

EMI TEST REPORT

FCC Part 15 Subpart B, Class B

Product : LASER PRINTER
Model No. ML-7300N, ML-7300

JOB NO. : 00ISM194

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3. 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.

Date of test Feb 6 and 7, 2001

Issued Date Feb 7, 2001

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1. General Information

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REGULATION(S) : FCC Part 15 Subpart B, Class B

MODEL NUMBER : ML-7300N, ML-7300

SERIAL NUMBER :-

KIND OF PRODUCT : LASER PRINTER

TESTED DATE : Feb 6 and 7, 2001

TEST SITE : 3meter semi-anechoic chamber

TEST SITE ADDRESS : San 14, Nongseo-Ri, Kihung-Eup,
Yongin-City, Kyungki-Do, Korea, 449-900

1.1 Product Description

The Samsung laser printer, ML-7300N or ML-7300(for Marketing Purpose) is supporting powerful speed(21ppm) and high resolution(600dpi) and has clock speeds of 2.983307, 6.94407, 7.3728, 12, 25, 30, 50 and 78.45496MHz. It can be operated in AC100~120V.

See attached ML-7300N User's Guide for more information.

1.2 Tested System Details

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system are:

Device Type	Manufacturer	Model Number	Serial No.	FCC ID / DoC
(1) Samsung Electronics (EUT)	Samsung	Laser Printer	N/A	A3LML7300N
(2) PC	HP	Pavilion 7850	MX04704167	FCC DoC
(3) Monitor	Samsung	6547-OBN	55-00006	FCC DoC
(4) Keyboard	HP	5183-9980	J94003612	FCC DoC
(5) Mouse	Sejin	SMB-400	4FEF027845	GJJS965CO
(6) PC	Apple	PowerBook 5300	SG6050FB5KJ	BCGM2785
(7) Smart Card Reader	DATAFAB	MDSM-B-USB	0223420865	FCC DoC
(8) External Modem	USRobotics	SPORTSTER	33083962	CJE-0149-217

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in FCC/ANSI C63.4(1992).

Radiated testing was performed at a distance of 3 meters from the antenna to EUT.

1.4 Test Facility

All test described in this report were performed by :

Open area test site : 781-14, Chung-Ri, Dongtan-Myun, Hwasung-Kun, Kyungki-Do, Korea

Conducted measurement facility and 3meter Semi-anechoic chamber :

San 14, Nongseo-Ri, Kihung-Eup, Yongin-City, Kyungki-Do, Korea, 449-900

2. System Test Configuration

2.1 Operation Environment

	Conduction	Radiation
Temperature [] :	25	25
Humidity [%]	52	54
Power supply	AC115V/60Hz	AC115V/60Hz

2.2 Justification

The system was configured in typical fashion(as a customer would normally use it) for testing.

2.3 EUT Exercise Soft ware

The EUT exercise program used during radiated and conducted testing was printer setup and commonly used NOTEPAD software.

2.4 Test Procedure

2.4.1 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.

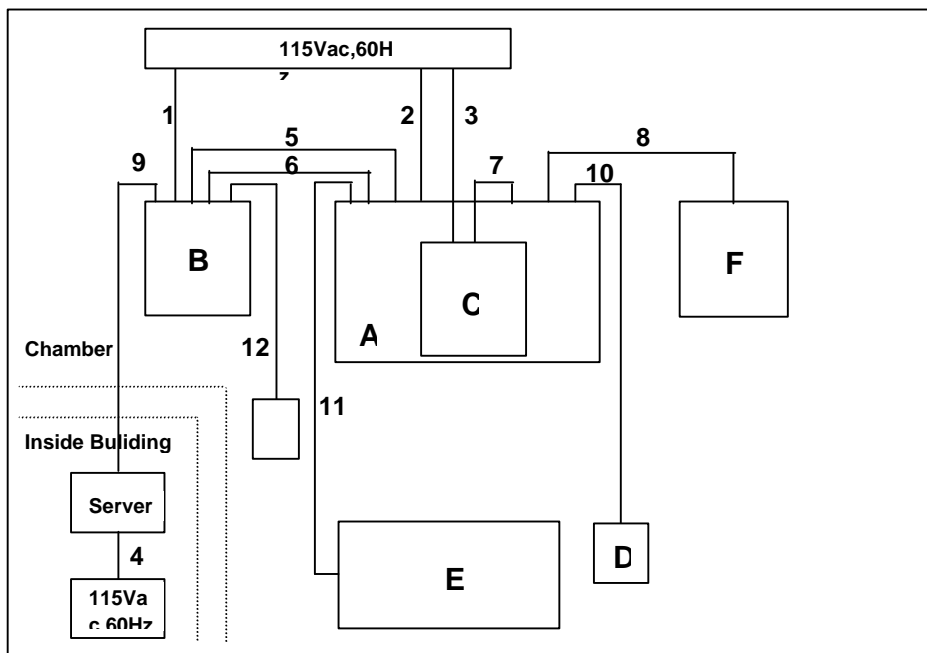
2.4.2 Radiated Emissions

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

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

2.5 Test System configuration

2.5.1 System Block Diagram of Test Configuration



* This system block diagram is originated on the basis of worst case emissions.

2.5.2 Configuration of EUT and peripherals

Mark	Item	Model No.	Serial No.	Manufacturer	Remark
A	Personal Computer	Pavilion 7850	MX04704167	HP	EUT
B	Laser Printer	ML-7300N	N/A	Samsung	
C	Monitor	6547-OBN	55-00006	IBM	
D	Mouse	SMB-400	4FEF027845	Sejin	
E	Keyboard	5183-9980	J94003612	HP	
F	Smart Card Reader	MDSM-B-USB	223420865	DATAFAB	

2.5.3 Used Cable Description

No.	Item	Length[m]	Shielded(Y/N)	Remark
1	AC Power cable	1.8	N	
2	AC Power cable	1.8	N	
3	AC Power cable	1.8	N	
4	AC Power cable	1.8	N	
5	Parallel cable	2.0	Y	
6	Serial cable	1.8	Y	
7	Video cable	1.6	Y	
8	USB cable	1.5	Y	
9	Ethernet cable	25	Y	
10	Mouse cable	1.8	Y	
11	Keyboard cable	1.6	Y	
12	IrDA cable	1.2	Y	

3. Conducted and Radiated Measurement Photos

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

3.1 Conducted Measurement Photos

Conduction(Front View)



Conduction(Rear View)



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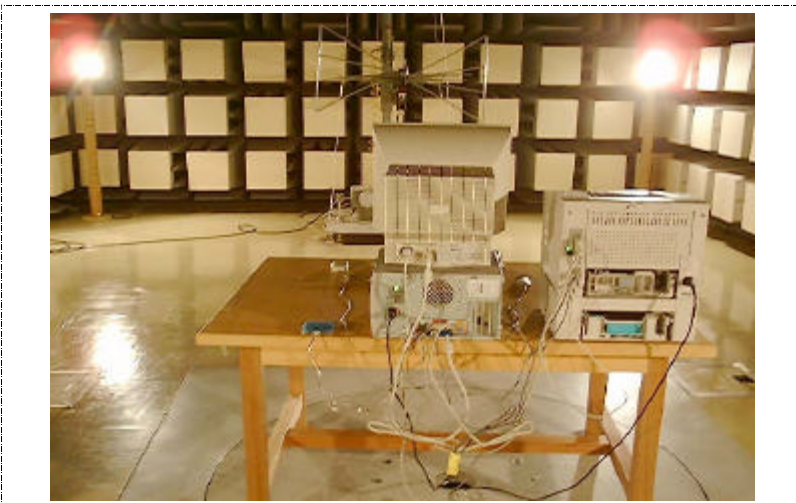
* Cabling was taken into consideration and test data was taken under worst case conditions.

3.2 Radiated Measurement Photos

Radiation(Front View)



Radiation(Rear View)



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4. Measurement Uncertainty

All data in report are to be traceability to the national or international standards.

4.1 Conducted Emission Test

The measurement uncertainty(with a 95% confidence level)for this test was $\pm 2.2\text{dB}$.

The data listed in this test report may exceed the test limit because it does not have enough margin(more than 2.0dB).

The data listed in this test report has enough margin, more than 2.0dB.

4.2 Radiated Emission Test

The measurement uncertainty(with a 95% confidence level)for this test was $\pm 3.4\text{dB}$.

The data listed in this test report may exceed the test limit because it does not have enough margin(more than 2.0dB).

The data listed in this test report has enough margin, more than 3.4dB.

5. Conducted Emission Test Data

The initial step in collecting conducted data was to perform a quasi-peak scan over the measurement range using a spectrum analyzer. All modes of operation(Parallel, Network, Local talk, Serial and IrDA printing) were investigated and the worst-case emission(Network printing) was reported. All other emission are non-significant.

The minimum margin to the limit is as follows :

Frequency : 5.23 [MHz]
Meter Reading : 36.78 [dBuV]
LISN Loss : 0.26 [dB]
Cable loss : 0.7 [dB]
Corrected Readings : 37.74 [dBuV/m]
Margin : -10.26 [dB]

Test Data Sheet

Tested Frequency [MHz]	Meter Reading [A] [dBuV]	LISN Pol. [L1/L2]	Factor[B]		Corrected Reading [A+B] [dBuV/m]	Limits [dBuV/m]	Margin [dB]
			LISN Loss [dB]	Cable Loss [dB]			
0.90	29.5	L2	0.14	0.40	30.04	48.0	-17.96
4.20	33.09	L2	0.23	0.40	33.72	48.0	-14.28
4.42	33.02	L2	0.24	0.54	33.80	48.0	-14.20
4.62	35.68	L1	0.24	0.56	36.48	48.0	-11.52
4.98	33.97	L1	0.25	0.69	34.91	48.0	-13.09
5.23	36.78	L1	0.26	0.70	37.74	48.0	-10.26
7.56	30.05	L1	0.31	0.60	30.96	48.0	-17.04

- * All readings are quasi-peak mode.
- * The selected bandwidth in emission testing is 9kHz.
- * Results = Meter Reading + LISN Insertion loss + Cable loss
- * Margin = Corrected Reading - Limits
- * L1 = Hot, L2 = Neutral

6. Radiated Emission Test Data

The initial step in collecting radiated data was to perform a quasi-peak scan over the measurement range using a spectrum analyzer.

All modes of operation(Parallel, Network, Local talk, Serial and IrDA printing) were investigated and the worst-case emission(Network printing) was reported.

All other emission are non-significant.

The minimum margin to the limit is as follows :

Frequency **132.0** [MHz]
Meter Reading **29.8** [dBuV]
Antenna Factor **7.1** [dB]
Cable loss **0.7** [dB]
Corrected Reading **37.6** [dBuV/m]
Margin **-5.9** [dB]

Test Data Sheet

Frequency Range	Tested Frequency	Ant. Pol.	Meter Reading [A] [dBuV]	Factor[B]		Antenna Height [Cm]	Turn table Degree [Deg]	Corrected Reading [A+B] [dBuV/m]	Margin [dB]	Limits [3m] [dBuV/m]
				Ant. Factor	Cable Loss					
				[dB]						
[MHz]	[MHz]									
30 - 88	53.5	H	19.7	7.9	0.2	150	120	27.8	-12.3	40.0
	87.0	H	22.3	7.0	0.5	130	110	29.8	-10.2	
88 - 216	93.0	V	26.7	7.3	0.5	165	220	34.5	-9.0	43.5
	99.0	V	23.8	7.8	0.5	150	200	32.1	-11.4	
	132.0	H	29.8	7.1	0.7	240	250	37.6	-5.9	
	150.0	H	26.0	8.5	1.0	170	120	35.5	-8.0	
216 - 960	237.0	V	24.2	11.6	1.5	140	280	37.3	-8.7	46.0
	276.0	V	22.3	12.7	1.5	200	240	36.5	-9.5	
	350.0	H	22.1	15.1	1.0	180	120	38.2	-7.8	
	450.0	H	18.9	16.8	2.2	160	110	37.9	-8.1	
960 -										54.0

* "<" Means equal or less than * All readings are quasi-peak mode.

* The selected bandwidth in emission testing is 100kHz.

* Corrected Reading = Meter Reading + Antenna Factor + Cable loss

* Margin = Corrected Reading - Limits

* H = Horizontal Polarization/Antenna, V = Vertical Polarization/Antenna

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8. Test Equipment Used

Equipment	Model No.	Serial No.	Makers	Last calibration and Interval
Spectrum analyzer	8568B	2928A04826	H.P	00/06/28, 12Months
		Firmware versions : REV 7.4.87		
Quasi-peak adapter	85650A	2811A01342	H.P	00/06/28, 12Months
RF Preselector	85685A	2837A00835	H.P	00/06/28, 12Months
Field strength meter	ESVS30	842807/007	R & S	00/06/02, 12Months
		F/W ver. : Main 3.10, OTP 02.01, GRA 02.03		
L.I.S.N	ESH2-Z5	831886/006	R & S	00/11/30, 12Months
	3825/2	1408	EMCO	00/11/11, 12Months
Biconilog Antenna	3142	9712-1236	EMCO	00/12/23, 12Months
Bi-conical Antenna	3104C	9001-4185	EMCO	00/06/01, 12Months
Log-periodic Antenna	3146	9603-4418	EMCO	00/06/01, 12Months
EMI Measurement Software	HP	Firmware versions : Rev. A.00.00		