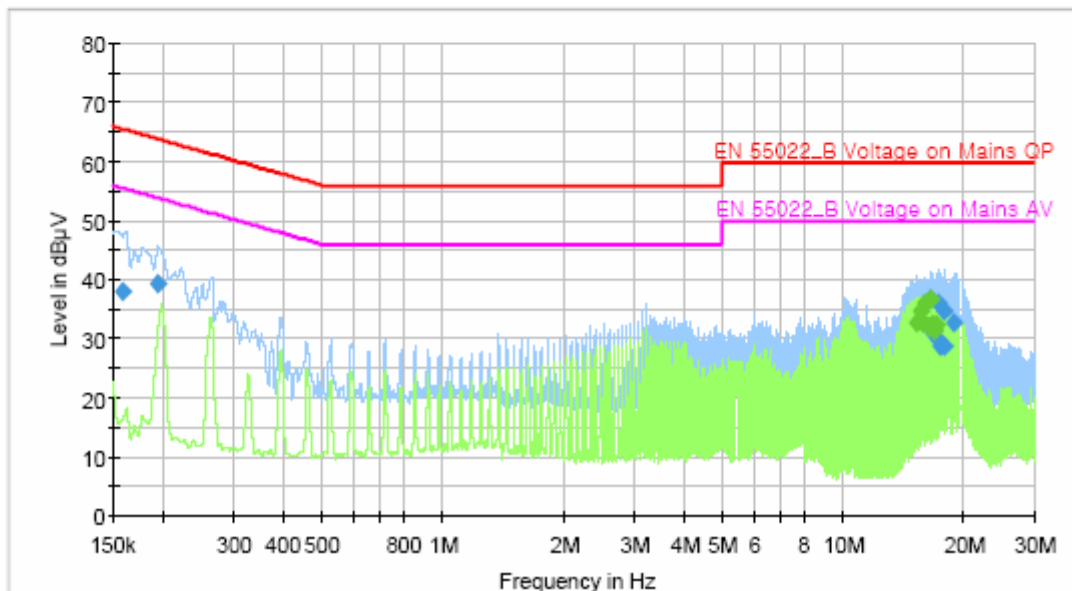
Subrange 1
Frequency Range: 150kHz - 30MHz
Receiver: ESCI 3
Transducer: ENV216 / Receiver-2-Line-LISN ENV216

Scan Setup: EN55022_B_2-Line-LISN fin [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN
Level Unit: dB μ V

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
150kHz - 30MHz	QuasiPeak; Average	9kHz	1s	ESCI 3

EN55022_B with 2-Line-LISN



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.159500	38.0	N	9.6	27.4	65.5
0.194500	39.2	L1	9.7	24.6	63.8
16.619500	36.6	L1	10.0	23.4	60.0
16.687500	31.1	L1	10.0	28.9	60.0
17.267500	29.9	L1	10.0	30.1	60.0
17.343500	36.1	L1	10.0	23.9	60.0
17.412500	28.6	L1	10.0	31.4	60.0
17.923500	34.6	L1	10.0	25.4	60.0
17.993500	28.7	L1	10.0	31.3	60.0
18.899500	32.6	L1	10.0	27.4	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
15.239500	32.9	L1	9.9	17.1	50.0
15.607500	34.8	N	10.0	15.2	50.0
15.747500	32.8	L1	10.0	17.2	50.0
15.968500	36.0	N	10.0	14.0	50.0
16.327500	32.0	L1	10.0	18.0	50.0
16.478500	36.7	N	10.1	13.3	50.0
16.763500	32.2	L1	10.0	17.8	50.0
16.835500	31.4	N	10.1	18.6	50.0
17.131500	32.4	N	10.1	17.6	50.0

3.2 Radiated emission

3.2.1 Test information

Test engineer	Young Hun, Cheong
Test date	July 13, 2006
Climate condition	Ambient temperature : 22.5 °C , Relative humidity : 38 % Atmospheric pressure 102.0 kPa
Test place	10 m Semi-Anechoic Chamber # 2

3.2.2 Test equipment

Equipment	Model name	Manufacturer	Serial no.	Calibration	
				Next date	Interval
EMI Test Receiver	ESI-26	R&S	10028	2007-03-05	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	251677	2007-03-05	12
RF selector	NS4900	TOYO	-	N/A	N/A
Bi-log Antenna	CBL6141A	SCHAFFNER	426	2007-05-03	12

EUT Test Setup

EUT set up in semi-anechoic chamber. EUT positioned at 10 m from the antenna in the center of the table.

All ports terminated into characteristic loads.

Test Result

Measurement Results

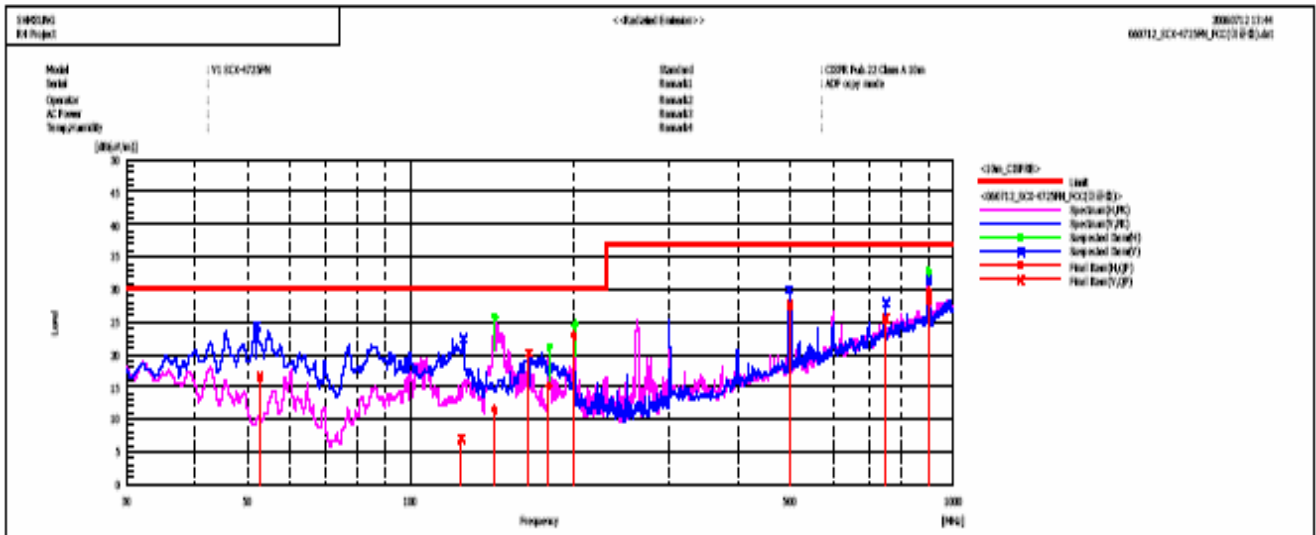
Complied

The measured emissions of the EUT have found to be below the specified limits.

Test Data

■ Operating Mode : ADF Copy (30 MHz ~ 1 000 MHz)

[Graph and Data]



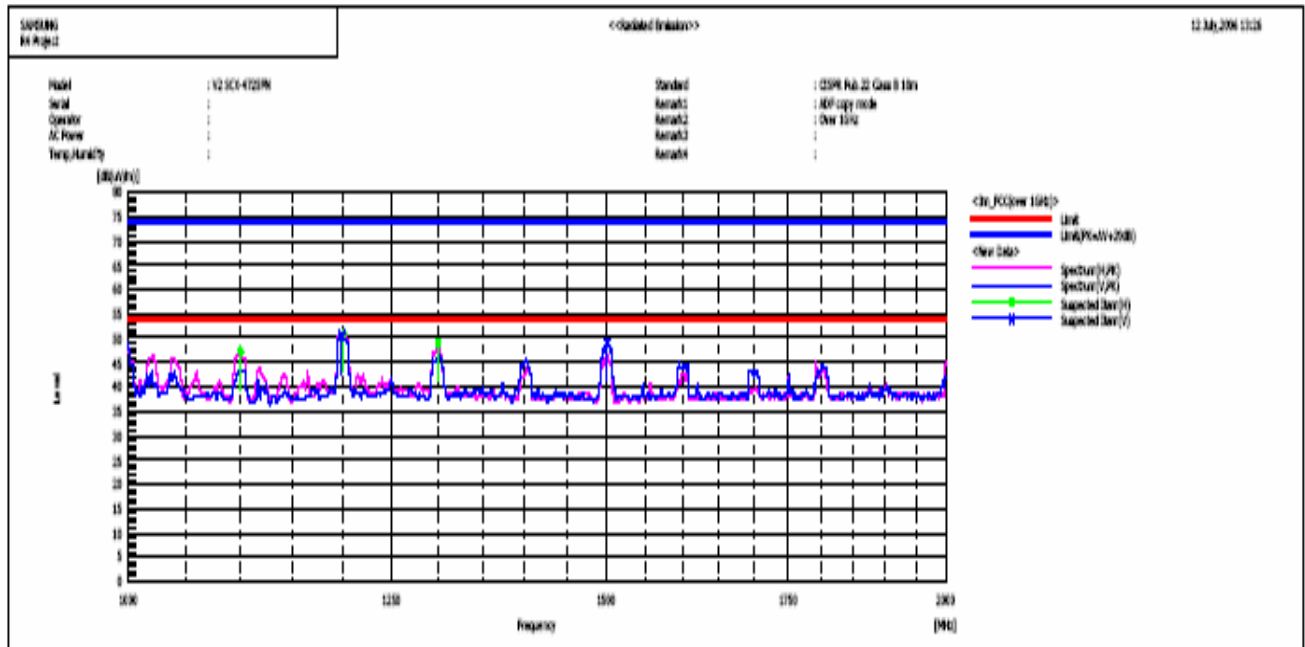
Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(t/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	52.771	V	34.5	-17.9	18.6	30.0	13.4	319.0	359.8
2	124.140	V	23.9	-16.9	7.0	30.0	23.0	131.0	51.9
3	142.900	H	25.0	-16.5	11.5	30.0	18.5	375.0	157.8
4	165.100	V	37.6	-17.3	20.3	30.0	9.7	100.0	121.0
5	179.780	H	33.1	-18.0	15.1	30.0	14.9	284.0	55.8
6	200.097	H	40.3	-17.3	23.0	30.0	7.0	368.0	63.2
7	500.370	V	35.9	-8.1	27.8	37.0	9.2	275.0	309.3
8	749.985	V	28.6	-3.0	25.6	37.0	11.4	187.0	272.0
9	900.716	V	29.2	-0.8	28.4	37.0	8.6	184.0	300.4
10	900.843	H	30.1	-0.4	29.7	37.0	7.3	101.0	255.9

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

■ Operating Mode : ADFCopy (Above 1 000 MHz)

[Graph and Data]



Spectrum Selection

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	1100.200	H	53.8	-6.3	47.8	54.0	8.7	100.0	4.5
2	1198.997	V	55.9	-5.2	50.7	54.0	3.3	100.0	288.8
3	1200.401	H	56.2	-5.2	51.0	54.0	3.0	100.0	185.3
4	1300.601	H	54.0	-5.0	49.0	54.0	5.0	200.0	327.9
5	1501.002	V	53.9	-4.8	49.1	54.0	4.9	200.0	337.2

- * Receiving antenna mode : Horizontal, Vertical
- * Test distance : 3m (RF Semi Anechoic Chamber)
- * Result = Reading + c.f (Antenna factor + Cable loss- Amp Gain)
- * Margin = Limit – Result

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)

4.3 Label (Picture 7~9 SCX-4725FN, Picture 10~12 SCX-4725F)

 USOC Jack Type:RJ11C Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M259	Model: SCX-4725FN Volts: AC 110-127V Hertz: 50/60Hz Amps: 5.5A Ringer Equivalence: Manufactured:	FCC ID: A3LSCX4725FN 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. Complies with Part 68, FCC Rules. FCC Certification No.: US: 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. IC: 649E-SCX4725F
	 LISTED 51Y7 E149091 I.T.E.	Serial No.

MADE IN KOREA REV.00

Picture 7. Samsung Electronics Co., Ltd.

 USOC Jack Type:RJ11C Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M264	Model: SCX-4725FN Volts: AC 110-127V Hertz: 50/60Hz Amps: 5.5A Ringer Equivalence: Manufactured:	FCC ID: A3LSCX4725FN 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. Complies with Part 68, FCC Rules. FCC Certification No.: US: 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. IC: 649E-SCX4725F
	 LISTED 51Y7 E149091 I.T.E.	Serial No.

MADE IN CHINA REV.00

Picture 8. Samsung Electronics (Shandong) Digital Printing Co.,Ltd.

 USOC Jack Type:RJ11C Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M098	Model: SCX-4725FN Volts: AC 110-127V Hertz: 50/60Hz Amps: 5.5A Ringer Equivalence: Manufactured:	FCC ID: A3LSCX4725FN 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. Complies with Part 68, FCC Rules. FCC Certification No.: US: 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. IC: 649E-SCX4725F
	 LISTED 51Y7 E149091 I.T.E.	Serial No.

MADE IN CHINA REV.00

Picture 9. Weihai Shin Heung Digital Electronics Co., Ltd.

 USOC Jack Type:RJ11C Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M259	Model: SCX-4725F Volts: AC 110-127V Hertz: 50/60Hz Amps: 5.5A Ringer Equivalence: Manufactured:	FCC ID: A3LSCX4725FN 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. Complies with Part 68, FCC Rules. FCC Certification No.: US: 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. IC: 649E-SCX4725F
	 LISTED 51Y7 E149091 I.T.E.	Serial No. _____ MADE IN KOREA REV.00

Picture 10. Samsung Electronics Co., Ltd.

 USOC Jack Type:RJ11C Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M264	Model: SCX-4725F Volts: AC 110-127V Hertz: 50/60Hz Amps: 5.5A Ringer Equivalence: Manufactured:	FCC ID: A3LSCX4725FN 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. Complies with Part 68, FCC Rules. FCC Certification No.: US: 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. IC: 649E-SCX4725F
	 LISTED 51Y7 E149091 I.T.E.	Serial No. _____ MADE IN CHINA REV.00

Picture 11. Samsung Electronics (Shandong) Digital Printing Co.,Ltd.

 USOC Jack Type:RJ11C Samsung Electronics Co., Ltd. Suwon, Korea, 443-742 Place:M098	Model: SCX-4725F Volts: AC 110-127V Hertz: 50/60Hz Amps: 5.5A Ringer Equivalence: Manufactured:	FCC ID: A3LSCX4725FN 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. Complies with Part 68, FCC Rules. FCC Certification No.: US: 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. IC: 649E-SCX4725F
	 LISTED 51Y7 E149091 I.T.E.	Serial No. _____ MADE IN CHINA REV.00

Picture 12. Weihai Shin Heung Digital Electronics Co., Ltd.

4.4 Label Location



Picture 13. REAR