EMC Test Report

According to FCC Part 15 Subpart B

Project No.		**LBE042327**
Equipment under Test		
	Address	416 Maetan3-Dong,Yeongtong-Gu,Suwon-City,Gyeonggi-Do, Korea,443-742
	Product Name	**Digital Camcorder**
	Model Name	**SC-D353**
	Manufacturer	SAMSUNG
	Brand Name	SAMSUNG
	Variant Model	See Page 3
Date of Test		December 9, 2004 ~ December 10, 2004
Issued Date		December 20, 2004

	Name/Position	Signature
Tested by	Sung Wook, Choi Test Engineer	S.W.Choi
Reviewed by	No Cheon, Park Manager of EMC Lab.	N. C. Park
Authorized by	Kyu Baek, Chung Chief of EMC Lab.	K. B. Chung

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

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1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co. Ltd
Model name	SC-D353
Applicant Address	Samsung Electronics Co. Ltd; 416 Maetan3- Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, Korea, 443-742
Contact Person	Sung Wook, Choi
Kind of product	Digital Camcorder
Valiant list	SC-D351, SC-D352, SC-D354, SC-D355
Manufacturer	Samsung Electronics Co.Ltd
New / Alternative / Permissive change Information	This report is original report #

1.2 Detail Information related Product

Specification

System	
Video signal	NTSC
Video recording system	2 rotary heads, Helical scanning system
Audio recording system	Rotary heads, PCM system
Usable cassette	Digital video tape (6.35mm width): Mini DV cassette
Tape speed	SP: approx. 18.81mm/s LP: approx. 12.56mm/s
Tape recording time	SP: 60 minutes (when using DVM 60), LP: 90 minutes (when using DVM 60)
FF/REW time	Approx. 150 sec. (using DVM60 tape)
Image device	CCD (Charge Coupled Device)
Lens	F1.4 20x(Optical), 900x(Digital) Electronic zoom lens
Filter diameter	Ø30
LCD screen/Viewfinder	
Size/dot number	2.5inchs 112k
LCD screen Method	TFT LCD
Viewfinder	B/W LCD (SCD351/D352/D353/D354 only), Color LCD (SCD355 only)
Connectors	
Video output	1Vp-p (75Ω terminated)
S-video output	Y: 1Vp-p, 75Ω, C: 0. 286Vp-p, 75Ω
Audio output	-7.5dBs (600Ω terminated)
DV input/output	4pin special in/out connector
USB output	Mini-B type connector
External mic	Ø3.5 stereo

General	
Power source	DC 8.4V, Lithium Ion Battery Pack 7.4V
Power source type	Lithium Ion Battery Pack, Power supply (100V~240V) 50/60Hz
Power consumption (Recording)	4.3W(LCD), 4.1W(Viewfinder)
Operating temperature	0˚~40˚C (32˚F~104˚F)
Storage temperature	-20˚C ~ 60˚C (-4˚F ~ 140˚F)
External dimension	Height 3.62inches(92mm), Length 4.63inches(117.5mm), Width 2.52inches(64mm)
Weight	410g (Except for Lithium Ion Battery Pack and tape)
Built-in MIC	Omni-directional stereo condenser microphone
Remote control (SCD354/D355 only)	Indoors: greater than 49ft(15m) (straight line), Outdoors: about 16.4ft(5m) (straight line)

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1.3 Operating Mode and Condition

The system was configured for testing in typical fashion use.

The mode of operation utilized for testing was selected to best simulate typical EUT use.

- PLAY
- RECORDING

1.4 Equipment Modifications

No equipment modifications were required.

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1.5 Test Configuration

Used EUT and Peripherals

Mark	Item	Model No.	Serial No.	Manufacturer	FCC ID
A	Digital Camcorder	SC-D353	-	SAMSUNG	A3L05DRAGON
B	Adapter	-	-	SAMSUNG	DOC
C	Note PC	OX-138-A01-T	1009-007	DELL	DOC
D	Adapter	ADP-50FH	TH-08H051-17971-19A-01DV	DELL	DOC
E	Printer	ML-1740	BABX820386E	SAMSUNG	A3LML-1710P
F	Mouse	M-S48	LZA84606015	SAMSUNG	DZL211092

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	1.5	No	
4	MIC	1.5	No	
5	AV	1.5	No	
6	1394 Cable	1.5	No	
7	Printer	1.5	No	
8	Mouse	1.5	No	
9	Printer cable	1.5	No	

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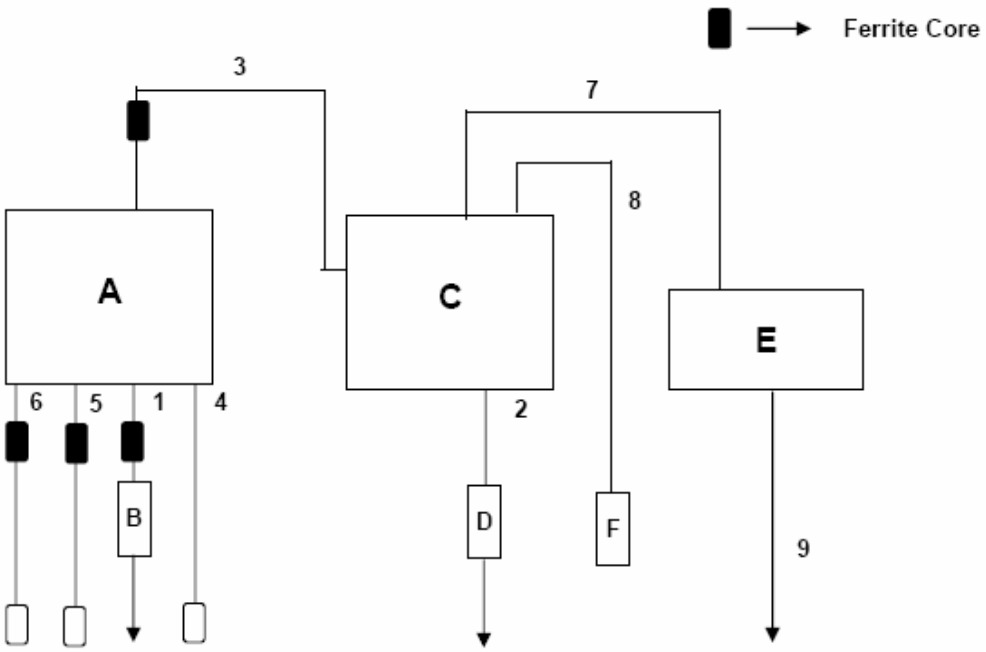
Block Diagram



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1.6 Applied Standards

List

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

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1.7 Test Facility

General Information

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 22, 16-1, 16-2, 11.

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)

Test Item	Expanded Uncertainty
Conducted Emission	+/-1.64
Radiated Emission	+/-5.09

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2. Summary of Test Results

Result : PASS

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

Test Name		Applied Standard	Result
Electromagnetic Emission Test			
3.1	Conducted Emission	FCC Part15 Subpart B	Complied
3.2	Radiated Emission	FCC Part15 Subpart B	Complied

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3. Description of Individual Tests

3.1 Conducted Emission

Test Information		
	Test Engineer	Sung Wook, Choi
	Test Date	December 10, 2004
	Climate Condition	Ambient Temperature : 24℃ Relative Humidity : 34%
	Test Place	Shield Room #5

Test Equipments

Equipment	Modal Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Test Software	EP5CE	TOYO	None	N/A	N/A
Field strength meter	ESS	R&S	844661/005	2005-01-05	12
RF Relais Matrix	PSU	R&S	861206/024	N/A	N/A
L.I.S.N	ESH3-Z5	R&S	100260	2005-07-06	12
Spectrum Analyzer	ESI	R&S	100067	2005-01-09	12

EUT Test Setup

EUT was placed on a platform of nominal size, raised 80cm above the conducting ground plane. The rear of table top was located 40cm to the vertical conducting plane. The rear of EUT was aligned and flushed with rear of tabletop. All other surfaces of tabletop was at least 80cm from any other grounded conducting surface. All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment See photo.

Test Result

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

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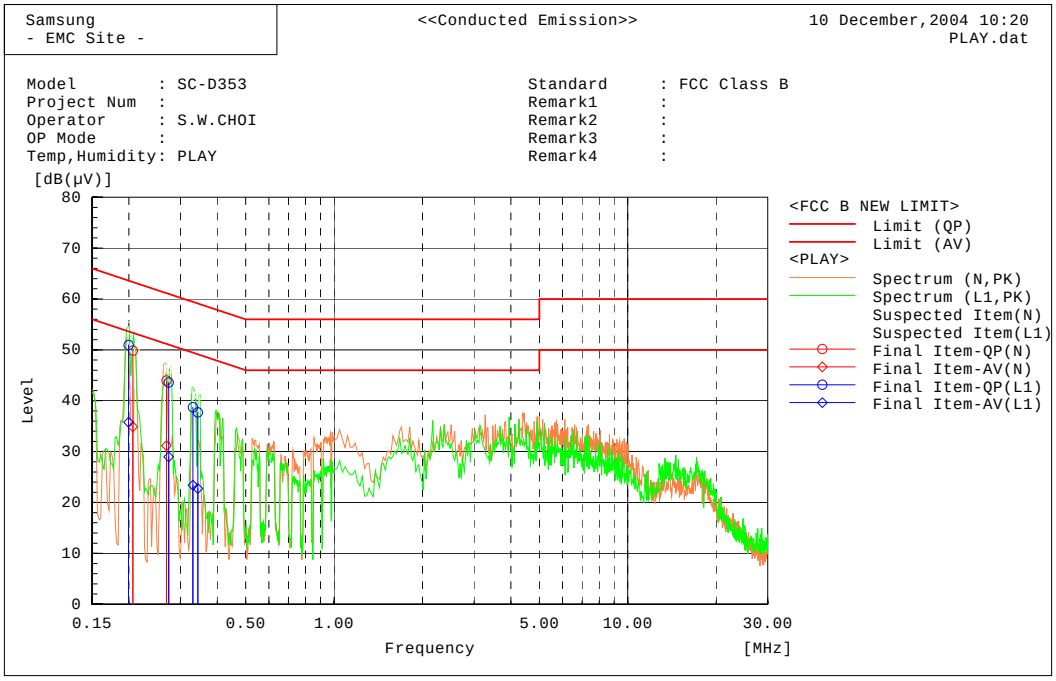
Test Data

■ Operating Mode : PLAY

[Graph and Data]



Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(µV)]	Reading AV [dB(µV)]	c.f [dB]	Result QP [dB(µV)]	Result AV [dB(µV)]	Limit QP [dB(µV)]	Limit AV [dB(µV)]	Margin QP [dB]	Margin AV [dB]
1	0.2064	49.7	34.8	0.1	49.8	34.9	63.3	53.3	13.5	18.4
2	0.26862	43.9	31.1	0.1	44.0	31.2	61.2	51.2	17.3	20.0

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(µV)]	Reading AV [dB(µV)]	c.f [dB]	Result QP [dB(µV)]	Result AV [dB(µV)]	Limit QP [dB(µV)]	Limit AV [dB(µV)]	Margin QP [dB]	Margin AV [dB]
1	0.19966	50.8	35.7	0.1	50.9	35.8	63.6	53.6	12.7	17.8
2	0.2734	43.5	28.9	0.1	43.6	29.0	61.0	51.0	17.4	22.0
3	0.33101	38.6	23.3	0.1	38.7	23.4	59.4	49.4	20.7	26.0
4	0.34372	37.6	22.6	0.1	37.7	22.7	59.1	49.1	21.4	26.4

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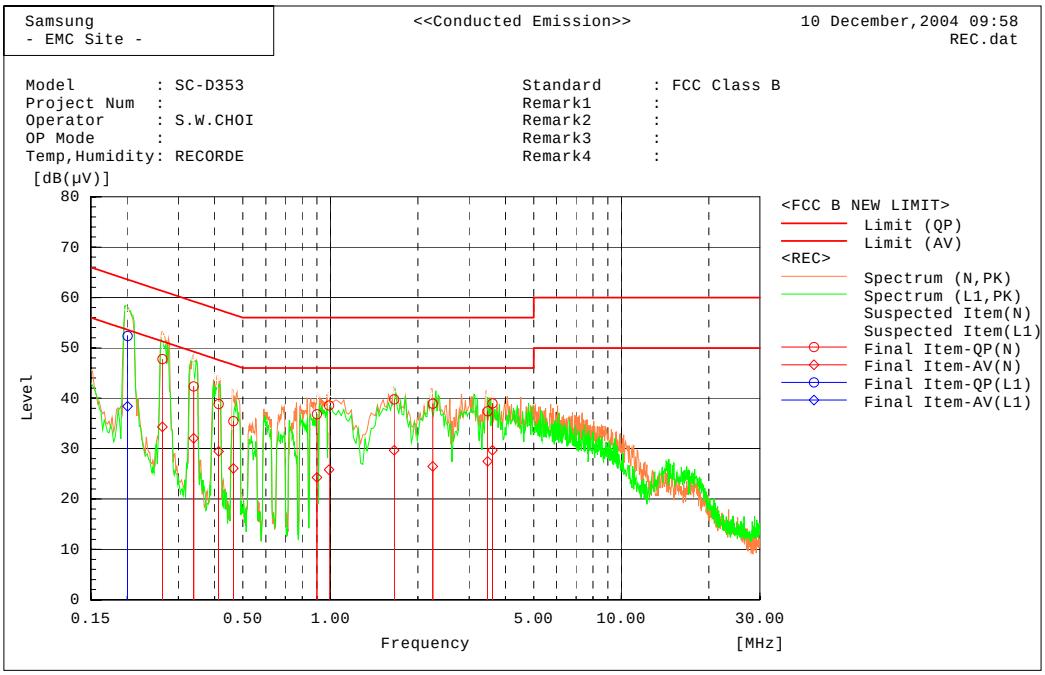
■ Operating Mode : RECORDING

[Graph and Data]



Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(µV)]	Reading AV [dB(µV)]	c.f [dB]	Result QP [dB(µV)]	Result AV [dB(µV)]	Limit QP [dB(µV)]	Limit AV [dB(µV)]	Margin QP [dB]	Margin AV [dB]
1	0.26447	47.7	34.2	0.1	47.8	34.3	61.3	51.3	13.5	17.0
2	0.33883	42.2	32.0	0.1	42.3	32.1	59.2	49.2	16.9	17.2
3	0.41322	38.7	29.4	0.1	38.8	29.5	57.6	47.6	18.8	18.2
4	0.46416	35.4	26.0	0.1	35.5	26.1	56.6	46.6	21.2	20.5
5	0.89923	36.6	24.1	0.2	36.8	24.3	56.0	46.0	19.2	21.8
6	0.98935	38.4	25.6	0.2	38.6	25.8	56.0	46.0	17.4	20.2
7	1.6557	39.6	29.6	0.1	39.7	29.7	56.0	46.0	16.3	16.3
8	2.2476	38.8	26.4	0.1	38.9	26.5	56.0	46.0	17.1	19.6
9	3.4746	37.3	27.4	0.1	37.4	27.5	56.0	46.0	18.6	18.5
10	3.6096	38.9	29.6	0.1	39.0	29.7	56.0	46.0	17.1	16.3

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(µV)]	Reading AV [dB(µV)]	c.f [dB]	Result QP [dB(µV)]	Result AV [dB(µV)]	Limit QP [dB(µV)]	Limit AV [dB(µV)]	Margin QP [dB]	Margin AV [dB]
1	0.20075	52.3	38.3	0.1	52.4	38.4	63.6	53.6	11.3	15.2

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3.2 Radiated Emission

Test Information		
	Test Engineer	Sung Wook, Choi
	Test Date	December 9, 2004
	Climate Condition	Ambient Temperature : 23℃ Relative Humidity : 36%
	Test Place	10m Semi Anechoic chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
RF Selector	NS4900	TOYO	0303-015	N/A	N/A
Biconilog Antenna	6112B	SCHAFFNER	2767	2005-05-22	12
Mast Controller	HD2000	HD	HD20000902027	N/A	N/A
Test Software	EP5RE	TOYO	None	N/A	N/A
Spectrum Analyzer	E7405A	Agilent	MY42000109	2005-11-27	12
Field strength meter	ESCS30	R&S	839809/002	2005-04-28	12

EUT Test Setup

EUT was placed on a platform of nominal size and raised 80cm above the conducting ground plane. The rear of EUT was aligned and flushed with rear of tabletop. 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. See photo.

Test Result

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

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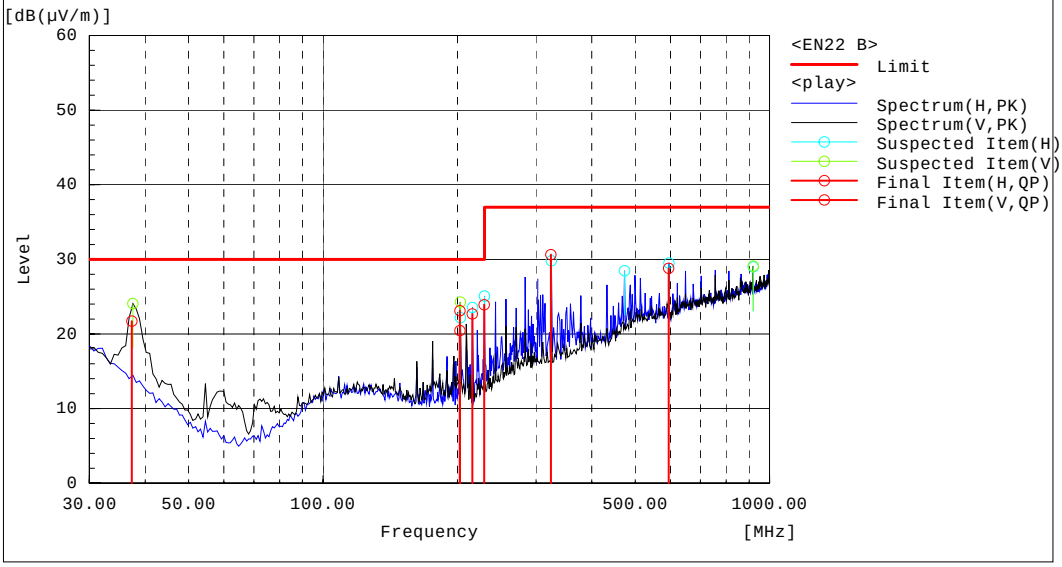
Test Data (Other Frequency)

■ Operating Mode : PLAY

SAMSUNG EMC LAB. <<Radiated Emission>> play.dat

Model : SC-D353
Serial : -
Operator :
AC Power :
Temp,Humidity

Standard : EN 55022 Class B
Project Num :
OP Mode : PLAY
Remark3 :
Remark4 :



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	229.503	38.2	-14.3	23.9	30.0	6.1	
2	216.003	38.3	-15.6	22.7	30.0	7.3	
3	323.990	40.4	-9.8	30.6	37.0	6.4	
4	594.000	33.2	-4.4	28.8	37.0	8.2	
5	202.483	36.3	-15.8	20.5	30.0	9.5	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	202.483	38.9	-15.8	23.1	30.0	6.9	
2	37.317	34.4	-12.7	21.7	30.0	8.3	

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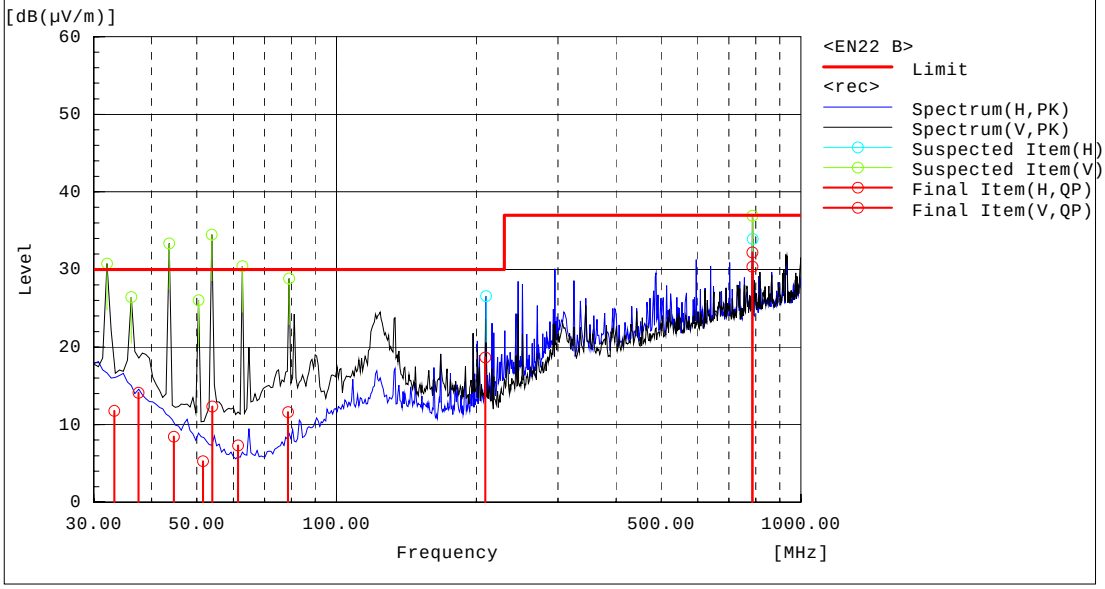
■ Operating Mode : RECORDING

SAMSUNG EMC LAB. <<Radiated Emission>> rec.dat

Model : SC-D353
Serial : -
Operator :
AC Power :
Temp,Humidity

Standard : EN 55022 Class B
Project Num :
OP Mode : Recording
Remark3 :
Remark4 :



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	786.480	32.5	-2.1	30.4	37.0	6.6	
2	209.253	34.4	-15.7	18.7	30.0	11.3	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Remark
1	54.003	32.3	-20.0	12.3	30.0	17.7	
2	786.480	34.3	-2.1	32.2	37.0	4.8	
3	44.621	24.9	-16.4	8.5	30.0	21.6	
4	33.240	22.3	-10.5	11.8	30.0	18.2	
5	61.401	28.7	-21.4	7.3	30.0	22.7	
6	78.654	31.1	-19.5	11.6	30.0	18.4	
7	37.486	26.9	-12.8	14.1	30.0	15.9	
8	51.614	24.6	-19.3	5.3	30.0	24.7	

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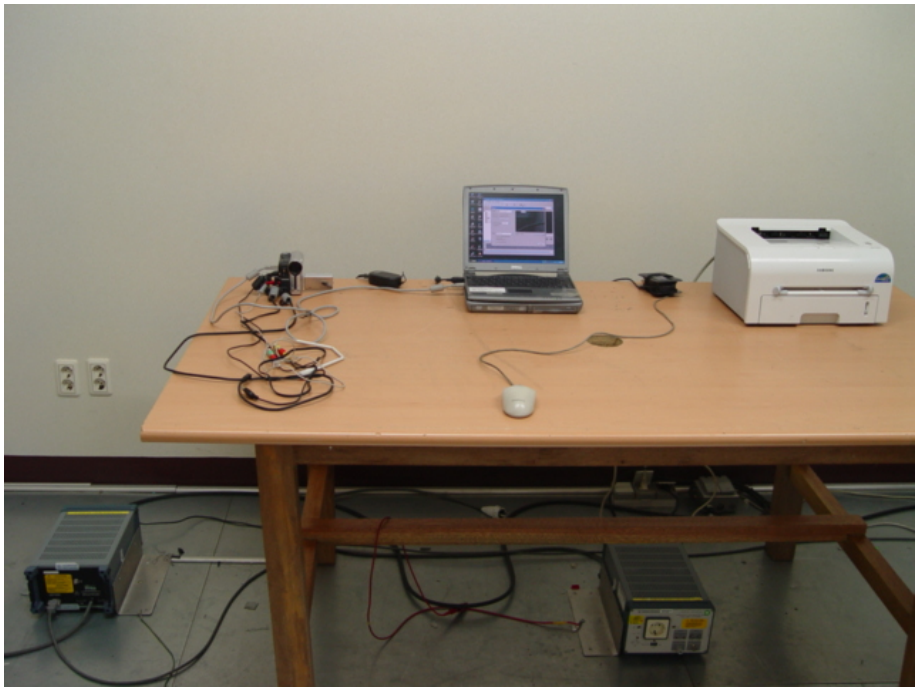
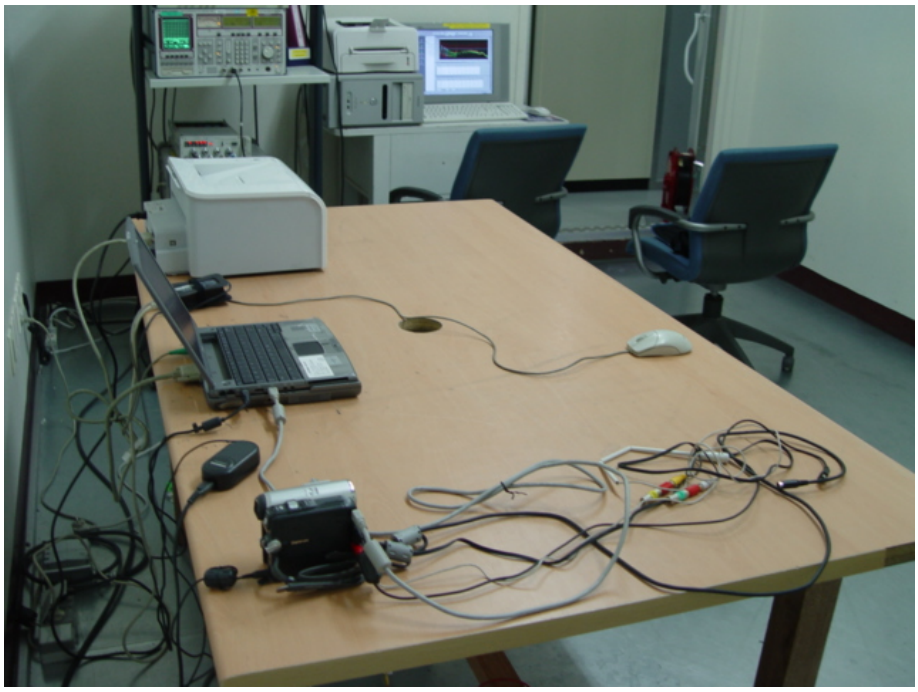
4. Appendix A

4.1 Test Photography



Picture 1. Conducted Emission (Front)



Picture 2. Conducted Emission (Side)

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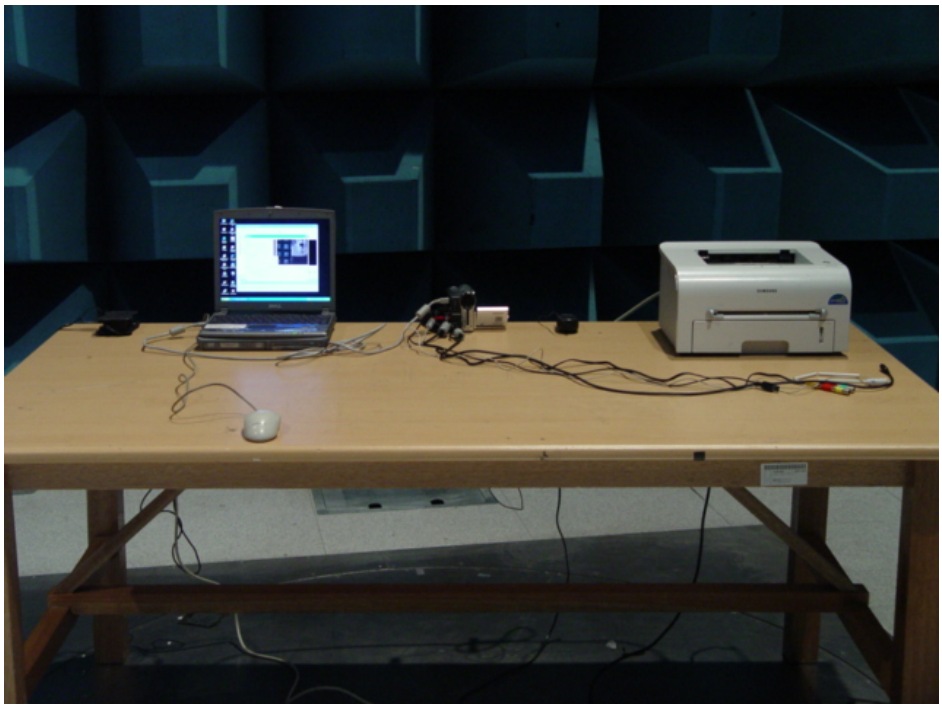
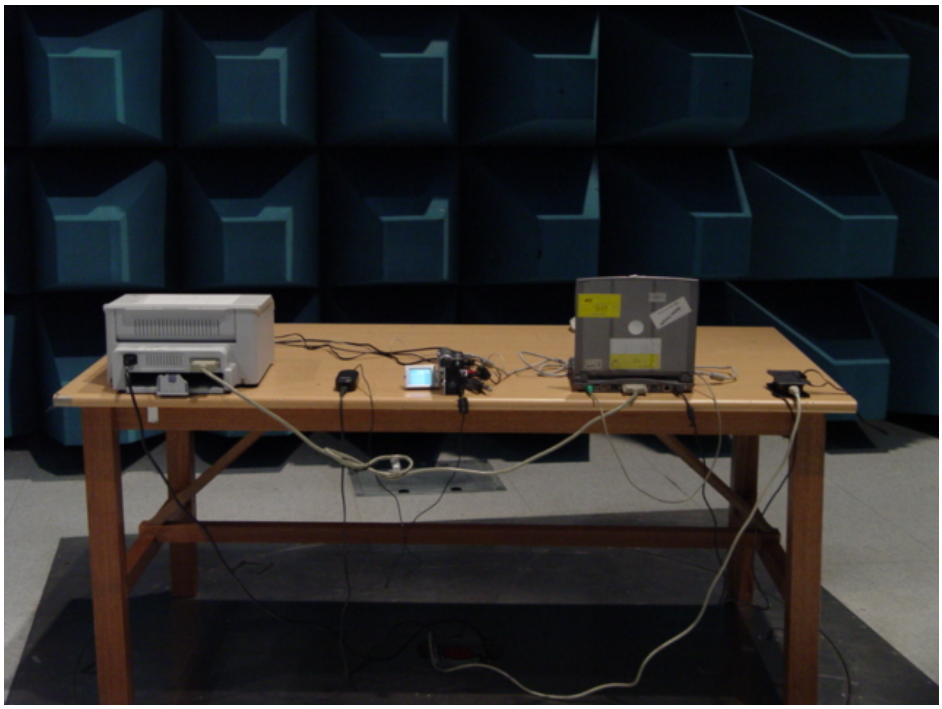


Picture 3. Radiated Emission (Front)



Picture 4. Radiated Emission (Rear)

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4.2 EUT Photography

Picture 5. EUT (Front)

Picture 6. EUT (Rear)

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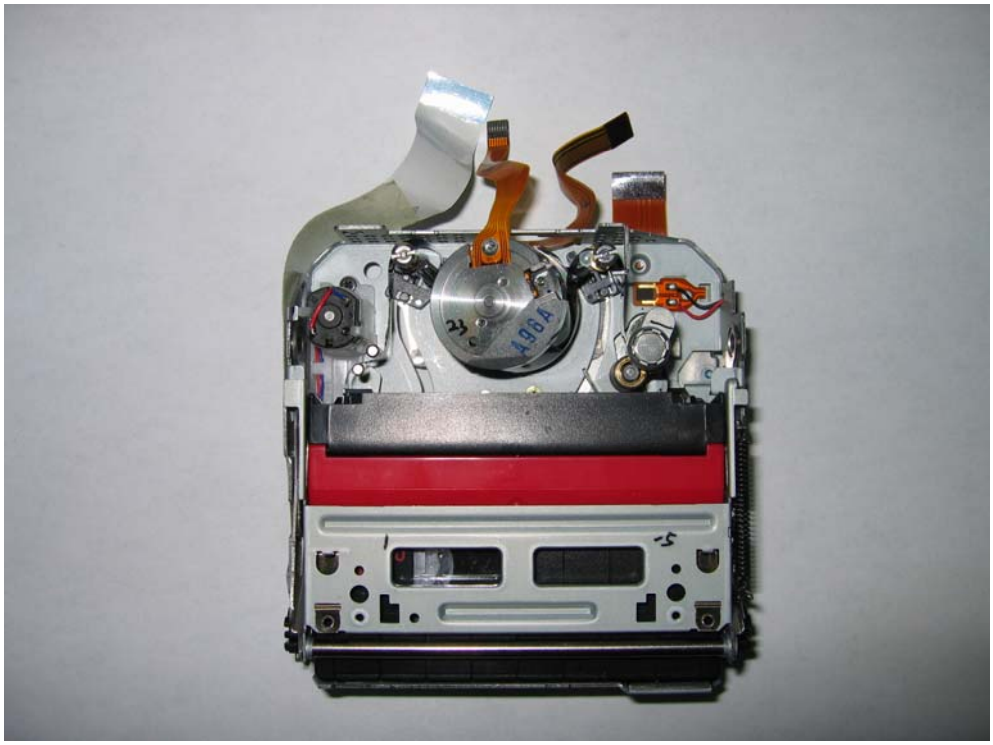

[Picture 7]

[Picture 8]

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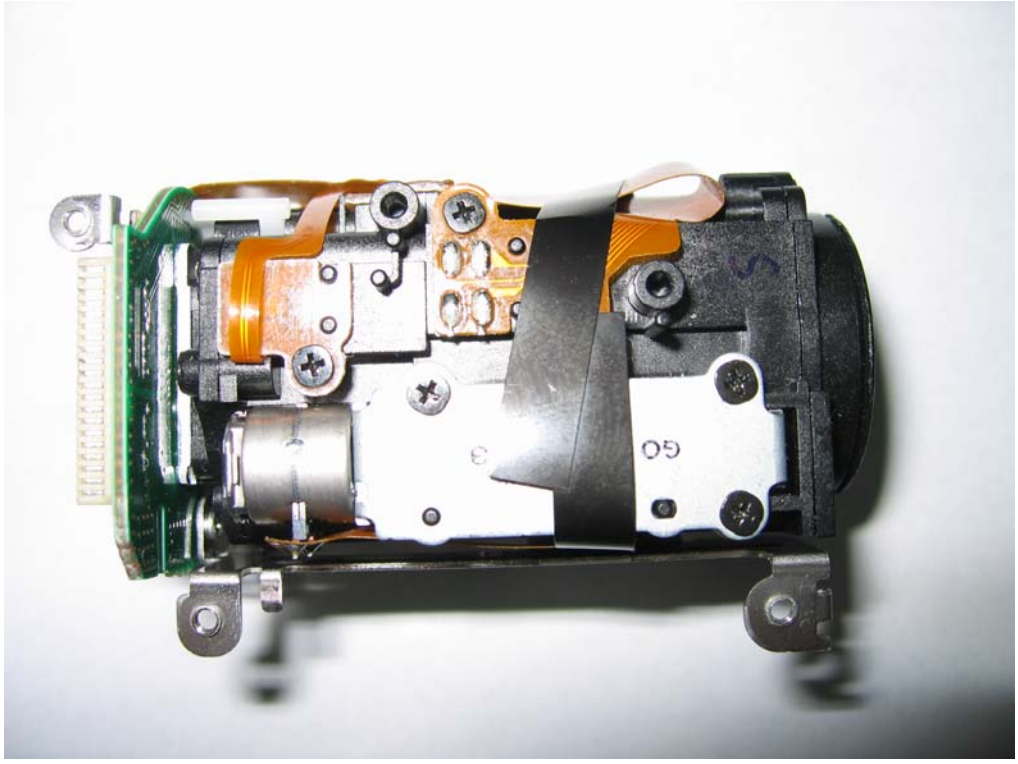
［Picture 9］



［Picture 10］

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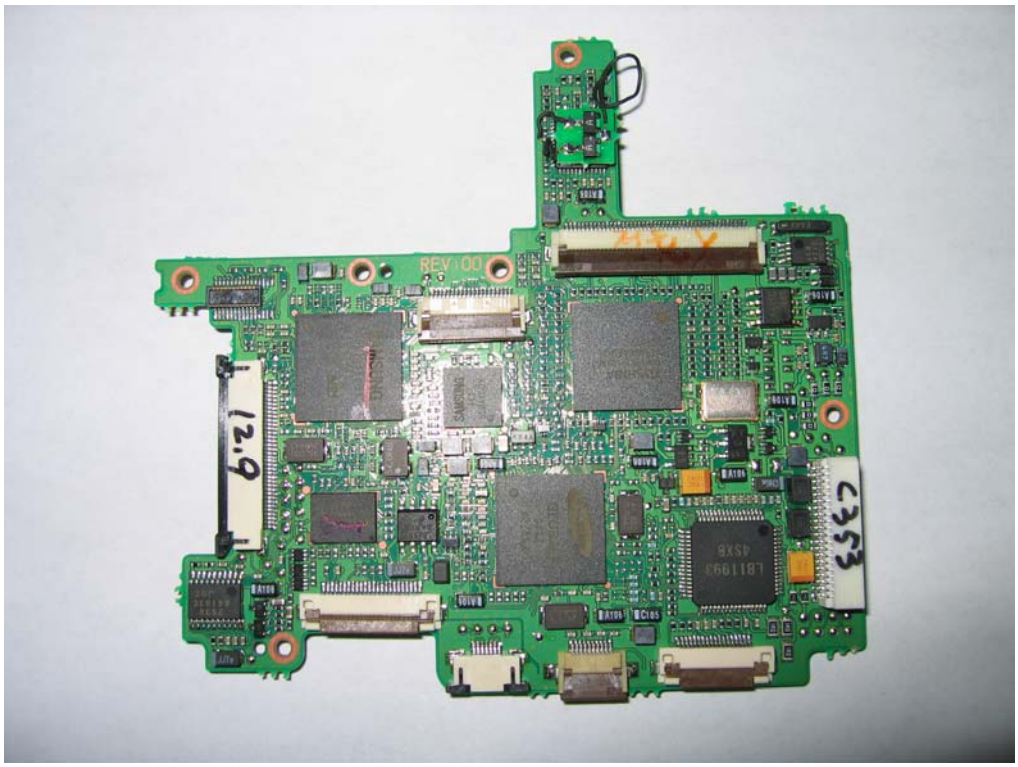
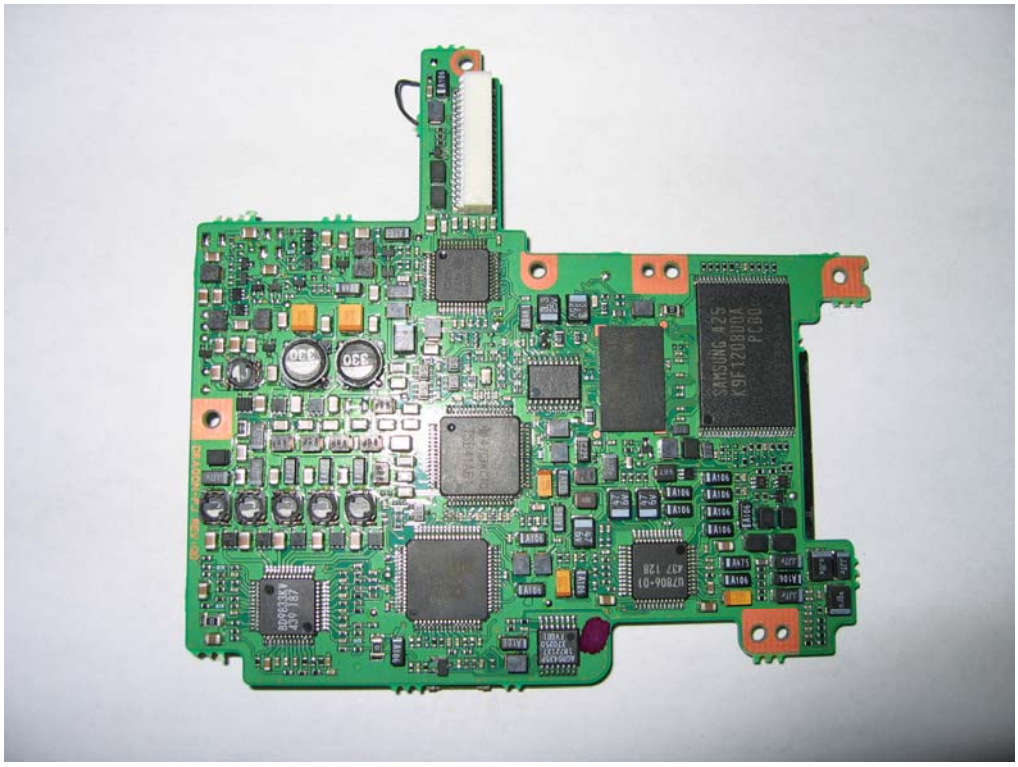


[Picture 11]



[Picture 12]

[Picture 13]

[Picture 14]

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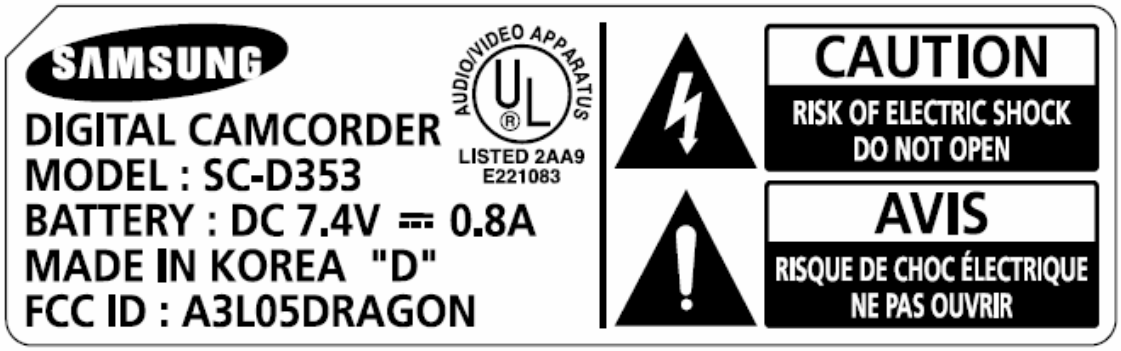
SAMSUNG
DIGITAL CAMCORDER
MODEL : SC-D353
BATTERY : DC 7.4V ⎓ 0.8A
MADE IN KOREA "D"
FCC ID : A3L05DRAGON
AUDIO/VIDEO APPARATUS
UL
LISTED 2AA9
E221083
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS
RISQUE DE CHOC ÉLECTRIQUE
NE PAS OUVRIR

[Label]