

EMI TEST REPORT

According to FCC Part 15 Subpart B/Class B

Product : Multi Function Printer

Model No. : Msys 755P

FCC ID : A3LSF755P

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All tests necessary to show compliance to the requirements were and these results met the specifications requirement.
4. That data in this report are traceable to National or International Standards.

Date of test : February 6, 2004

Issued Date : February 13, 2004

Tested by:

Sang Kyu, Seo / Test Engineer of EMC Lab.

Reviewed by:

No Cheon, PARK / Manager of EMC Lab.

Authorized by:

Kyu Baek, CHUNG / Chief of EMC Lab.

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The test reported herein have been performed in accordance with its terms of registration.



NVLAP Code: 200623-

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Distribution

This test report has been made available as follows:

CS Management Center, EMC Laboratory	1 original
Printer Division	1 copy

1. General Information

Applicant : Samsung Electronics Co., Ltd.

Full Address : 416 Maetan 3 Dong, YeoungTon-Ku,
Suwon City, Kyungki Do, Korea, 442-742

Kind of Product : Multi function Printer

FCC ID : A3LSF755P

Project Name : -

Model & Variant Names : Basic Model : Msys 755P (Brand : Samsung)
Variant Model : Msys 750 (Brand : Samsung)
Variant Model : 3820/F270/LF215m/2210L (Brand : Ricoh)

Remark) Variant Model Msys 750 is identical to the Basic Model Msys 755P except for
the USB printer port. (Speed : Letter Size 17 PPM, A4 Size 16PPM)

Test Report Produced by : Sang Kyu, Seo / Test Engineer of EMC Lab.

1.1 Product Description

1) Justification

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

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 was reported.

Further details of cabling and configuration are shown in the test system configuration.

2) Operating Frequency :

Video clock : 14.7456 MHz

CPU clock : 60 MHz

SDRAM Clock : 60 MHz

Main Clock : 12 MHz

CIP4_Main : 20 MHz

UART clock : 12 MHz

CIS Clock(copy) : 5MHz

Modem Clock : 28.224MHz

3) Description of Testing operating mode

Operating Mode	Operating section of EUT
USB Printing	Continuously H pattern printing by Computer
ADF Copying	Continuously H pattern ADF Copying

EUT was tested all operating mode as above. Finally EUT was tested USB Printing mode as maximum emission.

4) Tested Resolution : N/A

Tested Video mode	Resolutions	Refresh rates	Colors

5) Manufacturer : Samsung Electronics Co., Ltd.

259, Gongdan-Dong, Gumi-City, Kyung-Buk, 730-030, Korea

Shandong Samsung Telecommunications Co. Ltd.

Sanxing Road, Weihai Hi-Tech. IDZ Shandong Province, 264209
China

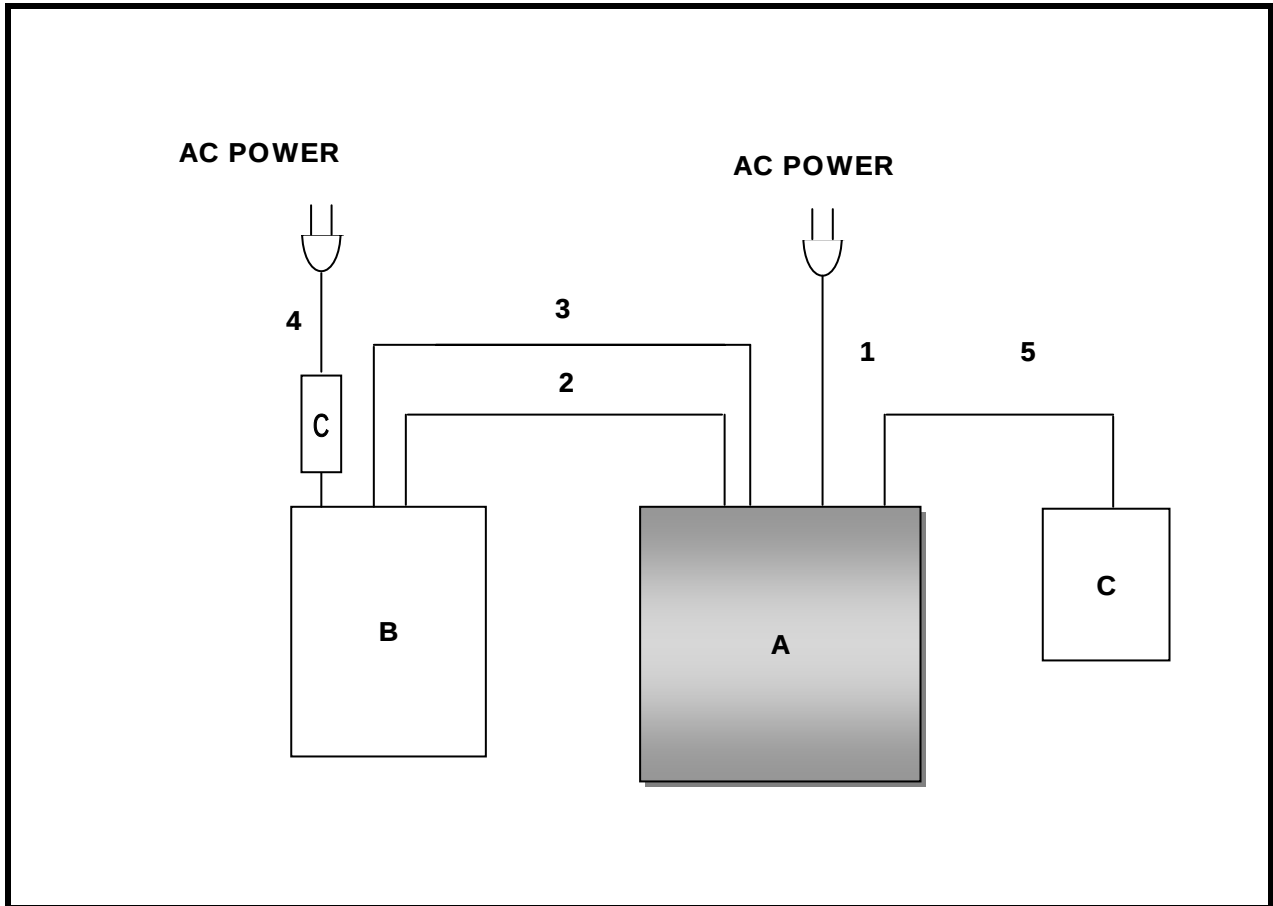
1.2 Configuration of EUT and peripherals

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1.3 Used Cable Description

No.	Item	Length[m]	Shielded (Y/N)	Remark
1	AC Power Cable	1.7	N	For EUT
2	USB Cable	1.5	Y	-
3	Parallel Cable	1.5	Y	-
4	AC Power Cable	1.5	N	For PC
5	Tel Line	1.5	N	For Phone

1.4 System Block Diagram of Test Configuration



1.5 Test Facility

All test described in this report were performed by :
SAMSUNG ELECTRONICS CO., LTD.
EMC TESTING LABORATORY
416 Maetan 3-Dong, Youngtong Ku, Suwon City, Kyungki Do, Korea, 443-742
Semi Anechoic Chamber #2(Registration Number:873282) and Shielded Room.

This test facility has been filed in FCC under the criteria in ANSI C63.4-1995.

2. System Test Configuration

2.1 Configuration of Radiated and Conducted Interference Measurement

* Cabling was taken into consideration and test data was taken under worse case conditions.

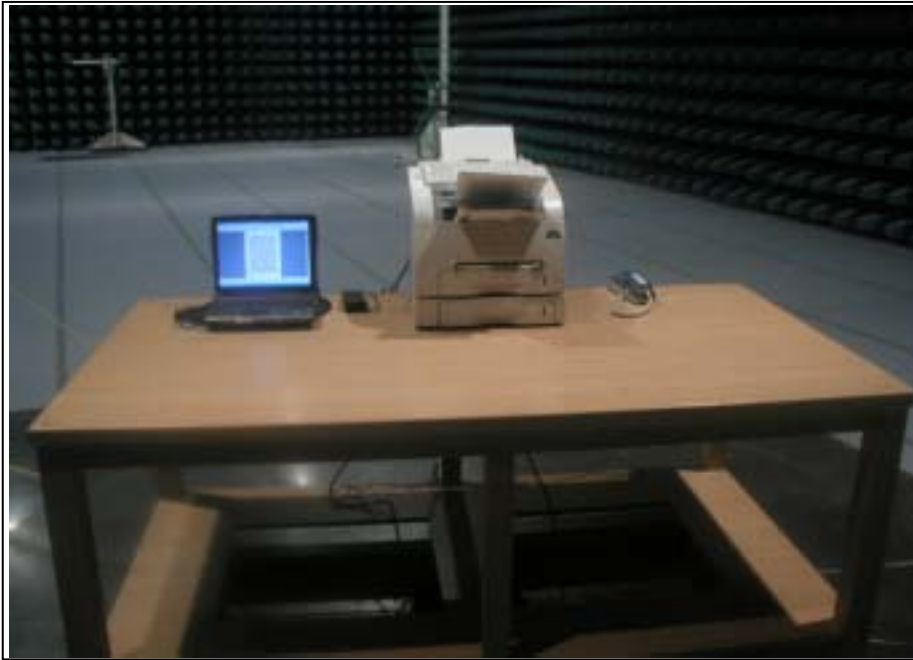
1)Conduction(Front View)



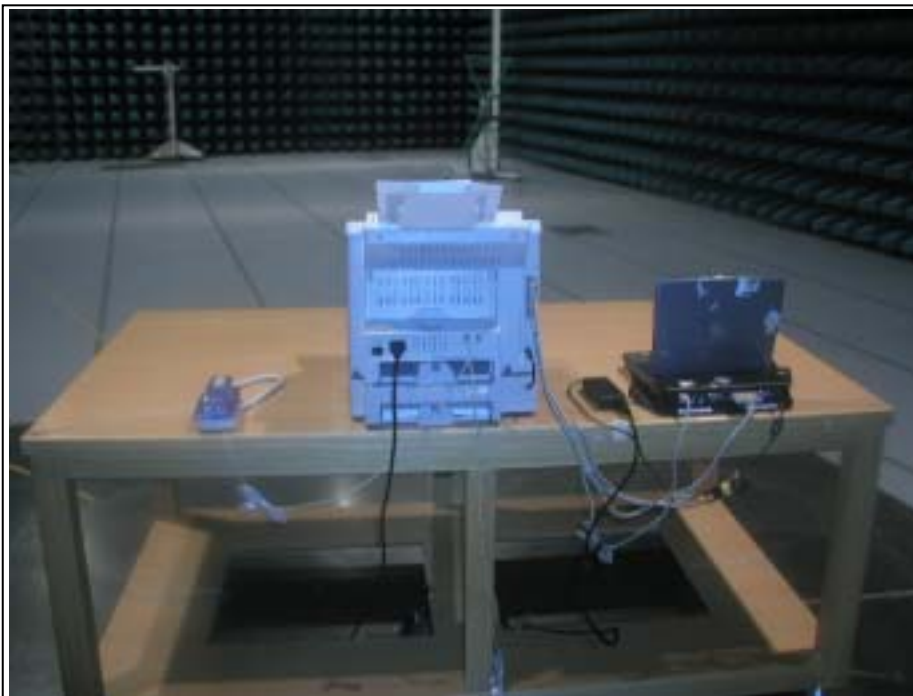
2)Conduction(Rear View)



3) Radiation(Front View)



4) Radiation(Rear View)



2.2 Operation Environment

	Conduction	Radiation
Temperature [C] :	24	25
Humidity [%]	33	35
Power supply	: AC110V/60Hz	AC110V/60Hz

2.3 Test Procedure

2.3.1 Conducted Emissions

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting ground plane.

The rear of EUT, including peripherals was aligned and flush with rear of tabletop. All other surfaces of tabletop was at least 80cm from any other grounded conducting surface. I/O cables and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

Each EUT current-carrying power lead, except the ground(safety) lead, were individually connected through a LISN to the input power source.

All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.

The EUT was switched on and allowed to warm up to its normal operating condition.

A quick scan, from 150kHz to 30MHz, was made on the L1 & L2 line by LISN.

High peaks, relative to the limit line, over the frequency range were then selected.

The EMI TEST RECEIVER was then tuned to the selected frequencies.

CISPR quasi-peak measurements with a receiver bandwidth setting of 10kHz, were taken.

2.3.2 Radiated Emissions

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

The rear of EUT, including peripherals was aligned and flush with rear of tabletop. I/O cables that were connected to the peripherals were bundle in center.

They were folded back and forth forming a bundle 30cm to 40cm long and were hanged 40cm height to the ground plane.

The system configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 to 1000 MHz using biconiLog antenna.

Each emission was maximized by: varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and/or support equipment; powering the monitor from the floor mounted outlet box and the computer aux AC outlet if applicable, and changing the polarity of the antenna; whichever determined the worst-case emission.

3. Conducted Emission Test Data

O Test Mode : USB Printing

MEASUREMENT RESULT: "Msys 755P high_fin QP"

2/6/2004 4:40PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.170000	43.40	0.6	65	21.6	N	GND
2.030000	35.40	0.5	56	20.6	N	GND
2.090000	35.90	0.5	56	20.1	N	GND
3.320000	33.40	0.6	56	22.6	N	GND
4.480000	31.00	0.8	56	25.0	N	GND
4.700000	30.50	0.8	56	25.5	N	GND
5.060000	31.20	0.8	60	28.8	N	GND
5.980000	31.10	0.9	60	28.9	N	GND
6.260000	28.10	0.9	60	31.9	N	GND
6.350000	29.60	0.9	60	30.4	N	GND
7.160000	29.30	0.9	60	30.7	N	GND

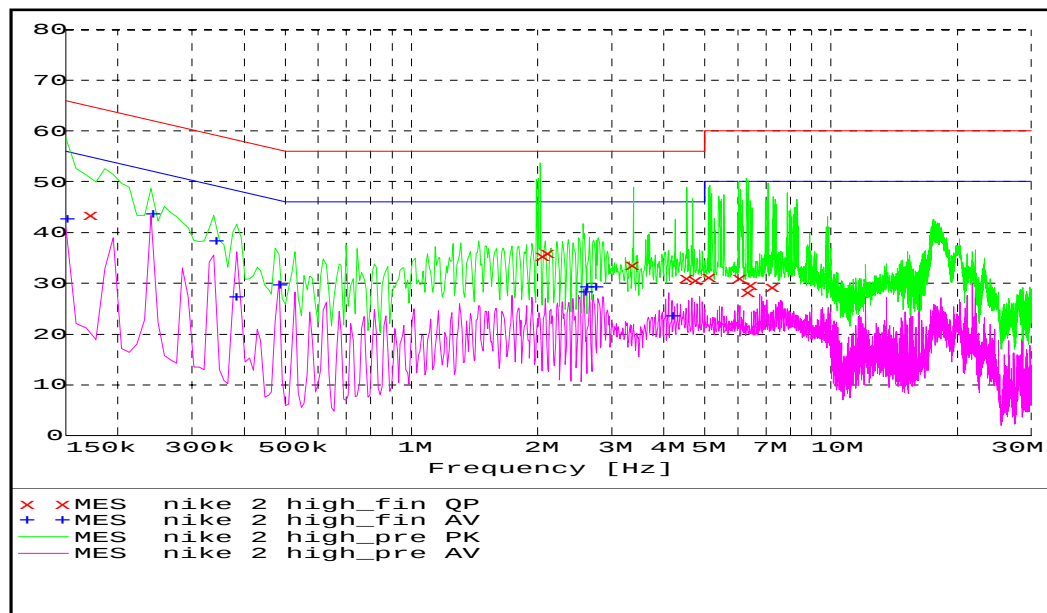
MEASUREMENT RESULT: "Msys 755P high_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150000	42.60	0.6	56	13.4	N	GND
0.240000	43.70	0.5	52	8.4	N	GND
0.340000	38.20	0.5	49	11.0	N	GND
0.380000	27.20	0.5	48	21.1	N	GND
0.480000	29.60	0.6	46	16.8	N	GND
2.580000	28.30	0.5	46	17.7	N	GND
2.590000	29.20	0.5	46	16.8	N	GND
2.730000	29.20	0.6	46	16.8	N	GND
4.160000	23.50	0.8	46	22.5	N	GND

3-1. Conducted Emission Test Graph

Level[dBuV]



4. Radiated Emission Test Data

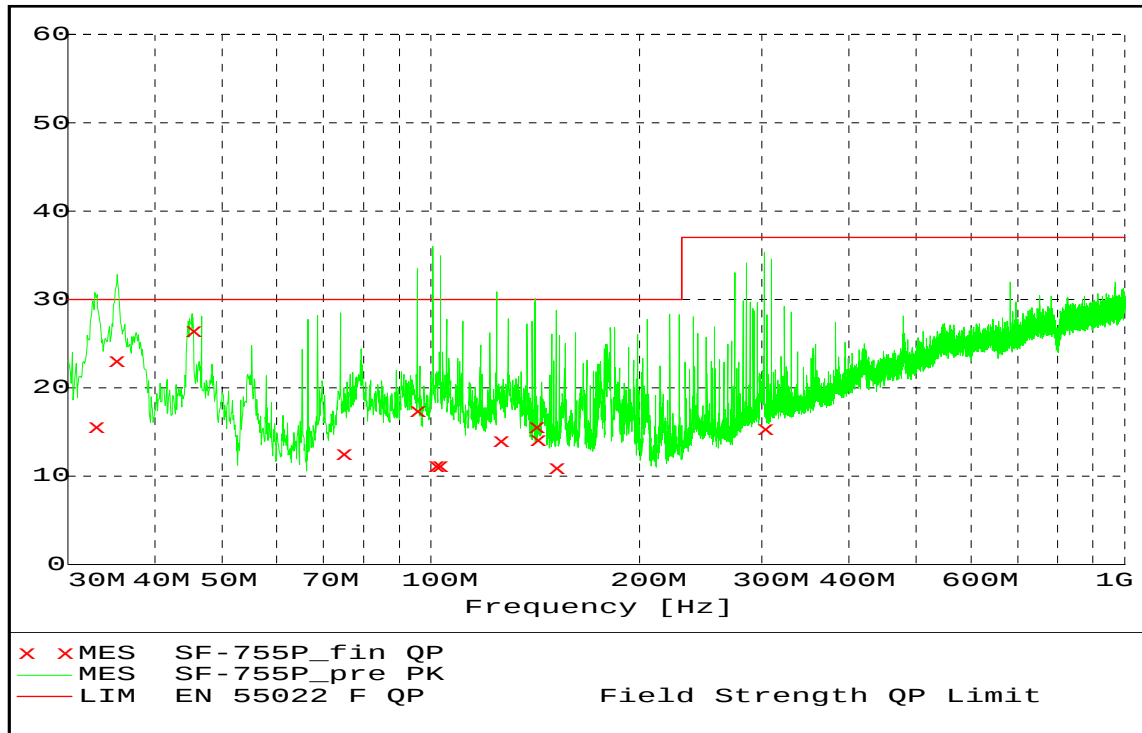
MEASUREMENT RESULT: "Msys 755P_fin QP"

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Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
32.720000	15.50	17.5	30.0	14.5	135.0	240.00	VERTICAL
35.040000	23.00	16.3	30.0	7.0	127.0	280.00	VERTICAL
45.200000	26.30	11.0	30.0	3.7	150.0	329.00	VERTICAL
74.480000	12.40	7.2	30.0	17.6	306.0	301.00	VERTICAL
95.120000	17.30	11.2	30.0	12.7	150.0	6.00	VERTICAL
101.200000	11.10	12.2	30.0	18.9	400.0	0.00	VERTICAL
102.480000	11.10	12.4	30.0	18.9	153.0	53.00	VERTICAL
125.440000	13.90	13.4	30.0	16.1	311.0	195.00	VERTICAL
141.120000	15.50	12.2	30.0	14.5	150.0	203.00	VERTICAL
141.840000	14.00	12.1	30.0	16.0	176.0	11.00	VERTICAL
150.960000	10.90	12.0	30.0	19.1	400.0	324.00	HORIZONTAL
301.280000	15.30	16.1	37.0	21.7	113.0	19.00	VERTICAL

4-2. Radiated Emission Test Graph

Level[dBuV/m]



5. FCC Label Configuration and Location

5.1 Label Configuration



5.2 Location of Label



6. Test Equipment Used

Equipment	Model No.	Serial No.	Makers	Calibration Last calibration and Interval
Field strength meter	ESS	844861/005	R & S	05/01/01, 12Months
	Firmware versions : Main 1.10, OTP 02.01, GRA 02.03			
Field strength meter	ESI26	100019	R&S	04/08/22, 11Months
L.I.S.N	3825/2NM	2251	EMCO	04/02/07, 12Months
L.I.S.N	ESH3-Z5	831887/0004	R & S	04/10/01, 12Months
Bi-Log Antenna	CBL6112B	2805	Schaffner	04/04/02, 12Months