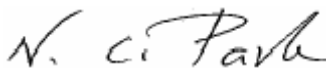


# EMC Test Report

## According to FCC Part 15 Subpart B

|                             |                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Project No.</b>          | LBE060724                                                                                                  |
| <b>Equipment under Test</b> |                                                                                                            |
| Applicant                   | Samsung Electronics Co., Ltd.<br>416 Maetan3- Dong, Yeongtong-Gu, Suwon-Si,<br>Gyeonggi-Do, 443-742, Korea |
| FCC ID                      | A3LSCX5330FN                                                                                               |
| Kind of product             | Printer                                                                                                    |
| Model Name                  | <b>SCX-5330FN</b>                                                                                          |
| Marketing Model Name        | -                                                                                                          |
| Manufacturer                | Samsung Electronics Co., Ltd.                                                                              |
| <b>Date of Test</b>         | April 02, 2006 ~ April 06, 2006                                                                            |
| <b>Issued Date</b>          | April 10, 2006                                                                                             |

|                      | <b>Name/Position</b>                  | <b>Signature</b>                                                                     |
|----------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <b>Tested by</b>     | Kyeong Dong, Kim<br>Test Engineer     |  |
| <b>Reviewed by</b>   | No Cheon, Park<br>Manager of EMC Lab. |  |
| <b>Authorized by</b> | Seung Kyu, Cha<br>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

3. FCC Registration Number : KR0004

## **Table of Contents**

### **1. General Information**

Basic Information related Product  
Justification for EUT Configuration  
Operating Mode and Condition  
Equipment Modifications  
Test Procedure  
Test Configuration  
Applied Standards  
Test Facility

### **2. Summary of Test Results**

### **3. Description of individual tests**

Conducted Emission  
Radiated Emission

### **4. Appendix**

Test Photography  
EUT Photography

## 1. General Information

### 1.1 Basic Information related Product

|                                                         |                                                                             |
|---------------------------------------------------------|-----------------------------------------------------------------------------|
| Applicant                                               | Samsung Electronics Co., Ltd.                                               |
| Model name                                              | SCX-5330FN                                                                  |
| Applicant Address                                       | 416 Maetan3- Dong, Yeongtong-Gu, Suwon-Si,<br>Gyeonggi-Do, Korea, 443-742   |
| Contact Person                                          | Kyung Dong, Kim                                                             |
| Kind of product                                         | Printer                                                                     |
| Variant list                                            | -                                                                           |
| Manufacturer                                            | Samsung Electronics Co., Ltd.                                               |
| New / Alternative /<br>Permissive change<br>Information | Main board, HVPS, SMPS, CCD modules are upgraded, ferrite core<br>is added. |

### 1.2 Detail Information related product

#### 1.2.1 Specification General specifications

| Item                  | Description                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ADF                   | Up to 50 sheets (75 g/m2 bond)                                                                                                                                                                   |
| ADF document size     | Width: 142 to 216 mm, Length: 148 to 356 mm                                                                                                                                                      |
| Paper input capacity  | Tray 1/2: 250 multi-pages for plain paper (75 g/m2 bond)<br>Multi-purpose tray: 50 pages for plain paper, 5 pages for card stock, labels,<br>transparencies, and envelopes (60 to 163 g/m2 bond) |
| Paper output capacity | Output tray: 150 sheet (face down), Rear cover: 1 sheet (face up)                                                                                                                                |
| Consumables           | 1-piece toner cartridge system                                                                                                                                                                   |
| Power rating          | 110 - 127 VAC, 50/60 Hz, 6.4 A (USA, Canada), 220 - 240 VAC, 50/60 Hz, 3.2 A<br>(others)                                                                                                         |
| Power consumption     | Average: 520 W, Power save mode: Less than 10 W                                                                                                                                                  |
| Noise level           | Standby mode: Less than 39 dBA, Printing: Less than 54 dBA<br>Copying mode: Less than 55 dBA, Warm up: Less than 49 dBA                                                                          |

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Warm-up time          | Less than 20 seconds (from sleep mode)                          |
| Operating environment | Temperature: 10 C to 32 C, Humidity: 20% to 80% RH              |
| Display               | 16 characters x 2 lines                                         |
| Toner cartridge life  | 4,000 or 8,000 pages at ISO 19752 5% coverage                   |
| Memory                | SCX-5330N: 64 MB (max. 320 MB), SCX-5530FN: 96 MB (max. 320 MB) |
| External dimension    | 467,5 x 435,5 x 458 mm (W x D x H)                              |
| Weight                | 17,5 Kg (including consumables)                                 |
| Package weight Paper: | 2,8 Kg, Plastic: 0,7 Kg                                         |
| Duty cycle            | Monthly print: Up to 25,000 pages                               |

## Printer specifications

| Item                  | Description                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| Printing method       | Laser Beam Printing                                                                                       |
| Printing speed        | Up to 28 ppm in A4 (30 ppm in Letter)                                                                     |
| Duplex printing speed | Up to 19 ipm in A4 (21 ipm in Letter)                                                                     |
| First print out time  | 8,5 seconds (from ready)                                                                                  |
| Print resolution      | Up to 1,200 x 1,200 dpi effective output                                                                  |
| Printer language      | PCL 6, PS 3 (SCX-5530FN only)                                                                             |
| OS Compatibility      | Windows 98/Me/NT 4.0/2000/XP/2003, Various Linux OS (USB only)<br>Macintosh 10.3 ~ 10.4 (SCX-5530FN only) |
| Interface             | IEEE 1284 Parallel, High Speed USB 2.0, Ethernet 10/100 Base TX(Embedded type)                            |

## Scanner and copier specifications

| Item                      | Description                                                                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Compatibility             | TWAIN standard / WIA standard                                                                                                                                             |
| Scanning method           | ADF and Flat-bed Color CCD (Charge Coupled Device) module                                                                                                                 |
| Resolution                | Optical: 600 x 1,200 dpi (mono and color), Enhanced: 4,800 x 4,800 dpi                                                                                                    |
| Effective scanning length | Scanner glass: 297 mm, ADF: 356 mm                                                                                                                                        |
| Effective scanning width  | Max 208 mm                                                                                                                                                                |
| Color bit depth           | 24 bit                                                                                                                                                                    |
| Mono bit depth            | 1 bit for Black & White mode, 8 bit for Gray mode                                                                                                                         |
| Copy speed                | Up to 28 ppm in A4 (30 ppm in Letter)                                                                                                                                     |
| Copy resolution           | Scan: up to 600 x 300 (text, text/photo)<br>up to 600 x 600 (photo using platen)<br>up to 600 x 300 (photo using ADF)<br>Print: up to 600 x 600 (text, text/photo, photo) |
| Zoom rate                 | Scanner glass: 25 to 400%,ADF: 25 to 100%                                                                                                                                 |
| Multiple copies           | 1 to 99 pages                                                                                                                                                             |
| Grayscale                 | 256 levels                                                                                                                                                                |

## Facsimile specifications

| Item                    | Description                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|
| Compatibility           | ITU-T Group 3                                                                                                       |
| Applicable line         | Public Switched Telephone Network (PSTN) or behind PABX                                                             |
| Data coding             | MH/MR/MMR/JPEG/ECM (Error Correction Mode)                                                                          |
| Modem speed             | 33,6 Kbps                                                                                                           |
| Transmissionspeed       | Approx. 3 seconds/page                                                                                              |
| Maximum document length | Scanner glass: 297 mm, Automatic document glass: 356 mm                                                             |
| Resolution              | Standard:203 x 98 dpi, Fine: 203 x 196 dpi, Super Fine: 300 x 300 dpi<br>Photo: 203 x 196 dpi, Color: 200 x 200 dpi |
| Memory                  | 8 MB                                                                                                                |
| Halftone                | 256 levels                                                                                                          |
| Auto dialer             | Speed buttons (up to 30 numbers),Speed dialing (up to 240 numbers)                                                  |

### 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 USB, Parallel and Network(LAN) printing. FAX and Scan Copy

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, Scan and Copy mode(duplex mode) was reported.

### 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

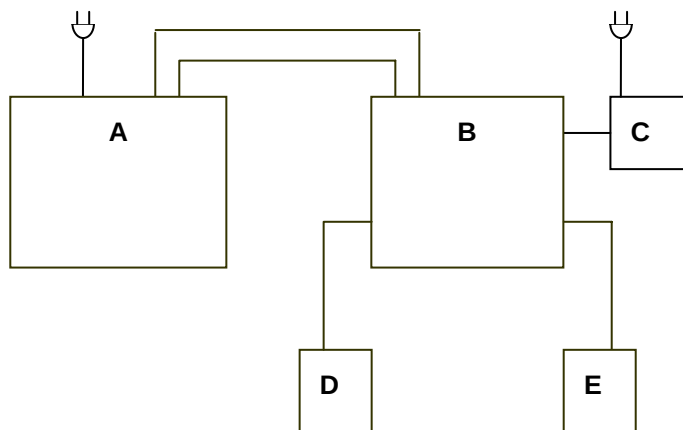
### 1.6.1 Used EUT and peripherals

| Mark | Item        | Model No.  | Serial No.   | Manufacturer      |              |
|------|-------------|------------|--------------|-------------------|--------------|
| A    | Printer     | SCX-5330FN | -            | Samsung           | A3LSCX5530FN |
| B    | Notebook PC | PP03N      | 1D166A02     | DELL              | DoC          |
| C    | AC Adapter  | ADP-90FB   | TH0693501797 | DELTA electronics | Doc          |
| D    | USB mouse   | M-UV69a    | HCA50701217  | Logitech          | Doc          |
| E    | USB FDD     | MSFC-20U   | 20001402     | Sony              | Doc          |

### 1.6.2 Used cable description

| Mark | 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            | -      |

### 1.6.3 Block Diagram



## 1.7 Applied Standards

| Product or Generic Standards | Basic Standards   |
|------------------------------|-------------------|
| FCC Part15 B                 | ANSI C63.4 : 2003 |

### 1.7.1 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                 | $\pm 3.3$ dB            |
| Radiated emission (Bi-Log Antenna) | $\pm 4.3$ dB            |

## 2. Summary of Test Results

### Result : PASS

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

| Section of the Product Standard |                    | Applied Standard  | Result   |
|---------------------------------|--------------------|-------------------|----------|
| Electromagnetic Emission Test   |                    |                   |          |
| 3.1                             | Conducted Emission | ANSI C63.4 : 2003 | Complied |
| 3.2                             | Radiated Emission  | ANSI C63.4 : 2003 | Complied |

### 3.1 Conducted Emission

| Test Information  |                                                         |
|-------------------|---------------------------------------------------------|
| Test Engineer     | Kyung Dong, Kim                                         |
| Test Date         | April. 06, 2006                                         |
| Climate Condition | Ambient temperature : 20.9 °C, Relative humidity : 30 % |
|                   | Atmospheric pressure : 102.6 kPa                        |
| Test Place        | Shielded room #1                                        |

#### Test Equipments

| Equipment         | Model Name | Manufacturer | Serial No. | Calibration |          |
|-------------------|------------|--------------|------------|-------------|----------|
|                   |            |              |            | Next Date   | Interval |
| EMI TEST RECEIVER | ESCI       | R&S          | 100136     | 2006-04-17  | 12       |
| LISN              | ENV216     | R&S          | 100116     | 2006-09-08  | 12       |
| LISN              | ENV216     | R&S          | 100117     | 2006-08-18  | 12       |
| Test Software     | EMC 32     | R&S          | Ver 4.40.0 | N/A         | N/A      |

| Measurement Results | <p><b>Passed</b></p> <p>The Measured emissions of the EUT have found to be below the specified limits.</p> |
|---------------------|------------------------------------------------------------------------------------------------------------|
|---------------------|------------------------------------------------------------------------------------------------------------|

### Test Graph & Data

#### Final Measurement Detector 1

| Frequency<br>(MHz) | QuasiPeak<br>(dB $\mu$ V) | Line | Corr.<br>(dB) | Margin<br>(dB) | Limit<br>(dB $\mu$ V) |
|--------------------|---------------------------|------|---------------|----------------|-----------------------|
| 0.151000           | 47.4                      | L1   | 9.6           | 18.5           | 65.9                  |
| 0.167500           | 43.2                      | L1   | 9.6           | 21.9           | 65.1                  |
| 0.183500           | 42.0                      | L1   | 9.6           | 22.3           | 64.3                  |
| 0.216500           | 39.2                      | N    | 9.6           | 23.8           | 63.0                  |
| 0.251500           | 37.9                      | N    | 9.6           | 23.8           | 61.7                  |
| 0.328500           | 35.7                      | N    | 9.6           | 23.8           | 59.5                  |
| 0.377500           | 38.4                      | N    | 9.6           | 20.0           | 58.3                  |
| 0.399500           | 39.3                      | N    | 9.6           | 18.5           | 57.9                  |
| 0.488500           | 35.3                      | N    | 9.6           | 20.9           | 56.2                  |
| 7.181500           | 33.1                      | L1   | 9.6           | 26.9           | 60.0                  |

#### Final Measurement Detector 2

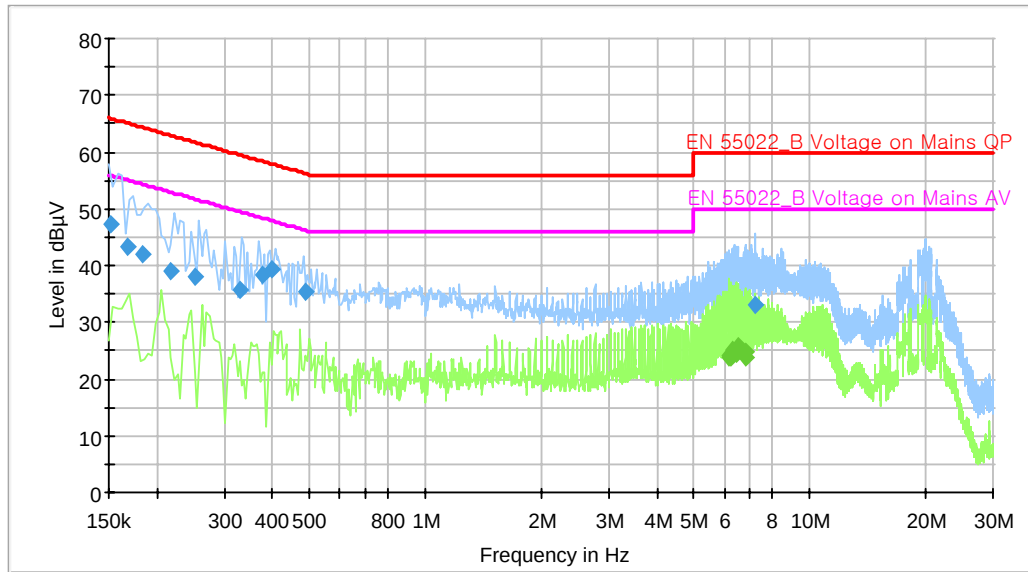
| Frequency<br>(MHz) | Average<br>(dB $\mu$ V) | Line | Corr.<br>(dB) | Margin<br>(dB) | Limit<br>(dB $\mu$ V) |
|--------------------|-------------------------|------|---------------|----------------|-----------------------|
| 6.150500           | 24.0                    | L1   | 9.6           | 26.0           | 50.0                  |
| 6.158500           | 23.9                    | L1   | 9.6           | 26.1           | 50.0                  |
| 6.219500           | 23.9                    | L1   | 9.6           | 26.1           | 50.0                  |
| 6.227500           | 24.2                    | L1   | 9.6           | 25.8           | 50.0                  |
| 6.290500           | 25.0                    | N    | 9.6           | 25.0           | 50.0                  |
| 6.357500           | 24.8                    | N    | 9.6           | 25.2           | 50.0                  |
| 6.427500           | 24.4                    | N    | 9.6           | 25.6           | 50.0                  |
| 6.485500           | 25.7                    | N    | 9.6           | 24.3           | 50.0                  |
| 6.782500           | 23.9                    | N    | 9.6           | 26.1           | 50.0                  |
| 6.836500           | 25.0                    | N    | 9.6           | 25.0           | 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



### 3.2 Radiated Emission

| Test Information  |                                                         |
|-------------------|---------------------------------------------------------|
| Test Engineer     | Kyung Dong, Kim                                         |
| Test Date         | April. 02, 2006                                         |
| Climate Condition | Ambient temperature : 25.5 °C, Relative humidity : 33 % |
|                   | Atmospheric pressure : 102.5 kPa                        |
| Test Place        | 10m Semi Anechoic Chamber                               |

#### Test Equipments

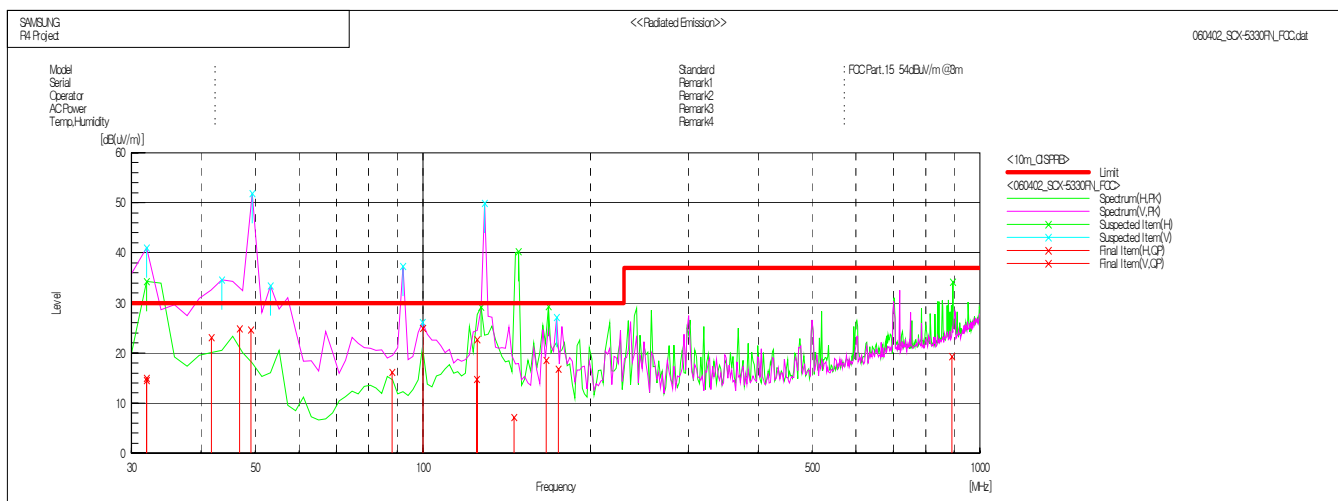
| Equipment         | Model Name | Manufacturer | Serial No. | Calibration |          |
|-------------------|------------|--------------|------------|-------------|----------|
|                   |            |              |            | Next Date   | Interval |
| EMI Test Receiver | ESI-26     | R&S          | 100287     | 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       | 251674     | 2006-03-08  | 12       |
| Amplifier         | 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       |

|                            |                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------|
| <b>Measurement Results</b> | <b>Passed</b><br>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:

### 1. Up to 1 GHz



All other emission are non-significant.

### Measurement detector function and bandwidth

- Detector function : CISPR quasi-peak - Bandwidth : 120kHz

\* Receiving Antenna Mode : Horizontal, Vertical

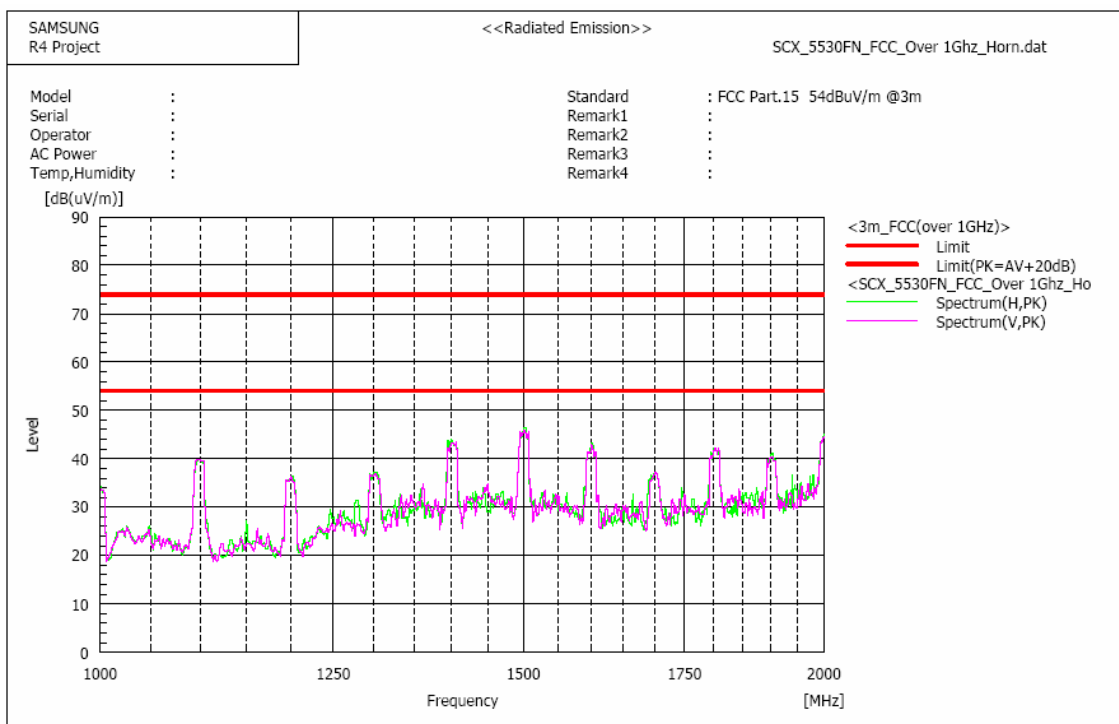
\* Test distance : 10m (Semi-Anechoic Chamber)

\* Result = Meter Reading + Total Loss(Antenna factor + Cable loss - Amp. Gain)

\* Margin = Limit – Result

## 2. Over 1 GHz

- \* Measurement detector function and bandwidth
  - Detector function : peak , - Bandwidth : 1MHz
- \* 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



**At all points(from 1GHz to 2 GHz)**

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

The Peak lever is lower than not only the peak limits but also the average limits.

## 4. Appendix

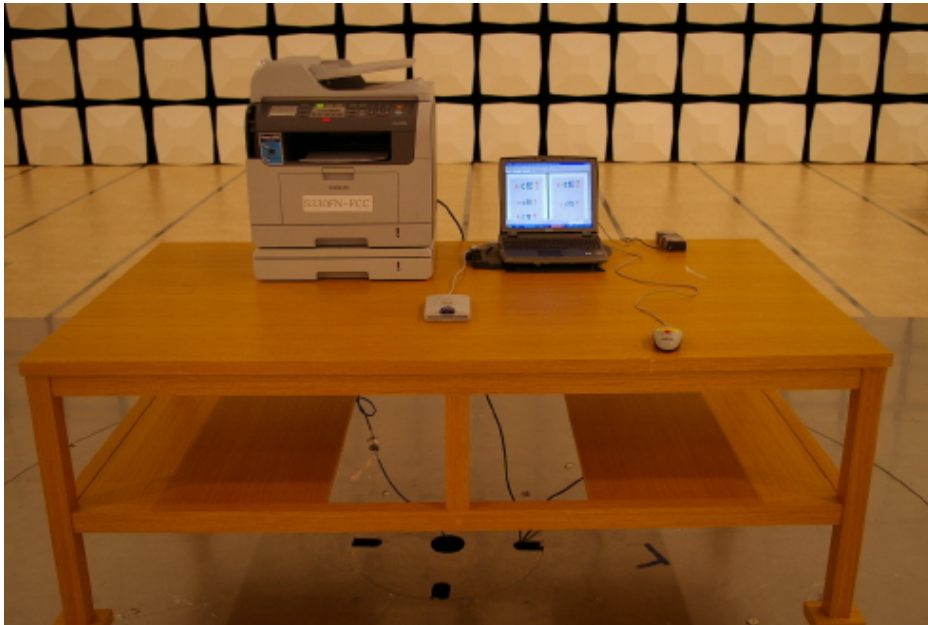
### 4.1 Test Photography



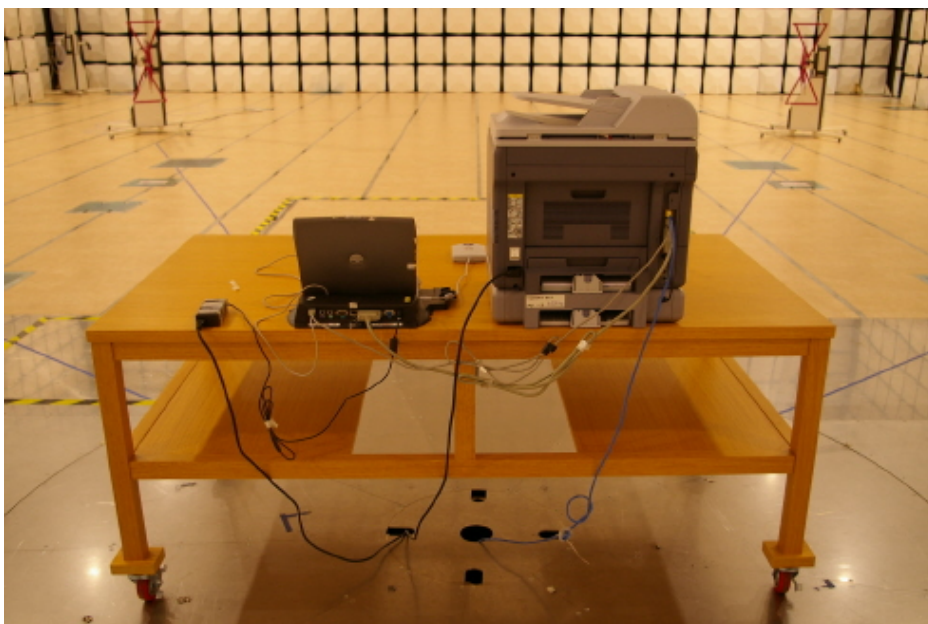
Picture 1. Conducted Emission (Front)



Picture 2. Conducted Emission (Rear)



Picture 3. Radiated Emission (Front)



Picture 4. Radiated Emission (Rear)

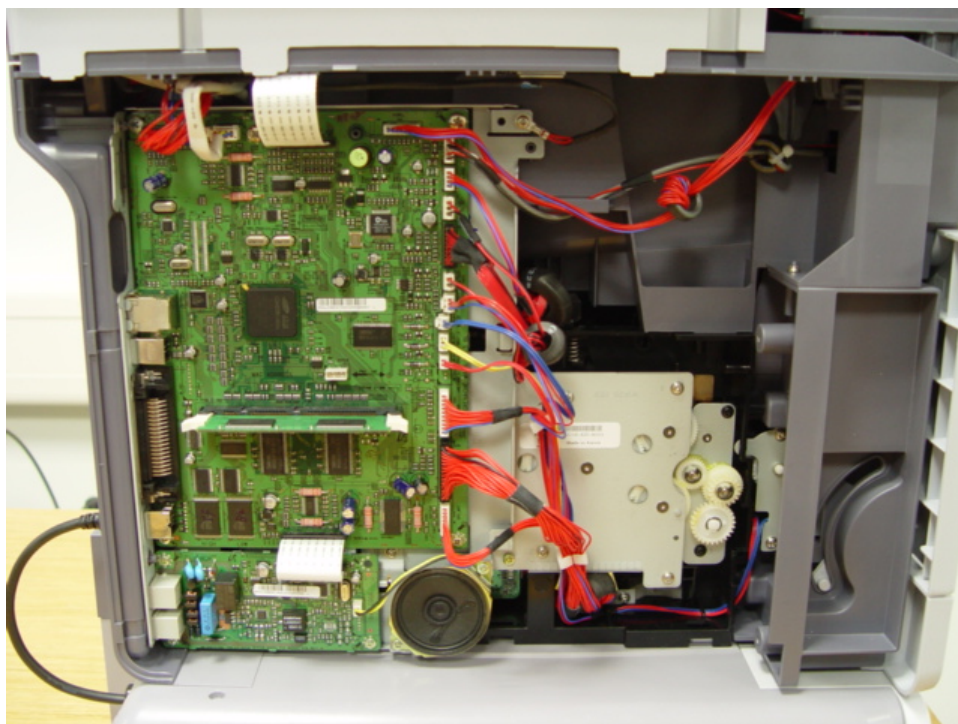
## 4.2 EUT Photography



Picture 5. EUT (Front)



Picture 6. EUT (Rear)



Picture 7. EUT (Inside)

|                                                                                                                                    |                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>SAMSUNG</b><br/><b>USCC Jack Type: RJ11C</b><br/>Samsung Electronics Co., Ltd.<br/>SUNON, Korea, 443-742<br/>Phone: M259</p> | <p><b>Model:</b> SCX-5530FM<br/><b>Voltage:</b> AC 110-127V<br/><b>Hertz:</b> 50/60Hz<br/><b>Amps:</b> 0.4A<br/><b>Ringer Equivalence:</b> 0.5B<br/><b>Manufactured:</b></p> | <p>FCC ID: A315SCX-5530FM (Printer)<br/>FCC ID: A315SWL-5300M (WLAN)<br/>This device complies with part 15 of the FCC Rules.<br/>Operation is subject to the following two conditions:<br/>1) This device may not cause harmful interference, and<br/>2) This device must accept any interference received,<br/>including interference that may cause undesired operation.<br/>Complies with Part 68, FCC Rules.<br/>RCC Certification No.: US:<br/>This product complies with 21 CFR Chapter I, subchapter J.<br/>This Class B digital apparatus meets all requirements of the<br/>Canadian Interference-Causing Equipment Regulations.<br/>Cet appareil numérique de la classe B respecte toutes les<br/>exigences du Règlement sur le matériel brouilleur du Canada.<br/>Canadian Certification Number (RSS-310): 649E-SWL5300M (WLAN)<br/>This Class B digital apparatus complies with<br/>Canadian ICES-003.<br/>Cet appareil numérique de la classe B est<br/>conforme à la norme NMB-003 du Canada.<br/><b>MADE IN KOREA FY2-00</b></p> |
| <p><b>IC: 649E-EB30MFF</b><br/><b>Serial No.</b></p>                                                                               | <p><b>LISTED</b><br/><b>5177</b><br/><b>E143091</b><br/><b>I.T.E.</b></p>                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Picture 8. EUT (Label)