

# EMC TEST REPORT

**Samsung Electronics Co., Ltd.**

416 Maetan 3-Dong, Yeongtong-Gu,  
Suwon-Si, Gyeonggi-Do, 443-742 Korea  
(Tel: 82 31 277 7752, Fax: 82 31 277 7753)

Project No. : LBE071502

Page (1)/(29)

**1. Applicant**

- Name of organization : Samsung Electronics Co., Ltd.
- Address : 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742 Korea
- Date of application : 2007. 04. 27

**2. Purpose for the report :** Approval for EMC

**3. Kind of product :** Printer (Model name :SCX-4500)

**4. Date of test :** 2007. 05. 03 ~ 2007. 05. 11

**5. Applied standard :** FCC Part 15, Subpart B

**6. 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 : Sang Kyu, seo

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.

2007. 05. 18

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

# TEST RESULT

**Test Report No.** : LBE071502

**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, 730-030 Korea  
2) Samsung Electronics(Shandong) Digital Printing Co., Ltd.  
264209, Samsung Road, Weihai Hi-Tech IDZ, Shandong Province, China  
3) Weihai Shin Heung Digital Electronics Co., Ltd.  
98, Samsung Road, Weihai H-Tech. IDZ, Shandong Province, P.R.China

**EUT** : 1. Product name : Printer  
2. Model name : SCX-4500  
3. Brand name : SAMSUNG  
4. Variant model : SCX-4500S  
5. FCC ID : A3LSCX4500

**Test Method** : ANSI C 63.4:2003

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

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



**Tested by** : Sang Kyu, Seo

**Reviewed by** : No Cheon Park

**Date of Issue** : 2007. 05. 18

## **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 Equipment modifications
- 1.5 Test procedure
- 1.6 Test configuration
- 1.7 Applied standard
- 1.8 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                                           | SCX-4500                                                                                                                                                                                                                                                                                                                                                           |
| Applicant address                                    | 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do<br>443-742 Korea                                                                                                                                                                                                                                                                                            |
| Contact person                                       | Sangsu ROH                                                                                                                                                                                                                                                                                                                                                         |
| Kind of product                                      | Printer                                                                                                                                                                                                                                                                                                                                                            |
| Variant model                                        | SCX-4500S                                                                                                                                                                                                                                                                                                                                                          |
| FCC ID                                               | A3LSCX4500                                                                                                                                                                                                                                                                                                                                                         |
| Manufacturer                                         | 1) Samsung Electronics Co., Ltd.<br>259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do, 730-030 Korea<br>2) Samsung Electronics(Shandong) Digital Printing Co., Ltd.<br>264209, Samsung Road, Weihai Hi-Tech IDZ, Shandong Province, China<br>3) Weihai Shin Heung Digital Electronics Co., Ltd.<br>98, Samsung Road, Weihai H-Tech. IDZ, Shandong Province, P.R.China |
| Rated power                                          | AC 120 V, 60 Hz                                                                                                                                                                                                                                                                                                                                                    |
| New / Alternative /<br>Permissive change information | New                                                                                                                                                                                                                                                                                                                                                                |

## 1.2 Detail Information related product

### 1.2.1 Specification

| Item                         | Specification and Description                                                           |
|------------------------------|-----------------------------------------------------------------------------------------|
| Processor                    | ChorusII(66MHz)                                                                         |
| Standard System memory       | 8MB SDRAM                                                                               |
| Resolution                   | 600x600dpi                                                                              |
| Copy Quality mode            | TEXT:600x300dpi<br>TEXT/PHOTO:600x300dpi<br>PHOTO:600x600dpi                            |
| Paper Handling               | Paper Tray(standard) 100 Sheets<br>2nd Tray(optional) : NA<br>Bypass Tray : NA          |
| Power Rating                 | 110~127 VAC, 4.0A, 50/60 Hz                                                             |
| Power Consumption            | Power save mode : 8.12Watts<br>Stand by mode : 8.12Watts<br>Printing simplex : 350Watts |
| Printer Language             | GDI                                                                                     |
| Interfaces                   | USB2.0                                                                                  |
| OS compatibility             | Windows 2000 / XP / 2003 / Vista<br>Linux<br>Mac OS 10.3                                |
| Modes of Operation           | USB Printing                                                                            |
| Intended Class for Emissions | Class B                                                                                 |

#### Operating Frequency

Main Source Clock : 10MHz, Video Clock : 19.75MHz, SDRAM Clock : 66MHz

USB Device Clock : 12MHz, OPE : 115.2KHz, CPU Core Clock : 66MHz

### 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 is supporting the Copy and USB printind mode.  
So, all the data of EUT operation were reported.

- **Operating Mode**

- Copy Printing Mode
- USB Printing Mode
- Standby Mode

- Test Voltage : 120 V, 60 Hz

### 1.4 Equipment modifications

No equipment modifications were required.

## 1.5 Test procedure

### 1.5.1 Conducted emission

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<br>[MHz] | Instrument   | Detector   | Resolution<br>Bandwidth | Video<br>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 turntable 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.

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

## 1.6 Test configuration

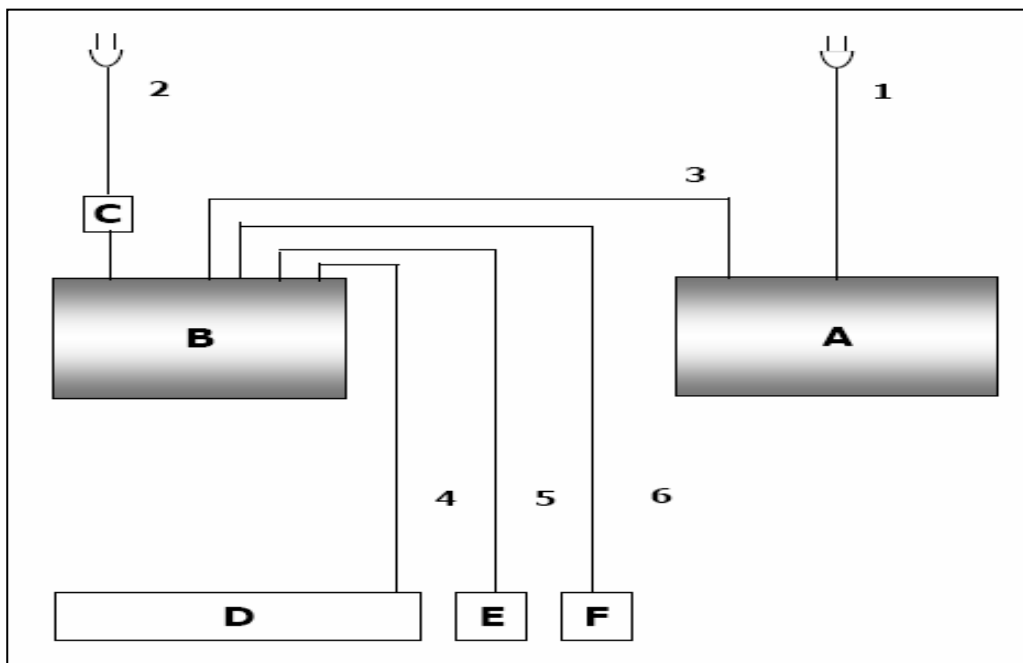
### 1.6.1 Used EUT and peripherals

| Seq | Device       | Model Name         | Serial #                    | Maker                                   | FCC ID           |
|-----|--------------|--------------------|-----------------------------|-----------------------------------------|------------------|
| A   | Printer      | SCX-4500           | -                           | Samsung                                 | -                |
| B   | Notebook PC  | SQ20               | L30991CX300026B             | Samsung                                 | DoC              |
| C   | AC Adaptor   | AD-4212A           | CNBA44XXXXXXSE3831L024<br>1 | Dong Guan SEM                           | -                |
| D   | USB Keyboard | SDM4600UH          | 4S000220                    | Samsung Electro M<br>echanics., Co. Ltd | DoC              |
| E   | SP/2 Mouse   | SMOP5000WX-<br>UAG | 06060 002825                | Chic Corp                               | DoC              |
| F   | Serial Mouse | 37964              | 1020764                     | Micro Soft                              | FCC ID<br>C3KMS1 |

### 1.6.2 Used cable description

| No | Connect Cable | Length [m] | Shielded [Y/N] | Remark              |
|----|---------------|------------|----------------|---------------------|
| 1  | Power         | 1.8        | No             | For EUT             |
| 2  | Power         | 1.8        | No             | For PC              |
| 3  | USB           | 1.8        | Yes            | From eut to pc      |
| 4  | USB           | 1.8        | Yes            | From pc to keyboard |
| 5  | PS/2          | 1.8        | Yes            | From pc to mouse    |
| 6  | Serial        | 1.8        | Yes            | From pc to mouse    |

### 1.6.3 Block diagram



### 1.7 Applied Standards

| Test standard         | Test method     |
|-----------------------|-----------------|
| FCC Part 15 Subpart B | ANSI C63.4:2003 |

## 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              | $\pm 2.8$ dB            |
| Radiated emission    Horizontal | $\pm 5.1$ dB            |
| Vertical                        | $\pm 5.09$ 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  | Test result |
|---------------------------------|--------------------|-------------------|-------------|
| 3.1                             | Conducted Emission | ANSI C63.4 : 2003 | Complied    |
| 3.2                             | Radiated Emission  | ANSI C63.4 : 2003 | Complied    |

### 3. Description of individual tests

#### 3.1 Conducted emission

##### 3.1.1 Test information

|                   |                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------|
| Test engineer     | Sang Kyu, Seo                                                                             |
| Test date         | May 11, 2007                                                                              |
| Climate condition | Ambient temperature : 23.7 , Relative humidity : 32 %<br>Atmospheric pressure : 101.0 kPa |
| Test place        | Shielded room # 1                                                                         |

##### 3.1.2 Test equipment

| Equipment             | Model name | Manufacturer | Serial no. | Calibration |                  |
|-----------------------|------------|--------------|------------|-------------|------------------|
|                       |            |              |            | Date        | Interval (Month) |
| EMI TEST RECEIVER     | ESCI       | 100086       | R&S        | 2007-03-21  | 12               |
| LISN (For EUT)        | ENV216     | R&S          | 100116     | 2006-09-01  | 12               |
| LISN (For Peripheral) | ESH3-Z5    | R&S          | 100261     | 2006-07-21  | 12               |
| Test Software         | EMC 32     | R&S          | Ver 4.40.0 | N/A         | N/A              |

#### 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

|                            |                                                                                        |
|----------------------------|----------------------------------------------------------------------------------------|
| <b>Measurement Results</b> | Pass<br>The measured emissions of the EUT have found to be below the specified limits. |
|----------------------------|----------------------------------------------------------------------------------------|

##### 3.1.3 Test data and graph

The initial step in collecting conducted data was to perform a peak and average scan over the measurement range using a receiver.

### 3.1.4 Test graph

#### Test Information

Test Description: SCX-4500  
Operating Conditions:  
Operator Name:  
Comment: Copy Printing

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

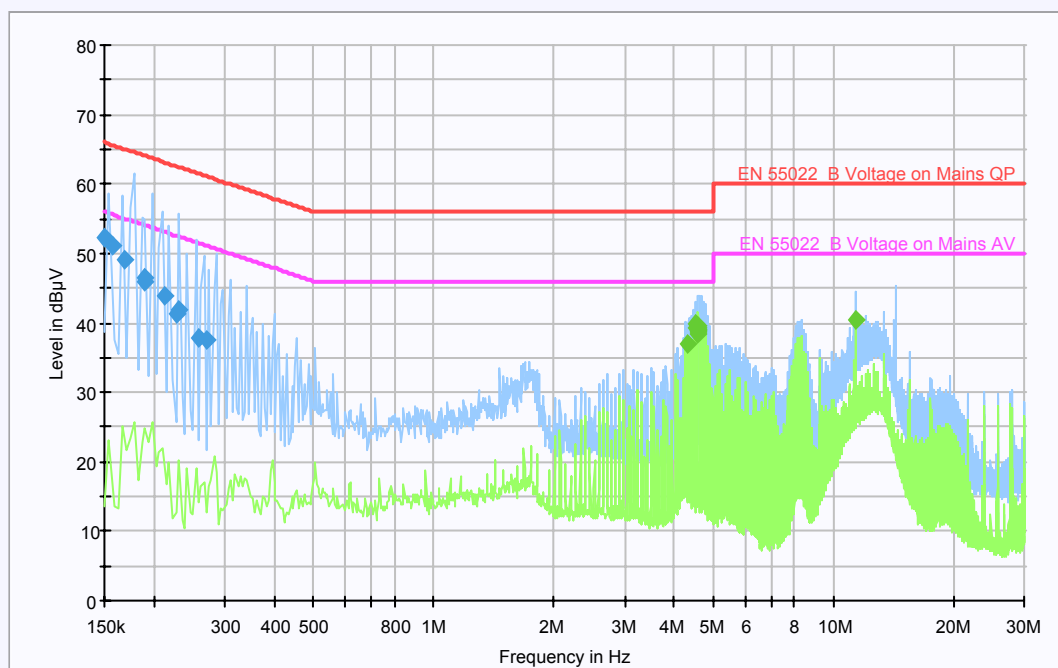
Subrange 1  
Frequency Range: 150kHz - 30MHz  
  
Receiver: ESCI 3 [ESCI 3]  
@ GPIB0 (ADR 20), SN 100369/003, FW 3.82  
Signal Path: Receiver-2-Line-LISN ENV216  
FW 1.0  
Correction Table: Receiver-2-LISN ENV216  
LISN: ENV216  
Correction Table (Line 0): ENV216\_100116\_N  
Correction Table (Line 1): ENV216\_100116\_L

#### Scan Setup: EN55022\_B\_ENV 2-Line-LISN fin [EMI conducted]

Hardware Setup: Voltage with ENV 2-Line-LISN  
Level Unit: dB  $\mu$ V

| Subrange       | Detectors          | IF Bandwidth | Meas. Time | Receiver |
|----------------|--------------------|--------------|------------|----------|
| 150kHz - 30MHz | QuasiPeak; Average | 9kHz         | 15s        | ESCI 3   |

#### EN55022\_B with ENV 2-Line-LISN



## Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V) |
|-----------------|------------------------|------|------------|-------------|--------------------|
| 0.150000        | 52.2                   | N    | 9.6        | 13.8        | 66.0               |
| 0.157700        | 51.1                   | L1   | 9.6        | 14.5        | 65.6               |
| 0.169100        | 49.1                   | L1   | 9.6        | 15.9        | 65.0               |
| 0.188100        | 46.0                   | N    | 9.6        | 18.1        | 64.1               |
| 0.188500        | 46.4                   | L1   | 9.6        | 17.7        | 64.1               |
| 0.211500        | 43.9                   | L1   | 10.0       | 19.2        | 63.1               |
| 0.227100        | 41.3                   | N    | 9.6        | 21.3        | 62.6               |
| 0.230500        | 41.9                   | L1   | 10.0       | 20.5        | 62.4               |
| 0.257300        | 38.0                   | N    | 9.6        | 23.5        | 61.5               |
| 0.271700        | 37.6                   | L1   | 9.9        | 23.5        | 61.1               |

## Final Measurement Detector 2

| Frequency (MHz) | Average (dB $\mu$ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V) |
|-----------------|----------------------|------|------------|-------------|--------------------|
| 4.334400        | 37.1                 | N    | 9.7        | 8.9         | 46.0               |
| 4.529200        | 39.8                 | L1   | 9.7        | 6.2         | 46.0               |
| 4.531000        | 39.4                 | L1   | 9.7        | 6.6         | 46.0               |
| 4.592600        | 38.8                 | N    | 9.7        | 7.2         | 46.0               |
| 4.594200        | 39.6                 | N    | 9.7        | 6.4         | 46.0               |
| 4.595000        | 39.3                 | N    | 9.7        | 6.7         | 46.0               |
| 4.595600        | 39.1                 | L1   | 9.7        | 6.9         | 46.0               |
| 4.595800        | 38.9                 | L1   | 9.7        | 7.1         | 46.0               |
| 4.596400        | 38.3                 | L1   | 9.7        | 7.7         | 46.0               |
| 11.348500       | 40.3                 | L1   | 9.9        | 9.7         | 50.0               |

\* QP : Quasi-peak, AV: Average

\* Level (QuasiPeak or Average) = Meter Reading(QP or AV) + Corr. (LISN Insertion loss + Cable loss)

\* Margin = Limit – Result

## Test Information

Test Description: SCX-4500  
Operating Conditions:  
Operator Name:  
Comment: USB Printing

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

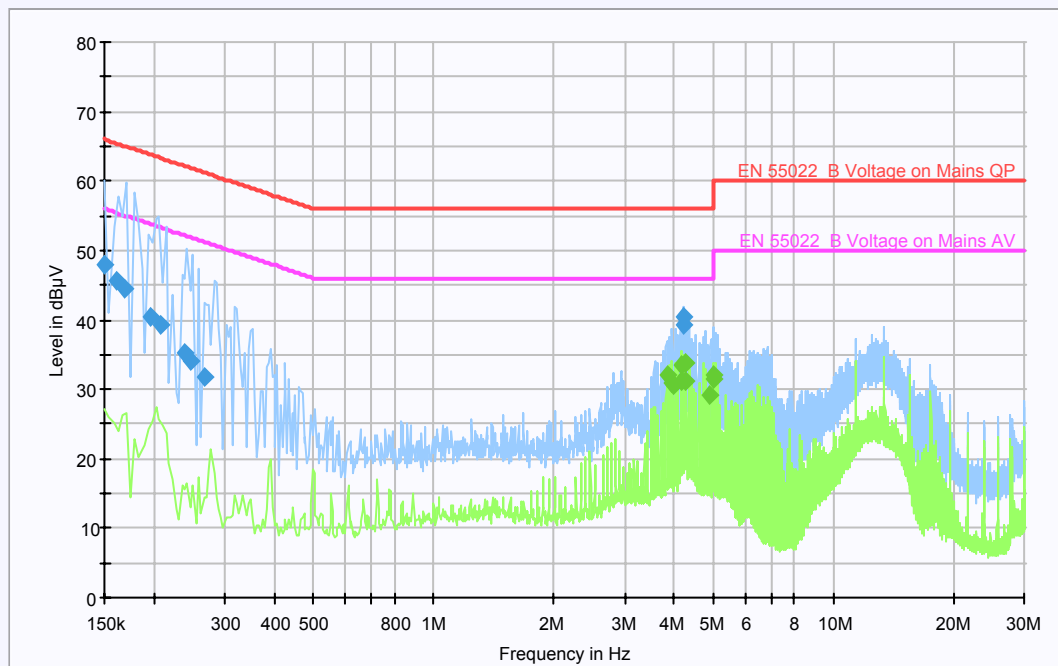
Subrange 1  
Frequency Range: 150kHz - 30MHz  
  
Receiver: ESCI 3 [ESCI 3]  
@ GPIB0 (ADR 20), SN 100369/003, FW 3.82  
Signal Path: Receiver-2-Line-LISN ENV216  
FW 1.0  
Correction Table: Receiver-2-LISN ENV216  
LISN: ENV216  
Correction Table (Line 0): ENV216\_100116\_N  
Correction Table (Line 1): ENV216\_100116\_L

## Scan Setup: EN55022\_B\_ENV 2-Line-LISN fin [EMI conducted]

Hardware Setup: Voltage with ENV 2-Line-LISN  
Level Unit: dB  $\mu$ V

| Subrange       | Detectors          | IF Bandwidth | Meas. Time | Receiver |
|----------------|--------------------|--------------|------------|----------|
| 150kHz - 30MHz | QuasiPeak; Average | 9kHz         | 15s        | ESCI 3   |

## EN55022\_B with ENV 2-Line-LISN



## Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V) |
|-----------------|------------------------|------|------------|-------------|--------------------|
| 0.150000        | 47.8                   | L1   | 9.6        | 18.2        | 66.0               |
| 0.161500        | 45.6                   | L1   | 9.6        | 19.8        | 65.4               |
| 0.169100        | 44.6                   | L1   | 9.6        | 20.4        | 65.0               |
| 0.195700        | 40.3                   | L1   | 9.6        | 23.5        | 63.8               |
| 0.207300        | 39.2                   | L1   | 10.0       | 24.1        | 63.3               |
| 0.237900        | 35.3                   | L1   | 9.9        | 26.9        | 62.2               |
| 0.245100        | 34.1                   | N    | 9.6        | 27.8        | 61.9               |
| 0.267900        | 31.7                   | L1   | 9.9        | 29.5        | 61.2               |
| 4.211000        | 40.4                   | N    | 9.7        | 15.6        | 56.0               |
| 4.213400        | 39.2                   | N    | 9.7        | 16.8        | 56.0               |

## Final Measurement Detector 2

| Frequency (MHz) | Average (dB $\mu$ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V) |
|-----------------|----------------------|------|------------|-------------|--------------------|
| 3.822400        | 32.0                 | N    | 9.7        | 14.0        | 46.0               |
| 3.953600        | 30.9                 | L1   | 9.7        | 15.1        | 46.0               |
| 3.956600        | 30.7                 | N    | 9.7        | 15.3        | 46.0               |
| 4.147000        | 31.1                 | L1   | 9.7        | 14.9        | 46.0               |
| 4.149400        | 33.6                 | N    | 9.7        | 12.4        | 46.0               |
| 4.274200        | 31.2                 | L1   | 9.7        | 14.8        | 46.0               |
| 4.275800        | 33.9                 | L1   | 9.7        | 12.1        | 46.0               |
| 4.923600        | 29.3                 | N    | 9.7        | 16.7        | 46.0               |
| 4.990400        | 32.1                 | N    | 9.7        | 13.9        | 46.0               |
| 4.992200        | 31.6                 | N    | 9.7        | 14.4        | 46.0               |

\* QP : Quasi-peak, AV: Average

\* Level (QuasiPeak or Average) = Meter Reading(QP or AV) + Corr. (LISN Insertion loss + Cable loss)

\* Margin = Limit – Result

## Test Information

Test Description: SCX-4500  
Operating Conditions:  
Operator Name:  
Comment: Standby

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

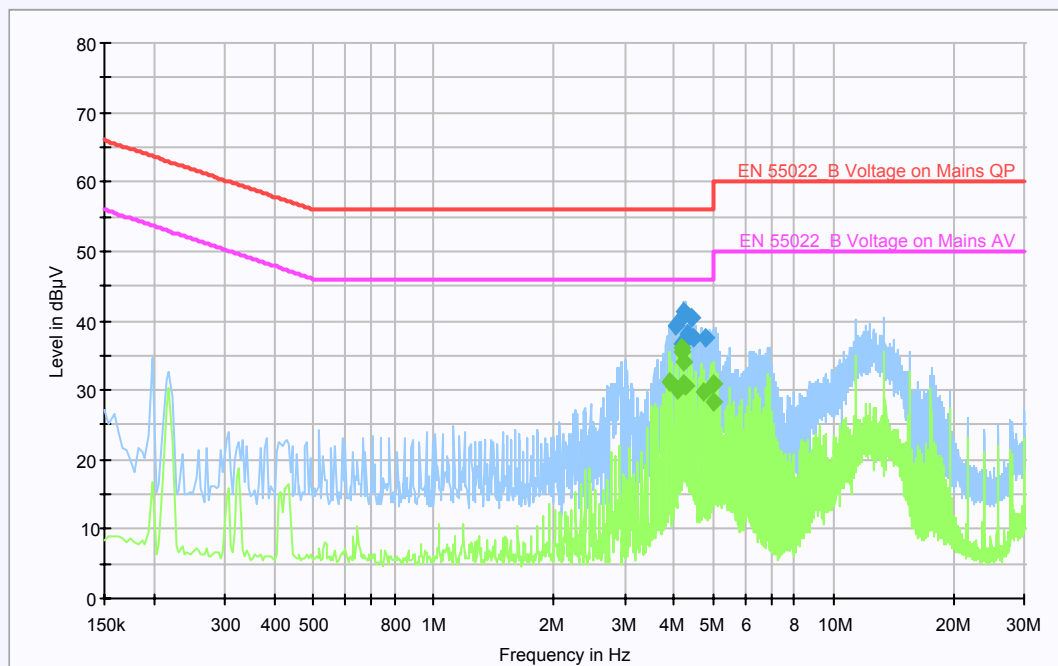
Subrange 1  
Frequency Range: 150kHz - 30MHz  
Receiver: ESCI 3 [ESCI 3]  
@ GPIB0 (ADR 20), SN 100369/003, FW 3.82  
Signal Path: Receiver-2-Line-LISN ENV216  
FW 1.0  
Correction Table: Receiver-2-LISN ENV216  
LISN: ENV216  
Correction Table (Line 0): ENV216\_100116\_N  
Correction Table (Line 1): ENV216\_100116\_L

## Scan Setup: EN55022\_B\_ENV 2-Line-LISN fin [EMI conducted]

Hardware Setup: Voltage with ENV 2-Line-LISN  
Level Unit: dB  $\mu$  V

| Subrange       | Detectors          | IF Bandwidth | Meas. Time | Receiver |
|----------------|--------------------|--------------|------------|----------|
| 150kHz - 30MHz | QuasiPeak; Average | 9kHz         | 15s        | ESCI 3   |

## EN55022\_B with ENV 2-Line-LISN



## Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dB $\mu$ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V) |
|-----------------|------------------------|------|------------|-------------|--------------------|
| 4.021600        | 39.3                   | L1   | 9.7        | 16.7        | 56.0               |
| 4.146400        | 36.8                   | N    | 9.7        | 19.2        | 56.0               |
| 4.211800        | 41.2                   | L1   | 9.7        | 14.8        | 56.0               |
| 4.212600        | 40.8                   | L1   | 9.7        | 15.2        | 56.0               |
| 4.277400        | 40.9                   | N    | 9.7        | 15.1        | 56.0               |
| 4.338200        | 38.2                   | N    | 9.7        | 17.8        | 56.0               |
| 4.405400        | 40.4                   | N    | 9.7        | 15.6        | 56.0               |
| 4.470600        | 37.7                   | L1   | 9.7        | 18.3        | 56.0               |
| 4.794600        | 37.6                   | N    | 9.7        | 18.4        | 56.0               |

## Final Measurement Detector 2

| Frequency (MHz) | Average (dB $\mu$ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V) |
|-----------------|----------------------|------|------------|-------------|--------------------|
| 3.886400        | 31.2                 | N    | 9.7        | 14.8        | 46.0               |
| 4.081600        | 30.1                 | N    | 9.7        | 15.9        | 46.0               |
| 4.146800        | 36.2                 | L1   | 9.7        | 9.8         | 46.0               |
| 4.148600        | 35.5                 | L1   | 9.7        | 10.5        | 46.0               |
| 4.209400        | 34.2                 | L1   | 9.7        | 11.8        | 46.0               |
| 4.210200        | 30.9                 | N    | 9.7        | 15.1        | 46.0               |
| 4.275800        | 30.5                 | N    | 9.7        | 15.5        | 46.0               |
| 4.730600        | 29.8                 | L1   | 9.8        | 16.2        | 46.0               |
| 4.990400        | 30.8                 | L1   | 9.8        | 15.2        | 46.0               |
| 4.993600        | 28.3                 | L1   | 9.8        | 17.7        | 46.0               |

\* QP : Quasi-peak, AV: Average

\* Level (QuasiPeak or Average) = Meter Reading(QP or AV) + Corr. (LISN Insertion loss + Cable loss)

\* Margin = Limit – Result

## 3.2 Radiated emission

### 3.2.1 Test information

|                   |                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------|
| Test engineer     | Sang Kyu, Seo                                                                             |
| Test date         | May 02, 2007                                                                              |
| Climate condition | Ambient temperature : 24.1 , Relative humidity : 33 %<br>Atmospheric pressure : 100.7 kPa |
| Test place        | 10 m Semi-anechoic Chamber                                                                |

### 3.2.2 Test equipment

| Equipment       | Model name | Manufacturer | Serial no. | Calibration |                  |
|-----------------|------------|--------------|------------|-------------|------------------|
|                 |            |              |            | Date        | Interval (Month) |
| Bi-con Antenna  | CBL6112D   | SCHAFFNER    | 22602      | 2006-06-26  | 12               |
| Bi-con Antenna  | CBL6112D   | SCHAFFNER    | 22601      | 2007-04-02  | 12               |
| EMI Receiver    | ESIB-26    | R&S          | 100289     | 2007-03-22  | 12               |
| EMI Receiver    | ESIB-26    | R&S          | 100287     | 2007-04-10  | 12               |
| AMPLIFIER       | 310N       | SONOMA       | 186467     | 2007-03-17  | 12               |
| AMPLIFIER       | 310N       | SONOMA       | 251673     | 2007-03-17  | 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              |
| RF Selector     | NS4900     | TOYO         | -          | N/A         | N/A              |
| HORN ANTENNA    | BBHA9120B  | SCHWARZBECK  | 335        | 2007-01-08  | 12               |

#### EUT Test Setup

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

All ports terminated into characteristic loads.

#### Test Result

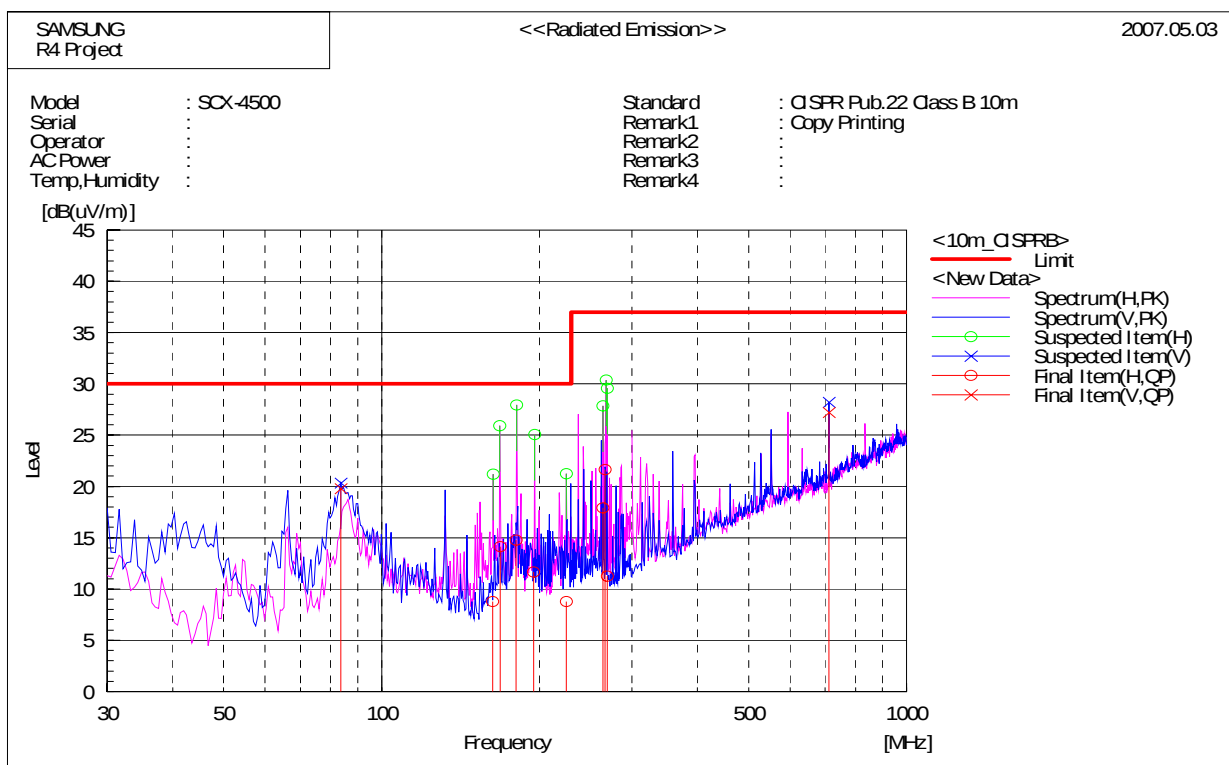
|                            |                                                                                        |
|----------------------------|----------------------------------------------------------------------------------------|
| <b>Measurement Results</b> | Pass<br>The measured emissions of the EUT have found to be below the specified limits. |
|----------------------------|----------------------------------------------------------------------------------------|

### 3.2.3 Test data and 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 were reported. All other emissions are non-significant

### 3.2.4 30 MHz ~ 1 000 MHz

#### ■ Operating Mode: Copy Printing

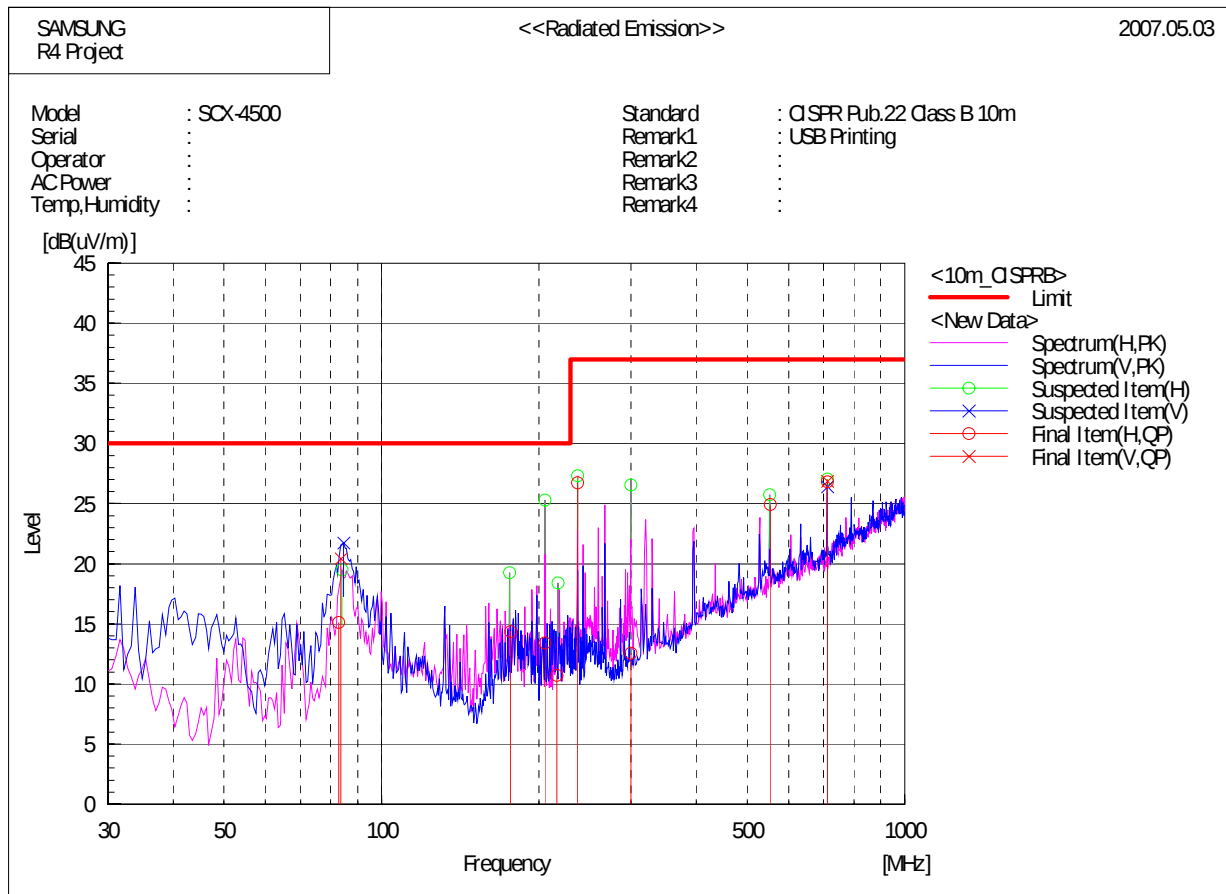


#### Final Result

| No. | Frequency [MHz] | (P) | 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] | System |
|-----|-----------------|-----|---------------------|---------------|----------------------|------------------|----------------|-------------|-------------|--------|
| 1   | 83.564          | V   | 42.1                | -22.3         | 19.8                 | 30.0             | 10.2           | 156.0       | 54.8        | 2      |
| 2   | 162.687         | H   | 28.0                | -19.2         | 8.8                  | 30.0             | 21.2           | 400.0       | 248.2       | 1      |
| 3   | 168.157         | H   | 33.4                | -19.3         | 14.1                 | 30.0             | 15.9           | 393.0       | 282.8       | 1      |
| 4   | 180.548         | H   | 35.2                | -20.4         | 14.8                 | 30.0             | 15.2           | 400.0       | 191.2       | 1      |
| 5   | 194.946         | H   | 31.5                | -19.9         | 11.6                 | 30.0             | 18.4           | 394.0       | 194.7       | 1      |
| 6   | 224.890         | H   | 28.1                | -19.3         | 8.8                  | 30.0             | 21.2           | 100.0       | 134.9       | 1      |
| 7   | 264.140         | H   | 33.1                | -15.2         | 17.9                 | 37.0             | 19.1           | 348.0       | 242.9       | 1      |
| 8   | 266.391         | H   | 36.9                | -15.3         | 21.6                 | 37.0             | 15.4           | 318.0       | 144.4       | 1      |
| 9   | 269.275         | H   | 26.6                | -15.4         | 11.2                 | 37.0             | 25.8           | 267.0       | 119.2       | 1      |
| 10  | 711.352         | V   | 33.0                | -5.8          | 27.2                 | 37.0             | 9.8            | 256.0       | 352.4       | 2      |

- \* 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: USB Printing

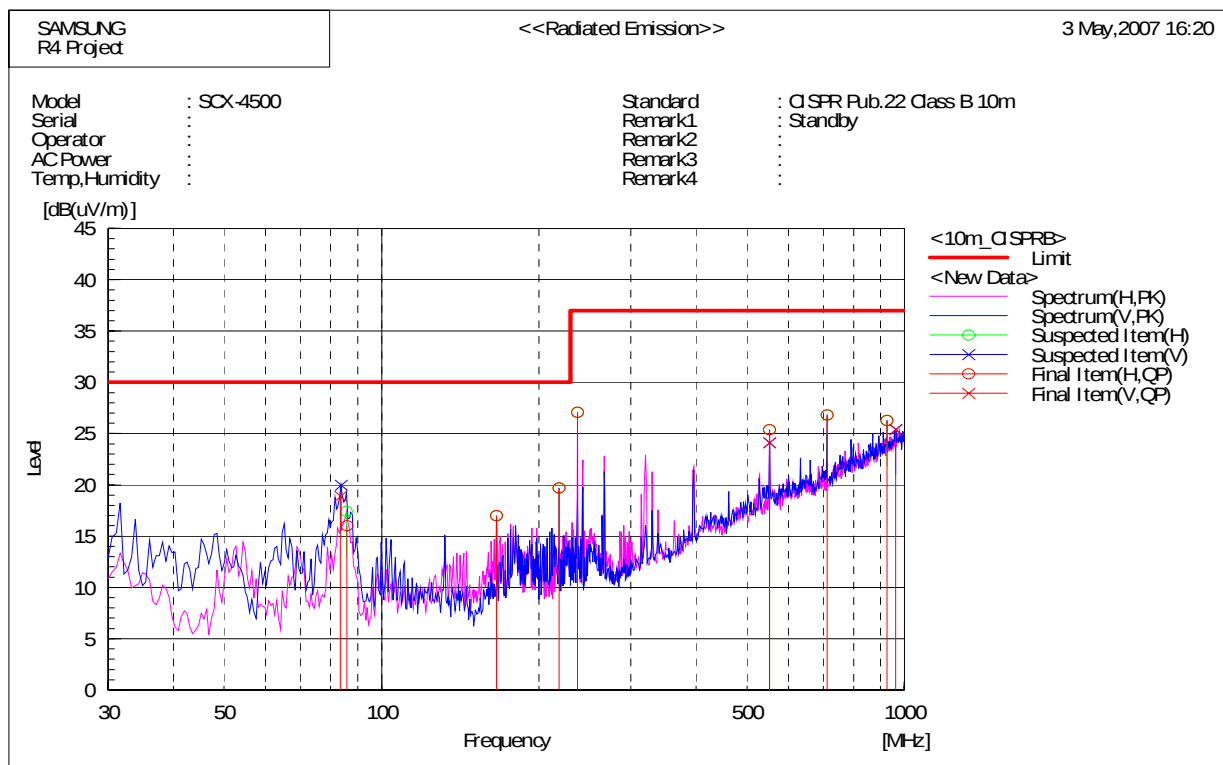


Final Result

| No. | Frequency [MHz] | (P) | 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] | System |
|-----|-----------------|-----|---------------------|---------------|----------------------|------------------|----------------|-------------|-------------|--------|
| 1   | 82.758          | H   | 37.9                | -22.8         | 15.1                 | 30.0             | 14.9           | 400.0       | 89.5        | 1      |
| 2   | 83.548          | V   | 42.7                | -22.3         | 20.4                 | 30.0             | 9.6            | 150.0       | 43.7        | 2      |
| 3   | 176.393         | H   | 34.5                | -20.1         | 14.4                 | 30.0             | 15.6           | 399.0       | 159.6       | 1      |
| 4   | 205.313         | H   | 33.3                | -19.9         | 13.4                 | 30.0             | 16.6           | 371.0       | 199.2       | 1      |
| 5   | 216.638         | H   | 30.6                | -19.9         | 10.7                 | 30.0             | 19.3           | 325.0       | 114.9       | 1      |
| 6   | 237.113         | H   | 44.4                | -17.7         | 26.7                 | 37.0             | 10.3           | 375.0       | 114.4       | 1      |
| 7   | 299.516         | H   | 26.8                | -14.3         | 12.5                 | 37.0             | 24.5           | 287.0       | 163.4       | 1      |
| 8   | 553.298         | H   | 32.9                | -8.0          | 24.9                 | 37.0             | 12.1           | 176.0       | 144.2       | 1      |
| 9   | 711.366         | H   | 33.2                | -6.4          | 26.8                 | 37.0             | 10.2           | 125.0       | 235.8       | 1      |
| 10  | 711.380         | V   | 32.7                | -5.8          | 26.9                 | 37.0             | 10.1           | 249.0       | 350.3       | 2      |

- \* 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: Standby



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(μV)] | c.f [dB(1/m)] | Result QP [dB(μV/m)] | Limit [dB(μV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] | System |
|-----|-----------------|-----|---------------------|---------------|----------------------|------------------|----------------|-------------|-------------|--------|
| 1   | 83.516          | V   | 41.2                | -22.3         | 18.9                 | 30.0             | 11.1           | 156.0       | 52.1        | 2      |
| 2   | 85.945          | H   | 38.0                | -22.0         | 16.0                 | 30.0             | 14.0           | 375.0       | 88.6        | 1      |
| 3   | 165.812         | H   | 36.2                | -19.2         | 17.0                 | 30.0             | 13.0           | 400.0       | 15.5        | 1      |
| 4   | 218.297         | H   | 39.6                | -19.9         | 19.7                 | 30.0             | 10.3           | 400.0       | 114.0       | 1      |
| 5   | 237.234         | H   | 44.8                | -17.7         | 27.1                 | 37.0             | 9.9            | 300.0       | 114.5       | 1      |
| 6   | 552.505         | H   | 33.4                | -8.0          | 25.4                 | 37.0             | 11.6           | 200.0       | 26.0        | 1      |
| 7   | 552.505         | V   | 31.2                | -7.1          | 24.1                 | 37.0             | 12.9           | 400.0       | 13.5        | 2      |
| 8   | 711.022         | H   | 33.2                | -6.4          | 26.8                 | 37.0             | 10.2           | 100.0       | 248.9       | 1      |
| 9   | 925.651         | H   | 29.0                | -2.7          | 26.3                 | 37.0             | 10.7           | 100.0       | 171.1       | 1      |
| 10  | 962.124         | V   | 26.9                | -1.5          | 25.4                 | 37.0             | 11.6           | 300.0       | 54.1        | 2      |

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

## 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

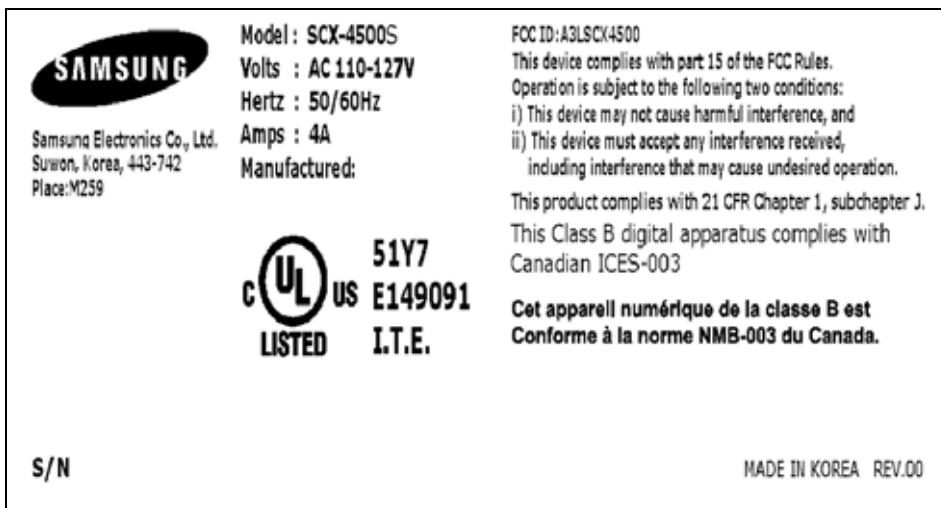
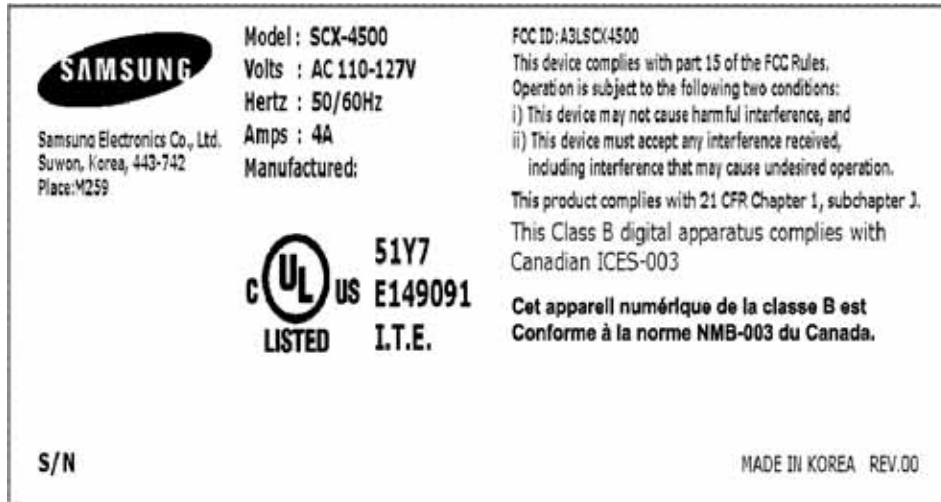


Picture 5. EUT (Front)

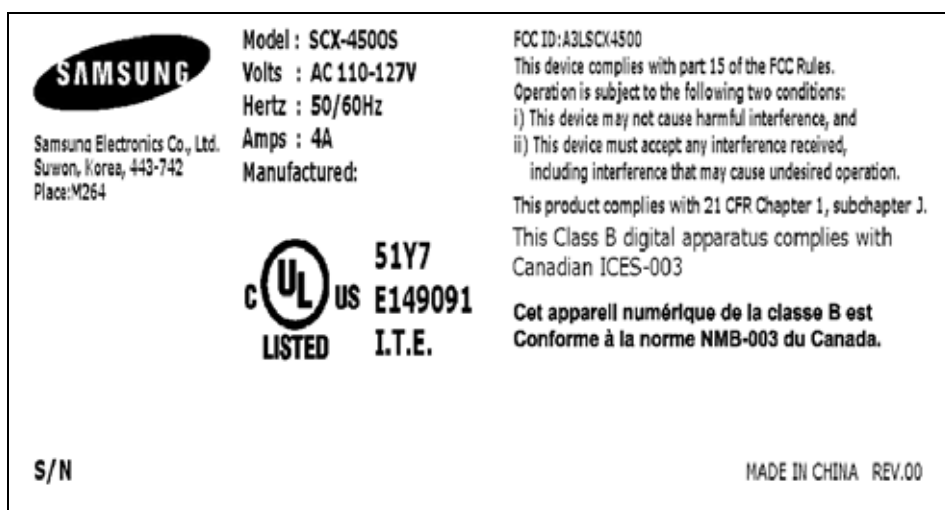
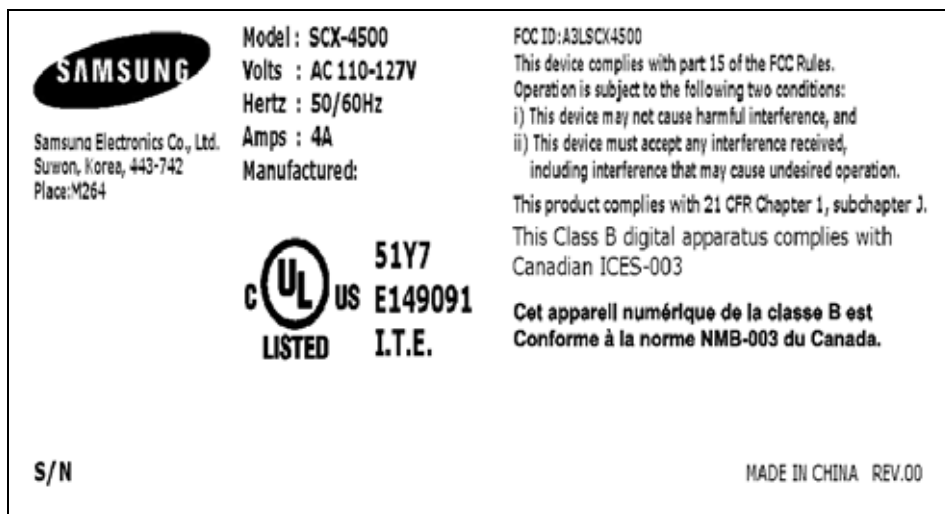


Picture 6. EUT (Rear)

### 4.3 Label and Label Location



( Samsung Electronics Co., Ltd )



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

Picture 7. Label



Picture 8. Label location(Bottom Side)