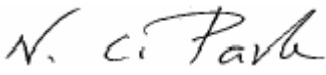
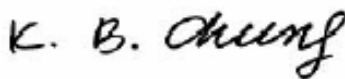


EMC Test Report

According to FCC Part 15 Subpart B

Project No.	LBE041801
Equipment under Test	
Applicant	Samsung Electronics Co. Ltd 416 Maetan-3 Dong, Yeoung tong-Ku, Suwon City, Gyeonggi-Do, Korea, 442-742
FCC ID	A3LSECSMPB
Product Name	USB Flash Drive
Model Name	SECSMPB_2G
Manufacturer	Samsung Electronics Co. Ltd.
Date of Test	September 16, 2004 ~ September 21, 2004
Issued Date	October 2, 2004

	Name/Position	Signature
Tested by	Min Gon, Kim Test Engineer	
Reviewed by	No Cheon, Park Manager of EMC Lab.	
Authorized by	Kyu Baek, Chung 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

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 Test System Details
- 1.5 Equipment Modifications
- 1.6 Test Procedure
- 1.7 Test Configuration
- 1.8 Applied Standard
- 1.9 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	SECSMPB_2G
Applicant Address	416 Maetan3- Dong, Yeoung tong-Ku, Suwon-City, Gyeonggi-Do, Korea, 443-742
Contact Person	Min Gon, Kim
Kind of product	USB Flash Drive
Valiant list	1GB : SECSMPB_1G 512MB : SECSMPB_512 256MB : SECSMPB_256 128MB : SECSMPB_128 64MB : SECSMPB_64 32MB : SECSMPB_32
Manufacturer	Samsung Electronics Co.Ltd;
New / Alternative / Permissive change Information	New

1.2 Detail Information related Product

Specification

Item	Specification	Remark
USB Flash Drive	- Fully compatible with the USB 2.0 High speed Specification , USB-IF certified - USB Specification V1.1 Mass Storage Compliance - USB Bulk Only Mass Storage Support - USB Class Definition for Bootability Support - Interface Speed : up to - High Speed : 480M bps - Full Speed : 12M bps - High Performance : Sequential Read/Write : 15MB/s (Max.) - Storage Capacities : Up to 2GB - Software support : - Password lock - Secure zoning - Auto Sleep Mode - USB Bus Powered (4.75 volt - 5.25 volt) - Suspend $\leq$ 500uA	

Operating Frequency

Crystal : 12MHz(Ceramic SMD-type)

1.3 Operating Mode and Condition

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

So we used windows media player program, It operated read continuously on EUT.

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

1.4 Test System Details

Refer to 1.2

1.5 Equipment Modifications

No equipment modifications were required.

1.6 Test Procedure

1.6.1 Disturbance Voltage at Mains

EUT was placed on a platform 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.

1.6.2 Radiated disturbance

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.

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 run table azimuth was varied to obtain the maximum signal strength

The system configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found.

The spectrum was scanned from 30 to 1000 MHz using biconiLog antenna.

1.7 Test Configuration

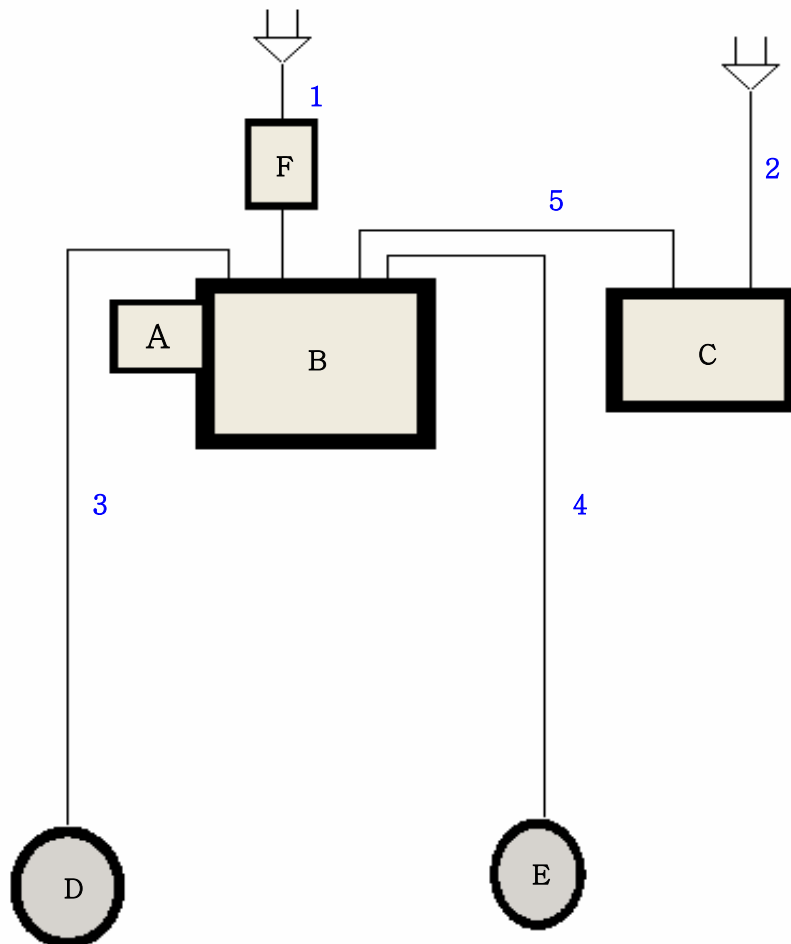
Used EUT and Peripherals

Seq	Device	Model Name	Serial #	Maker	Note
A	USB Flash Drive	SECSMPB_2G	-	SAMSUNG	EUT
B	NOTE PC	BLADE	-	DELL	-
C	PRINTER	LQ-580H	CG2Y014508	EPSON	-
D	Joystick	X04-97602	3768288731616	Microsoft	-
E	SERIAL MOUSE	C3KMS1	1020764	Microsoft	-
F	AC ADAPTOR	PA-1500-05D	DDR334-48010-286-00E0	DELL	-

Used Cable Description

	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	AC Power Cable	1.7	No	-
2	AC Power Cable	1.7	No	-
3	USB Cable	1.6	Yes	-
4	Serial Cable	1.6	No	-
5	Parallel Cable	1.8	Yes	-

Block Diagram



1.8 Applied Standards

List

Product or Generic Standards	Basic Standards
FCC Part15 Sub Part B	ANSI C63.4 : 2001

1.9 Test Facility

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.

Accreditation and Listing



Uncertainty

(According to NAMAS Pub.NIS81)

Samsung IT EMC Test Lab.

Disturbance voltage at Mains : $\pm 1.9\text{dB}$

Radiated disturbance Bi-Log Antenna : $\pm 5.1\text{dB}$

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	Fcc Part 15 Sub. B	Complied
3.2	Radiated Emission	Fcc Part 15 Sub. B	Complied

3.1 Conducted Emission

Test Information	
Test Engineer	Min Gon, Kim
Test Date	September 21, 2004
Climate Condition	Ambient Temperature : 22 °C Relative Humidity : 56%
	Atmospheric Pressure 1013mbar
Test Place	Shield Room

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
LISN	3810/2NM	EMCO	2251	2005-02-07	12
EMI TEST RECEIVER	ESCS30	R&S	830986/004	2005-02-12	12
LISN	ESH3-Z5	R&S	831887/004	2005-08-16	12

Measurement Results	Passed The Measured emissions of the EUT have found to be below the specified limits.
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Test Data & Graph

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

The find data represents worst-case emissions.

* QP : Quasi-peak, AV: Average

* Result = Meter Reading(QP or AV) + Total Loss(LISN Insertion loss + Cable loss)

* Margin = Limit – Result

1. - TEST DATA & GRAPH

1. Quasi Peak Data

MEASUREMENT RESULT: "SECSMPB_2G_fin QP"

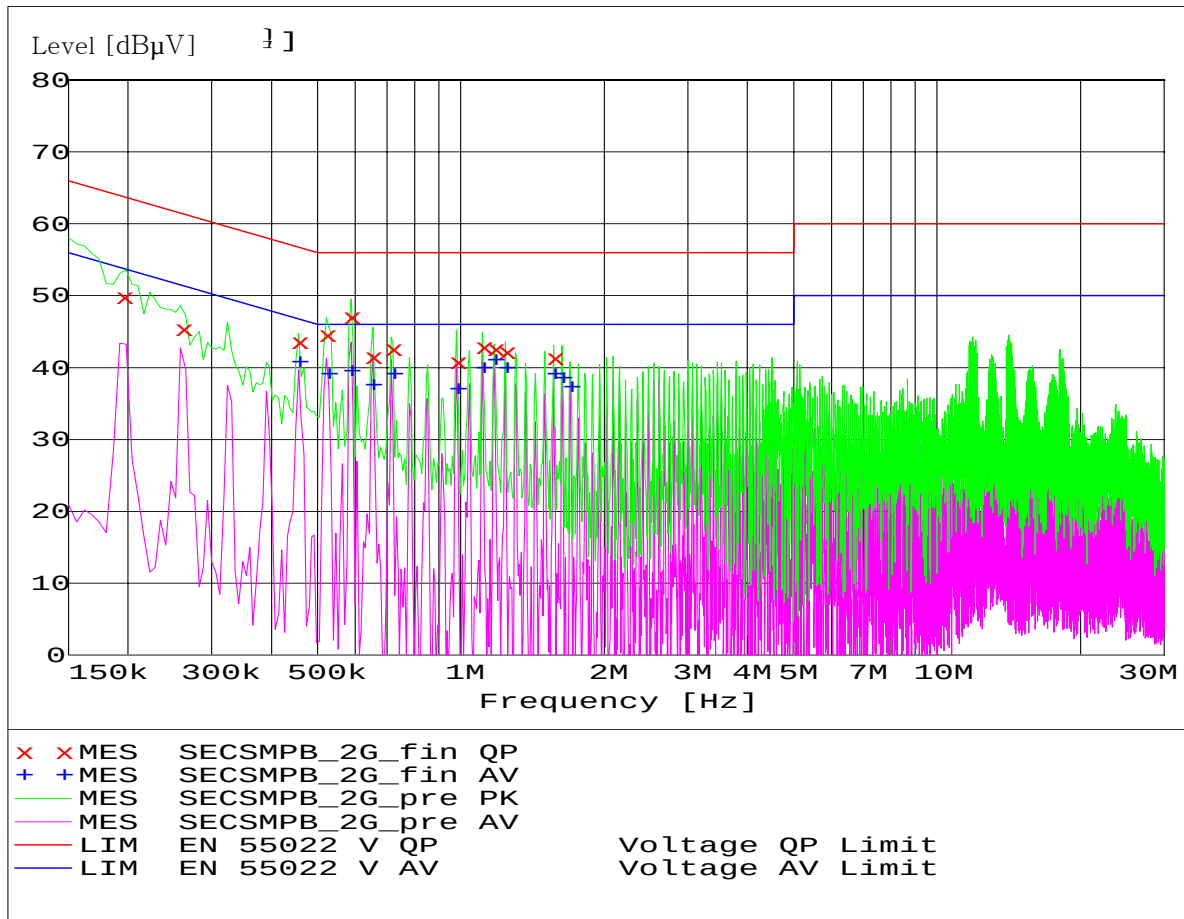
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.195000	49.80	0.6	64	14.0	L1	GND
0.260000	45.30	0.5	61	16.2	L1	GND
0.455000	43.50	0.5	57	13.3	L1	GND
0.520000	44.50	0.6	56	11.5	N	GND
0.585000	47.00	0.6	56	9.0	L1	GND
0.650000	41.50	0.5	56	14.5	L1	GND
0.715000	42.50	0.5	56	13.5	L1	GND
0.980000	40.80	0.6	56	15.2	L1	GND
1.110000	42.80	0.6	56	13.2	L1	GND
1.175000	42.50	0.6	56	13.5	L1	GND
1.240000	42.10	0.6	56	13.9	L1	GND
1.565000	41.30	0.6	56	14.7	L1	GND

2. Average Data

MEASUREMENT RESULT: "SECSMPB_2G_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.455000	40.70	0.5	47	6.1	L1	GND
0.525000	39.00	0.6	46	7.0	N	GND
0.585000	39.50	0.6	46	6.5	L1	GND
0.650000	37.50	0.5	46	8.5	N	GND
0.720000	39.10	0.5	46	6.9	L1	GND
0.980000	37.00	0.6	46	9.0	L1	GND
1.110000	40.00	0.6	46	6.0	L1	GND
1.175000	41.00	0.6	46	5.0	L1	GND
1.240000	40.00	0.6	46	6.0	L1	GND
1.565000	39.10	0.6	46	6.9	L1	GND
1.630000	38.50	0.6	46	7.5	N	GND
1.695000	37.30	0.6	46	8.7	N	GND

3. Graph



3.2 Radiated Emission

Test Information	
Test Engineer	Min Gon, Kim
Test Date	September 16, 2004
Climate Condition	Ambient Temperature : 23℃ Relative Humidity : 52%
	Atmospheric Pressure 1011 mbar
Test Place	10m RF Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Controller	HD100	HD	100/723	N/A	N/A
Preamplifier	CPA9232	Schaffner	1054	2005-02-12	12
BILOG Antenna	CBL6112B	Schaffner	2805	2005-03-12	12
Test Receiver	ESI26	R&S	100010	2005-03-16	12
Turn Table	DT430	HD	430/691/01	N/A	N/A
Antenna Mast	MA240	HD	240/678 BJ:01	N/A	N/A

Measurement Results	Passed The measured emissions of the EUT have found to be below the specified limits.
----------------------------	---

Test Data & Graph

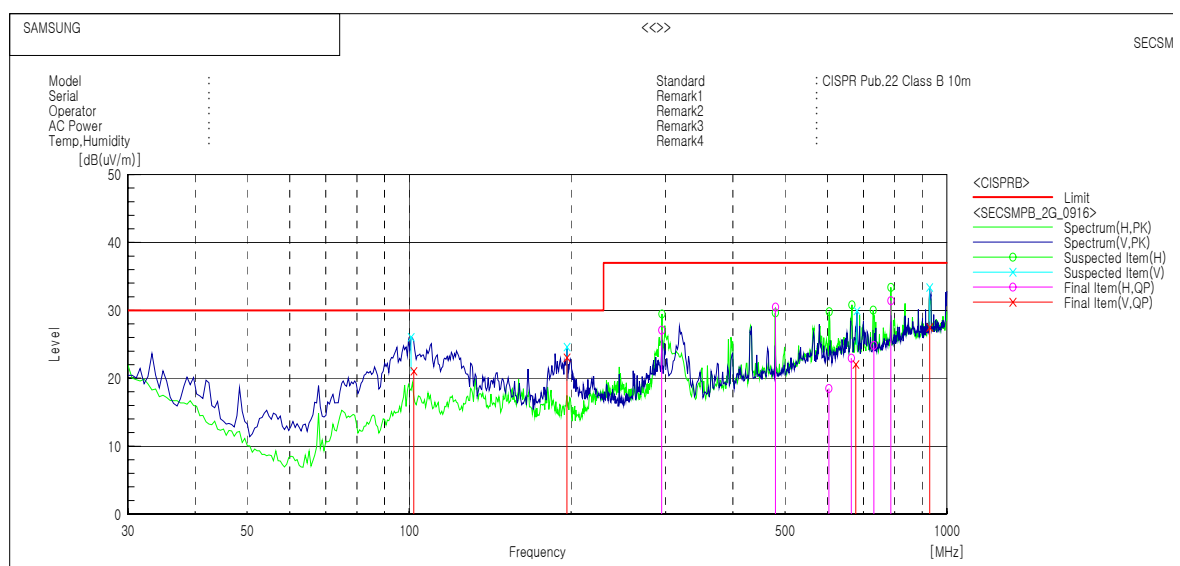
The initial step in collecting radiated data was to perform a peak scan over the measurement range using a receiver. All modes of operation were investigated and the worst-case emission are reported

The minimum margin to the limit is as follows:

All other emission are non-significant.

- * Receiving Antenna Mode : Horizontal, Vertical
- * Test distance : 10m (Semi-Anechoic Chamber)
- * Result = Meter Reading + Total Loss(Antenna factor + Cable loss)
- * Margin = Limit – Result

1) TEST DATA & GRAPH



Final Result

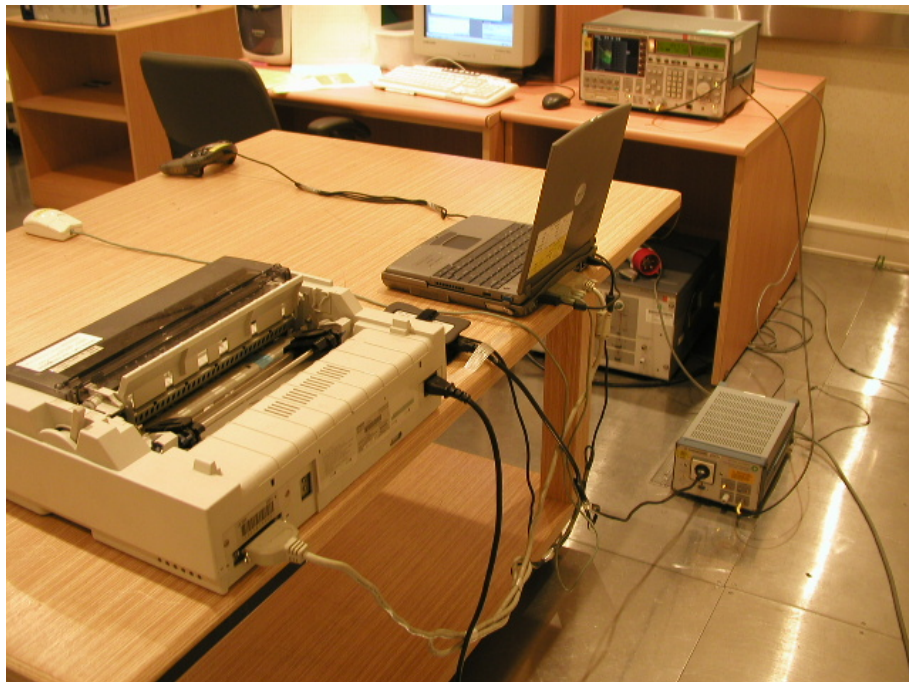
No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	QP		QP		QP			
		[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	102.053	V	-9.0	21.1	30.0	8.9	136.0	5.0	
2	196.607	V	-10.2	23.0	30.0	7.0	111.0	192.0	
3	294.922	H	-4.9	27.1	37.0	9.9	394.0	4.0	
4	480.085	H	-0.5	30.5	37.0	6.5	200.0	227.0	
5	603.308	H	2.1	18.5	37.0	18.5	200.0	222.0	
6	664.288	H	3.3	22.9	37.0	14.1	110.0	227.0	
7	676.899	V	3.2	22.0	37.0	15.0	270.0	294.0	
8	731.426	H	3.7	24.8	37.0	12.2	110.0	34.0	
9	786.416	H	4.3	31.4	37.0	5.6	126.0	258.0	
10	928.688	V	6.0	27.5	37.0	9.5	201.0	15.0	

4. Appendix

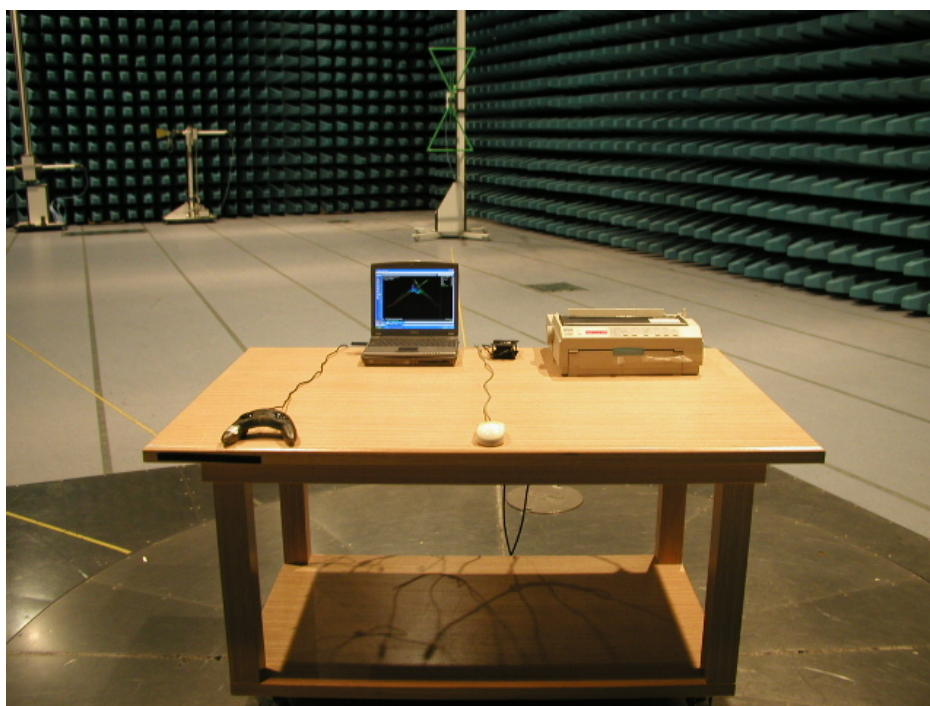
4.1 Test Photography



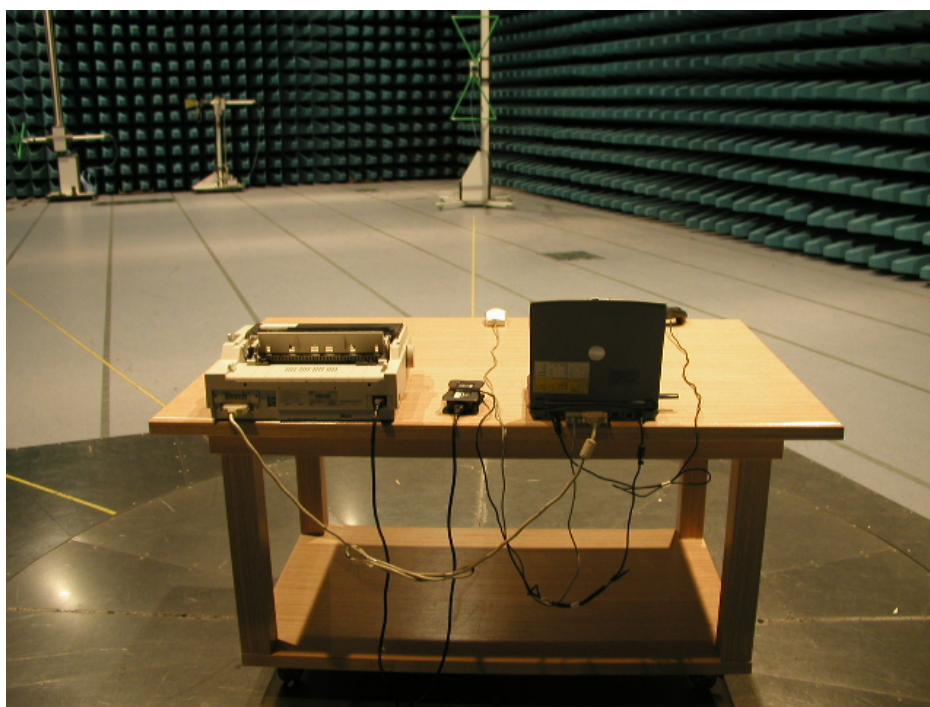
Pic. 1 Conducted Emission (Front)



Pic. 2 Conducted Emission (Rear)



Pic. 3 Radiated Emission (Front)



Pic. 4 Radiated Emission (Rear)

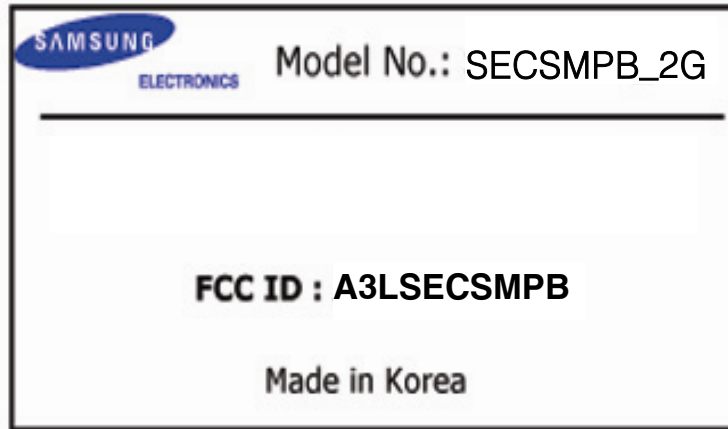
4.2 EUT Photography



Pic. 5 EUT (Front)



Pic. 6 EUT (Rear)



Pic. 7 Label