

Nemko Korea CO., Ltd.

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FCC EVALUATION REPORT FOR CERTIFICATION

Applicant :

Digital Cynos Co., Ltd.

3-906, Daeryung Technotown, 448,

Gasan-Dong, Geumcheon-Gu, Seoul, Korea

Attn : Mr. H. C. Choi

Dates of Issue : October 04, 2004

Test Report No. : NK2EE657

Test Site : Nemko Korea Co., Ltd.

EMC site, Korea

MODEL***QEWD CM-26WT*****Brand Name***CYNOS, Sliding, Grandin, CSE, HYUNDAI, DK Digital, solé***CONTACT PERSON**

Digital Cynos Co., Ltd.

3-906, Daeryung Technotown, 448, Gasan-Dong,

Geumcheon-Gu, Seoul, Korea.

Mr. H. C. Choi

Telephone No. : +82 2 2107 3450

Applied Standard:

Part 15 & 2

Classification :

FCC Class B Device

EUT Type:

26" LCD TV

The device bearing the brand name and FCC ID specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2001.

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



Tested By : C. S. Choi
Senior Engineer



Reviewed By : H.H. Kim
Manager & Chief Engineer

TABLE OF CONTENTS

SCOPE	3
INTRODUCTION (Site Description)	4
TEST CONDITIONS & EUT INFORMATION	5
SUMMARY OF TEST RESULTS	7
RECOMMANDATION / CONCLUSION	7
SAMPLE CALCULATION	7
DESCRIPTION OF TESTS (Conducted Emissions)	8
DESCRIPTION OF TESTS (Radiated Emissions)	9
DESCRIPTION OF TEST (Antenna-conducted Power Measurements)	10
TEST DATA (Conducted Emissions)	11
TEST DATA (Radiated Emissions)	12
TEST DATA (Antenna-conducted Power Measurements)	14
PLOT OF EMISSIONS (Conducted Emissions Diagram)	18
ACCURACY OF MEASUREMENT	22
TEST EQUIPMENT	23
APPENDIX A – SAMPLE LABEL	24
APPENDIX B – PHOTOGRAPHS OF TEST SET-UP	25
APPENDIX C – EUT PHOTOGRAPHS	28
APPENDIX D – PHOTOGRAPHS OF MODIFICATION FOR EMI SUPPRESSION	53
APPENDIX E – BLOCK DIAGRAM	58
APPENDIX F – USER’S MANUAL	59
APPENDIX G – SCHEMATIC DIAGRAMS	60

SCOPE

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.

Responsible Party :	Digital Cynos Co., Ltd.
Contact Person :	Mr. H. C. Choi
Manufacturer :	Digital Cynos Co., Ltd. 3-906, Daeryung Technotown, 448, Gasan-Dong, Geumcheon-Gu, Seoul, Korea. Tel No.: +82 2 2107 3450

- FCC ID : QEWDCCM-26WT
- Basic Model : DCM-26WT
- Alternate Model : SL-26KT04, 26LCDN04, CLT-260W, HLT-2630B, HLT-2630S, LCD-266, SLTV26MS3
- Brand Name : CYNOS, Sliding, Grandin, CSE, HYUNDAI, DK Digital, solé
- EUT Type : 26" LCD TV
- Voltage rate : Adaptor Input : AC 100V – 240V, 50/60Hz
Adaptor Output : DC 15V
- Test Voltage : AC120V, 60Hz
- Port/Connector : DVI In, D-Sub Analog In, PC Audio Input, DTV In (Y, Pb, Pr, L, R), DVD In (Y, Pb, Pr, L, R), TV Antenna In x 2EA, Audio/Video In, S-Video In, Headphone Out, Audio/Video Out, Upgrade Port
- Classification : FCC Class B
- Rule Part(s) : FCC Part 15 & Part 2
- Test Procedure(s) : ANSI C63.4 (2001)
- Dates of Test : September 03, 2004 to September 08, 2004
- Place of Tests : Nemko Korea Co., Ltd. EMC Site
- Test Report No. : NK2EE657

INTRODUCTION

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2001) was used in determining radiated and conducted emissions emanating from **Digital Cynos Co., Ltd.**

MODEL : **QEWDCM-26WT, 26" LCD TV.**

These measurement tests were conducted at **Nemko Korea Co., Ltd. EMC Laboratory**.

The site address is 300-2, Osan-Ri, Mohyun-Myun, Yongin-City, Kyungki-Do, KOREA

The area of Nemko Korea Corporation Ltd. EMC Test Site is located in a mountain area at 80 kilometers (48 miles) southeast and Incheon International Airport (Incheon Airport), 30 kilometers (18miles) south-southeast from central Seoul.

It is located in the valley surrounded by mountains in all directions where ambient radio signal conditions are quiet and a favorable area to measure the radio frequency interference on open field test site for the computing and ISM devices manufactures.

The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4 on June 06, 2001.



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Fig. 1. The map above shows the Seoul in Korea vicinity area.
The map also shows Nemko Korea Corporation Ltd. EMC Lab. and Incheon Airport.

TEST CONDITIONS & EUT INFORMATION

Operating During Test

The EUT was connected to PC and displayed "H" pattern on the screen.

A sinusoidal signal of 1kHz from the hard disk played continuously

The EUT was set to 1024 x 768 video resolution, with 60Hz vertical refresh rate and tested DVI & analog mode.

Antenna-conducted power measurements was performed with the EUT antenna terminal connected directly to a spectrum analyzer.

Support Equipment

26" LCD TV (EUT)	Digital Cynos Co., Ltd., FCC ID:QEWDCM-26WT 1.5m Shielded D-Sub cable 1.5m Shielded DVI cable	S/N : N/A
Adaptor	Li Shin International Enterprise Corp., 1.5m Unshield AC power cord	S/N : N/A
PC	Dell Computer Corporation. Model : DHM(Dimension 4550) 1.5m Shield AC power cord	S/N : N/A
PS/2 Mouse	Microsoft Corporation, 1.5m Unshielded D-sub cable	S/N : N/A
Serial Mouse	ALL SPIRIT Model : WS-U1-400, 1.5m Unshielded D-Sub cable	S/N : B050402
Keyboard	Sejin Electronics, Model : SKR-2239 1.5m Unshielded Din cable	S/N : OFA024809
Printer	H.P., Model: C5870A 1.5m Shielded D-Sub cable	S/N : SG88R131GW
Adaptor (Printer)	YOKOGAWA Model : C4557-60104 1.5m Unshielded AC power cable 1.2m unshielded DC power cable	S/N : N/A
Earphone	1.0m Unshielded, phone Jack	S/N : N/A

EUT Information

Clock	27MHz, 20MHz, 20.250MHz, 18.432MHz
Chipset(s)	U13(LM4808), U5(SDA5550M), U3(HY62U8200B)
Port(s)	DVI In, D-Sub Analog In, PC Audio Input,
	DTV In (Y, Pb, Pr, L, R), DVD In (Y, Pb, Pr, L, R),
	TV Antenna In x 2EA, Audio/Video In, S-Video In,
	Headphone Out, Audio/Video Out, Upgrade Port
LCD Panel	Size : 26" Wide (diagonal length)
	Pixel Pitch : 0.4425mm x 0.4425mm
TV Channel	VHF : 2~13 channels, UHF : 14~69 channels,
	Cable : 1, 14~125 channels
TV Broadcasting System	PAL / SECAM, NTSC-M Type
Audio Output	Max 20W + 2 / Stereo

SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specification:

Name of Test	Paragraph No.	Result	Remark
Conducted Emission	15.107(a)	Complies	
Radiated Emission	15.109(g)	Complies	
Antenna Power Conducted	15.111(a)	Complies	

RECOMMENDATION/CONCLUSION

The data collected shows that the **Digital Cynos Co., Ltd.**

FCC ID : **QEWDCM-26WT, 26" LCD TV.** complies with § 15.107, 15.109 and 15.111 of the FCC Rules.

The highest emission observed was at **1.03 MHz** for conducted emissions with a margin of **7.4 dB**, at **519.03 MHz** for radiated emissions with a margin of **3.2 dB** and at **799.00 MHz** for antenna power conducted emissions with a margin of **15.0 dB**.

SAMPLE CALCULATION

$$\text{dB } \mu\text{V} = 20 \log_{10} (\mu\text{V}/\text{m})$$

$$\mu\text{V} = 10^{(\text{dB } \mu\text{V}/20)}$$

EX. 1.

@57.7 MHz

Class B limit = 100 $\mu\text{V}/\text{m}$ = 40.0 dB $\mu\text{V}/\text{m}$

Reading = 19.1 dB μV (calibrated level)

Antenna factor + Cable Loss + Amplifier Gain = 10.12 dB

Total = 29.22 dB $\mu\text{V}/\text{m}$

Margin = 40.0 – 29.22 = 10.78

10.78 dB below the limit

DESCRIPTION OF TESTS

Conducted Emissions

The Line conducted emission test facility is located inside a 4 X 7 X 2.5 meter shielded enclosure.

It is manufactured by EM engineering. The shielding effectiveness of the shielded room is in accordance with MIL-STD-285 or NSA 65-6.

A 1m X 1.5m wooden table 0.8m height is placed 0.4m away from the vertical wall and 1.5m away from the side of wall of the shielded room

Rohde & Schwarz (ESH3-Z5) and Kyoritsu (KNW-407) of the 50ohm/50uH Line Impedance Stabilization Network(LISN) are bonded to the shielded room.

The EUT is powered from the Rohde & Schwarz LISN and the support equipment is powered from the Kyoritsu LISN. Power to the LISN s are filtered by high-current high insertion loss Power line filters. The purpose of filter is to attenuate ambient signal interference and this filter is also bonded to shielded enclosure. All electrical cables are shielded by tinned copper zipper tubing with inner diameter of 1/2".

If DC power device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the LISNs,

All interconnecting cables more than 1 meter were shortened by non inductive bundling (serpentine fashion) to a 1 meter length.

Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT. The spectrum was scanned from 150kHz to 30MHz with 20msec sweep time.

The frequency producing the maximum level was re-examined using the EMI test receiver. (Rohde & Schwarz ESCS30).

The detector function were set to CISPR quasi-peak mode & average mode.

The bandwidth of receiver was set to 9KHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.

Each emission was maximized by; switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux AC outlet, if applicable; which ever determined the worst case emission.

Each EME reported was calibrated using the R&S signal generator.

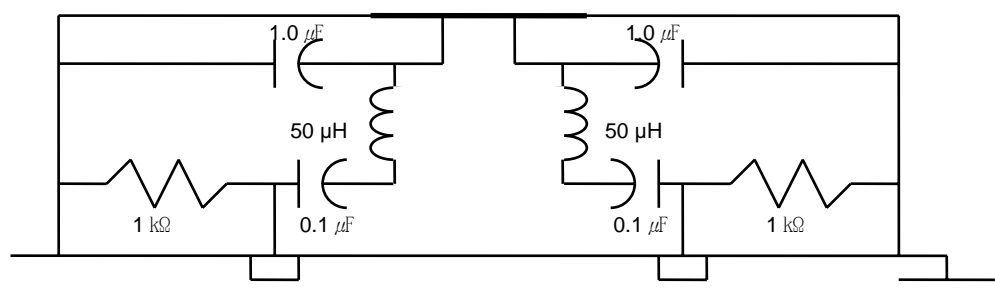


Fig. 2. LISN Schematic Diagram

DESCRIPTION OF TESTS

Radiated Emissions

Preliminary measurement were made indoors at 3 meter using broad band antennas, broadband amplifier, and spectrum analyzer to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The Technology configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna was note for each frequency found.

The spectrum was scanned from 30 to 1000MHz using Biconical log Antenna(ARA, LPB-2520/A).

Final Measurements were made outdoors at 10m test range using Logbicon Super Antenna (Schwarzbeck, VULB9166).

The test equipment was placed on a wooden table.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

Each frequency found during pre-scan measurements was reexamined and investigated using EMI test receiver.(ESCS30)

The detector function was set to CISPR peak mode or quasi-peak mode or Average mode and the bandwidth of the receiver was set to 120KHz or 1MHz depending on the frequency or type of signal.

The half wave dipole antenna was tuned to the frequency found during preliminary radiated measurements.

The EUT support equipment and interconnecting cables were re configured to the setup producing the maximum emission for the frequency and were placed on top of a 0.8m high non- metallic 1.0X 1.5 meter table.

The EUT, support equipment and interconnecting cables were re-arranged and manipulated to maximize each EME emission.

The turn table containing the Technology was rotated; the antenna height was varied 1 to 4meter and stopped at the azimuth or height producing the maximum emission Each emission was maximized by : switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux AC outlet, if applicable; which ever determined the worst case emission.

Each EME reported was calibrated using the R/S signal generator.

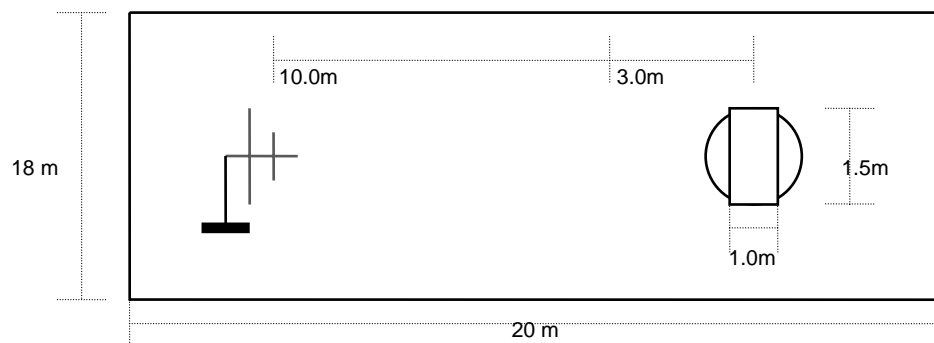


Fig. 3. Dimensions of Outdoor Test Site

DESCRIPTION OF TESTS

Antenna-Conducted Power Measurements

Power on the receive antenna terminals was to be determined by measurement of the voltage present at these terminals.

Antenna –conducted power measurements was performed with the EUT antenna terminals connected directly to measuring instrument (Rohde&Schwarz, ESCS 30) using a impedance-matching network(Rohde&Schwarz, RAM358.5414.02) to connect the measurement instrument to the antenna terminals of the EUT. Losses in decibels in impedance-matching network used was added to the measured values in dBuV.

With the receiver tuned to one of the number of frequency and voltage present at the antenna input terminals over the frequency range specified in the individual equipment requirements. The measurements was repeated with the receiver tuned to another frequency until the number of frequencies had been successively measured.

Power on the receive antenna terminals in the ratio of V^2/R , where V is the loss-corrected voltage measured at the antenna terminals, and R is the impedance of the measuring instrument.

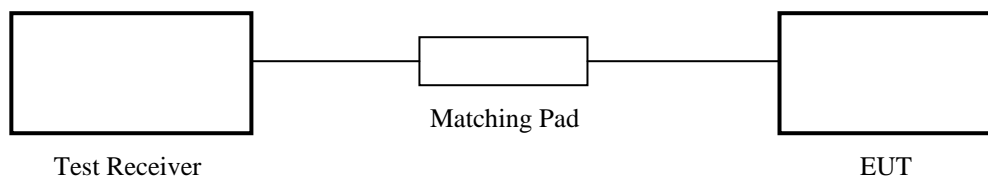


Fig. 4. Description of Test

TEST DATA

Conducted Emissions

FCC ID : QEWD CM-26WT

Test Mode : DVI mode

Frequency (MHz)	Level(dB μ V)		Line	Limit(dB μ V)		Margin(dB)	
	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.66	38.3	37.7	L	56.0	46.0	17.7	8.3
1.03	39.5	38.6	L	56.0	46.0	16.5	7.4
1.22	39.3	38.2	L	56.0	46.0	16.7	7.8
1.40	38.5	34.5	N	56.0	46.0	17.5	11.5
1.82	38.5	36.0	L	56.0	46.0	17.5	10.0
2.13	38.5	36.1	L	56.0	46.0	17.5	9.9

Test Mode : Analog mode

Frequency (MHz)	Level(dB μ V)		Line	Limit(dB μ V)		Margin(dB)	
	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
1.03	38.5	37.2	L	56.0	46.0	17.5	8.8
1.15	38.4	37.3	L	56.0	46.0	17.6	8.7
1.40	37.8	36.2	N	56.0	46.0	18.2	9.8
1.76	38.4	36.7	L	56.0	46.0	17.6	9.3
2.13	37.9	34.5	N	56.0	46.0	18.1	11.5
2.25	38.0	34.6	L	56.0	46.0	18.0	11.4

Table 1. Line Conducted Emissions Tabulated Data

NOTES:

1. Measurements using CISPR quasi-peak mode & average mode.
2. All modes of operation were investigated and the worst -case emission are reported. See attached Plots.
3. The limit for Class B device is on the FCC Part section 15.107(a).
4. Line L = Line Line N = Neutral



Tested by C. S. Choi

TEST DATA

Radiated Emissions

FCC ID : QEWD CM-26WT

Test Mode : DVI mode

Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
80.03	42.0	H	-20.7	21.3	30.0	8.7
84.40	45.9	H	-20.0	25.9	30.0	4.1
142.83	34.3	H	-13.7	20.6	30.0	9.4
149.32	33.1	H	-12.7	20.4	30.0	9.6
181.79	33.7	H	-13.3	20.4	30.0	9.6
644.98	35.6	V	-2.4	33.2	37.0	3.8

Test Mode : Analog mode

Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
40.07	42.8	V	-21.1	21.7	30.0	8.3
79.99	41.1	H	-20.7	20.4	30.0	9.6
159.99	33.4	H	-12.8	20.6	30.0	9.4
519.03	39.6	V	-5.8	33.8	37.0	3.2
583.90	31.7	H	-4.0	27.7	37.0	9.3
778.55	28.9	H	1.1	30.0	37.0	7.0

Table 2. Radiated Measurements at 10meters

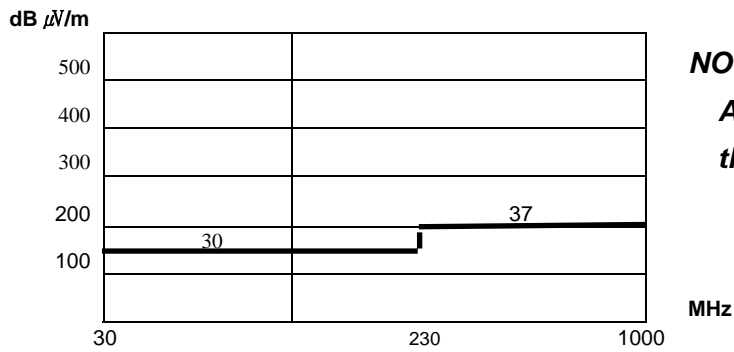


Fig. 5. Limits at 10 meters

NOTES:

All modes of operation were investigated the worst-case emission are reported.

NOTES:

1. *Pol. H =Horizontal V=Vertical
2. **AF+CL+Amp. = Antenna Factor + Cable Loss + Amplifier.
3. The limit for Class B device is on the FCC Part section 15.109(g).

Tested by **C. S. Choi**

TEST DATA

Antenna-Conducted Power Measurements

FCC ID : QEWD CM-26WT (Tuner 1)

CHANNEL	Frequency (MHz)	Reading (dBμV)	MPL * (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
2 (55.25MHz)	101.00	11.6	7.8	19.4	50.0	30.6
	202.00	3.0	7.8	10.8	50.0	39.2
3 (61.25MHz)	107.00	12.0	7.8	19.8	50.0	30.2
	214.00	4.8	7.8	12.6	50.0	37.4
4 (67.25MHz)	113.00	12.1	7.8	19.9	50.0	30.1
	226.00	6.8	7.8	14.6	50.0	35.4
5 (77.25MHz)	123.00	12.5	7.8	20.3	50.0	29.7
	246.00	9.8	7.8	17.6	50.0	32.4
	615.00	9.3	7.8	17.1	50.0	32.9
6 (83.25MHz)	129.00	13.2	7.8	21.0	50.0	29.0
	258.00	11.9	7.8	19.7	50.0	30.3
7 (175.25MHz)	221.00	13.0	7.8	20.8	50.0	29.2
	442.00	9.6	7.8	17.4	50.0	32.6
	663.00	11.4	7.8	19.2	50.0	30.8
8 (181.25MHz)	227.00	12.8	7.8	20.6	50.0	29.4
	454.00	11.3	7.8	19.1	50.0	30.9
	681.00	11.8	7.8	19.6	50.0	30.4
9 (187.25MHz)	233.00	12.4	7.8	20.2	50.0	29.8
	466.00	11.8	7.8	19.6	50.0	30.4
	699.00	12.0	7.8	19.8	50.0	30.2
10 (193.25MHz)	239.00	11.8	7.8	19.6	50.0	30.4
	478.00	11.9	7.8	19.7	50.0	30.3
	717.00	11.9	7.8	19.7	50.0	30.3
11 (199.25MHz)	245.00	11.3	7.8	19.1	50.0	30.9
	490.00	12.6	7.8	20.4	50.0	29.6
	735.00	10.9	7.8	18.7	50.0	31.3
12 (205.25MHz)	251.00	10.8	7.8	18.6	50.0	31.4
	502.00	14.1	7.8	21.9	50.0	28.1
	753.00	10.1	7.8	17.9	50.0	32.1
13 (211.25MHz)	257.00	10.4	7.8	18.2	50.0	31.8
	514.00	16.5	7.8	24.3	50.0	25.7
	771.00	9.6	7.8	17.4	50.0	32.6
14 (471.25MHz)	517.00	15.6	7.8	23.4	50.0	26.6
	1034.00	7.9	7.8	15.7	50.0	34.3

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
19 (501.25MHz)	547.00	22.0	7.8	29.8	50.0	20.2
	1094.00	7.6	7.8	15.4	50.0	34.6
28 (555.25MHz)	601.00	22.4	7.8	30.2	50.0	19.8
	1202.00	8.6	7.8	16.4	50.0	33.6
36 (603.25MHz)	649.00	24.3	7.8	32.1	50.0	17.9
	1298.00	5.0	7.8	12.8	50.0	37.2
44 (651.25MHz)	697.00	26.0	7.8	33.8	50.0	16.2
	1394.00	7.4	7.8	15.2	50.0	34.8
53 (705.25MHz)	751.00	26.3	7.8	34.1	50.0	15.9
	1502.00	11.6	7.8	19.4	50.0	30.6
61 (753.25MHz)	799.00	27.2	7.8	35.0	50.0	15.0
	1598.00	19.9	7.8	27.7	50.0	22.3
69 (801.25MHz)	847.00	24.1	7.8	31.9	50.0	18.1
	1694.00	16.0	7.8	23.8	50.0	26.2

Table 3. Antenna-Conducted Power Measurements

NOTES:

- *MPL = Impedance Matching Network Loss**
- Below 1GHz, measurements using CISPR quasi-peak mode.**
Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 1MHz.
The limits is 2.0 nano watts as the FCC part section 15.111.



Tested by C. S. Choi

TEST DATA

Antenna-Conducted Power Measurements

FCC ID : QEWD CM-26WT (Tuner 2)

CHANNEL	Frequency (MHz)	Reading (dBμV)	MPL * (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
2 (55.25MHz)	101.00	12.1	7.8	19.9	50.0	30.1
	202.00	2.0	7.8	9.8	50.0	40.2
3 (61.25MHz)	107.00	13.4	7.8	21.2	50.0	28.8
	214.00	3.4	7.8	11.2	50.0	38.8
4 (67.25MHz)	113.00	14.4	7.8	22.2	50.0	27.8
	226.00	6.0	7.8	13.8	50.0	36.2
5 (77.25MHz)	123.00	14.0	7.8	21.8	50.0	28.2
	246.00	9.5	7.8	17.3	50.0	32.7
	615.00	7.9	7.8	15.7	50.0	34.3
6 (83.25MHz)	129.00	12.5	7.8	20.3	50.0	29.7
	258.00	10.4	7.8	18.2	50.0	31.8
7 (175.25MHz)	221.00	13.3	7.8	21.1	50.0	28.9
	442.00	9.8	7.8	17.6	50.0	32.4
	663.00	11.4	7.8	19.2	50.0	30.8
8 (181.25MHz)	227.00	14.4	7.8	22.2	50.0	27.8
	454.00	10.0	7.8	17.8	50.0	32.2
	681.00	10.7	7.8	18.5	50.0	31.5
9 (187.25MHz)	233.00	15.0	7.8	22.8	50.0	27.2
	466.00	11.4	7.8	19.2	50.0	30.8
	699.00	9.8	7.8	17.6	50.0	32.4
10 (193.25MHz)	239.00	15.0	7.8	22.8	50.0	27.2
	478.00	13.0	7.8	20.8	50.0	29.2
	717.00	11.8	7.8	19.6	50.0	30.4
11 (199.25MHz)	245.00	14.5	7.8	22.3	50.0	27.7
	490.00	13.5	7.8	21.3	50.0	28.7
	735.00	13.8	7.8	21.6	50.0	28.4
12 (205.25MHz)	251.00	13.5	7.8	21.3	50.0	28.7
	502.00	13.3	7.8	21.1	50.0	28.9
	753.00	13.1	7.8	20.9	50.0	29.1
13 (211.25MHz)	257.00	12.7	7.8	20.5	50.0	29.5
	514.00	15.8	7.8	23.6	50.0	26.4
	771.00	11.7	7.8	19.5	50.0	30.5
14 (471.25MHz)	517.00	11.4	7.8	19.2	50.0	30.8
	1034.00	6.8	7.8	14.6	50.0	35.4

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
19 (501.25MHz)	547.00	17.0	7.8	24.8	50.0	25.2
	1094.00	7.4	7.8	15.2	50.0	34.8
28 (555.25MHz)	601.00	19.9	7.8	27.7	50.0	22.3
	1202.00	9.0	7.8	16.8	50.0	33.2
36 (603.25MHz)	649.00	18.0	7.8	25.8	50.0	24.2
	1298.00	7.8	7.8	15.6	50.0	34.4
44 (651.25MHz)	697.00	21.1	7.8	28.9	50.0	21.1
	1394.00	8.9	7.8	16.7	50.0	33.3
53 (705.25MHz)	751.00	26.3	7.8	34.1	50.0	15.9
	1502.00	18.4	7.8	26.2	50.0	23.8
61 (753.25MHz)	799.00	26.3	7.8	34.1	50.0	15.9
	1598.00	22.1	7.8	29.9	50.0	20.1
69 (801.25MHz)	847.00	22.9	7.8	30.7	50.0	19.3
	1694.00	14.5	7.8	22.3	50.0	27.7

Table 4. Antenna-Conducted Power Measurements

NOTES:

- *MPL = Impedance Matching Network Loss**
- Below 1GHz, measurements using CISPR quasi-peak mode.**
Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 1MHz.
The limits is 2.0 nano watts as the FCC part section 15.111.



Tested by **C. S. Choi**

PLOTS OF EMISSIONS

Conducted Emission at the Mains port (DVI mode, Line)

NEMKO KOREA (NK-2E-E-657)

06 Sep 2004 12:56

Conducted Emissions

EUT:

Manuf:

Op Cond:

Operator:

Test Spec:

Comment:

Result File:

LCD TV Monitor

Digital Cynos Co., Ltd.

"H" Scrolling & Audio Playback Mode (Digital Mode)

Chang-Soo, Choi

FCC Part 15 Subpart B Class B

MODEL : DCM-26WT

LINE : LINE-PE

e65711.dat : DCM-26WT_FCC_Digital

Scan Settings

(1 Range)

Frequencies

Start

150kHz

Stop

30MHz

Step

3.9063kHz

IF BW

9kHz

Detector

PK+AV

Receiver Settings

M-Time

20msec

Atten

10 dB

Preamp

OFF

OpRge

60dB

Transducer

No.

1

Start

150kHz

Stop

30MHz

Name

CE_LINE

Final Measurement:

Detectors:

Meas Time:

Subranges:

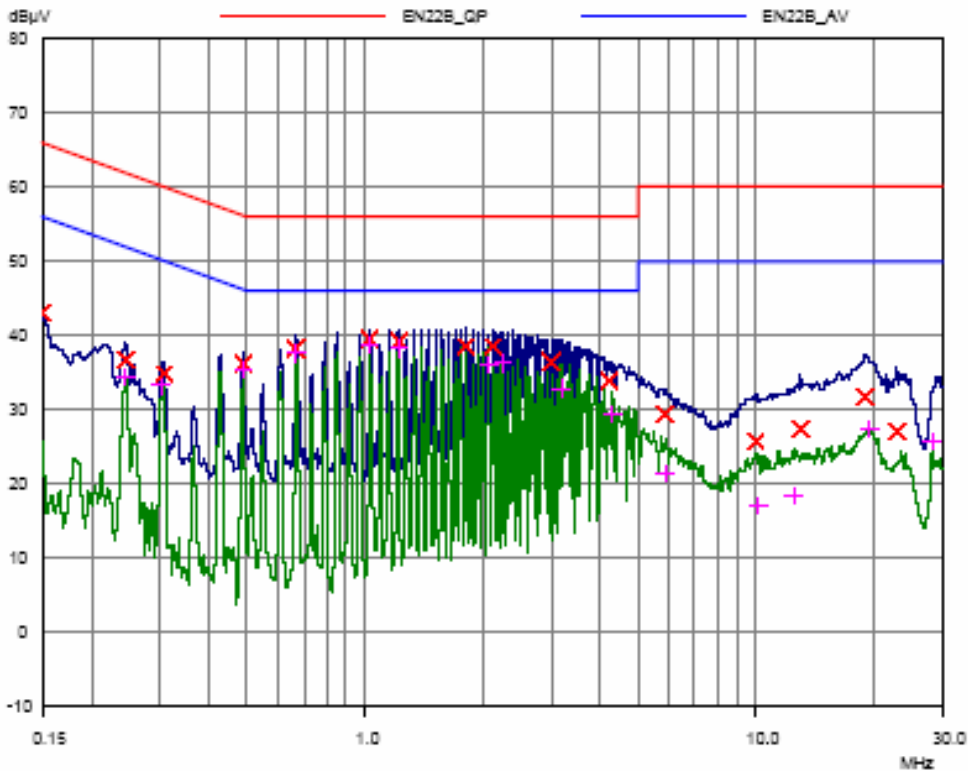
Acc Margin:

X QP / + AV

1sec

16

30 dB



PLOTS OF EMISSIONS

Conducted Emission at the Mains port (DVI mode, Neutral)

NEMKO KOREA (NK-2E-E-857)06 Sep 2004 11:58

Conducted Emissions

BUT:

Manuf:

Op Cond:

Operator:

Test Spec:

Comment:

Result File:

LCD TV Monitor

Digital Cynos Co., Ltd.

"H" Scrolling & Audio Playback Mode (Digital Mode)

Chang-Soo, Choi

FCC Part 15 Subpart B Class B

MODEL : DCM-26WT

LINE : NEUTRAL-PE

e657n1.dat : DCM-26WT_FCC_Digital

Scan Settings

(1 Range)

Frequencies

Start

150kHz

Stop

30MHz

Step

3.9063kHz

IF BW

9kHz

Detector

PK+AV

Receiver Settings

M-Time

20msec

Atten

10 dB

Preamp

OFF

OpRge

60dB

Transducer

No.

1

Start

150kHz

Stop

30MHz

Name

CE_LINE

Final Measurement:

Detectors:

Meas Time:

Subranges:

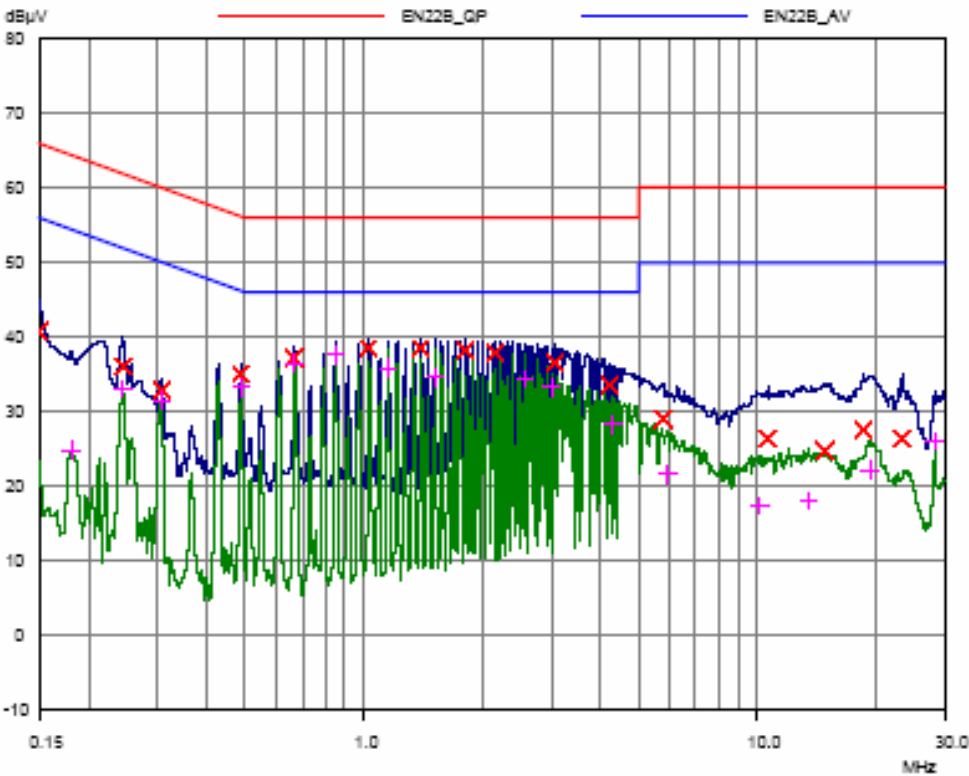
Acc Margin:

X QP / + AV

1sec

16

30 dB



PLOTS OF EMISSIONS

- Conducted Emission at the Mains port (Analog mode, Line)

06 Sep 2004 11:45

NEMKO KOREA (NK-2E-E-857)

Conducted Emissions

EUT: LCD TV Monitor

Manuf: Digital Cynos Co., Ltd.

Op Cond: "H" Scrolling & Audio Playback Mode (Analog Mode)

Operator: Chang-Soo, Choi

Test Spec: FCC Part 15 Subpart B Class B

Comment: MODEL : DCM-26WT

LINE : LINE-PE

Result File: e65712.dat : DCM-26WT_FCC_Analog

Scan Settings (1 Range)

Frequencies				Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	3.9063kHz	9kHz	PK+AV	20msec	10 dB	OFF	60dB

Transducer	No.	Start	Stop	Name
	1	150kHz	30MHz	CE_LINE

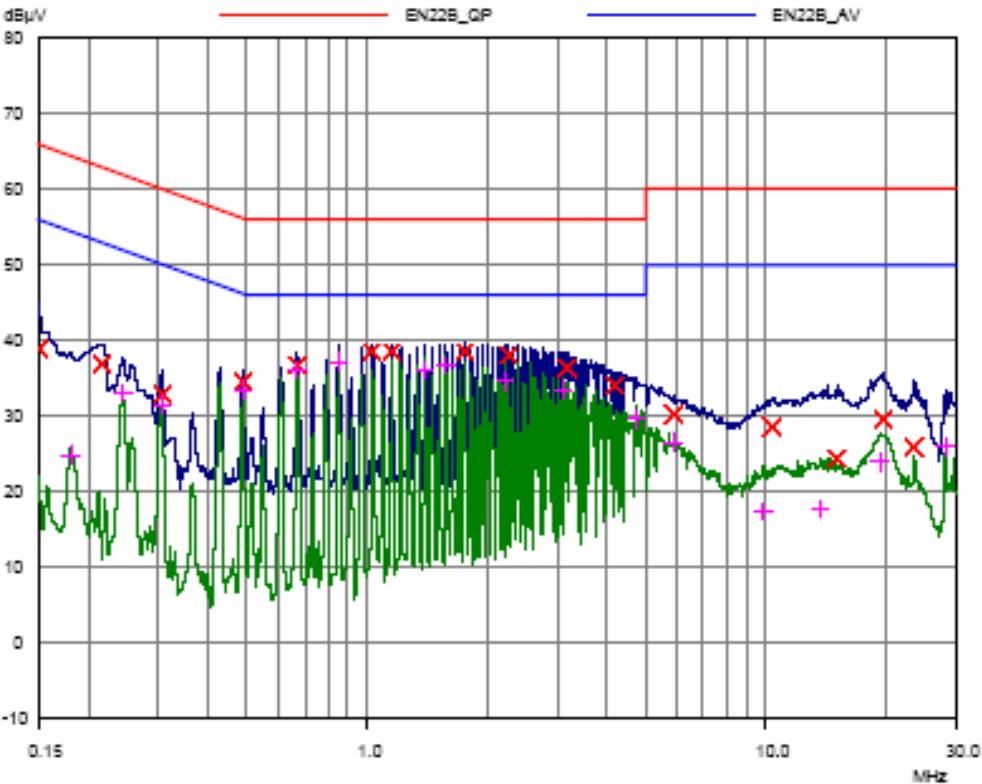
Final Measurement:

Detectors: X QP / + AV

Meas Time: 1sec

Subranges: 16

Acc Margin: 30 dB



PLOTS OF EMISSIONS

- Conducted Emission at the Mains port (Analog mode, Neutral)

NEMKO KOREA (NK-2E-E-657)

06 Sep 2004 11:10

Conducted Emissions

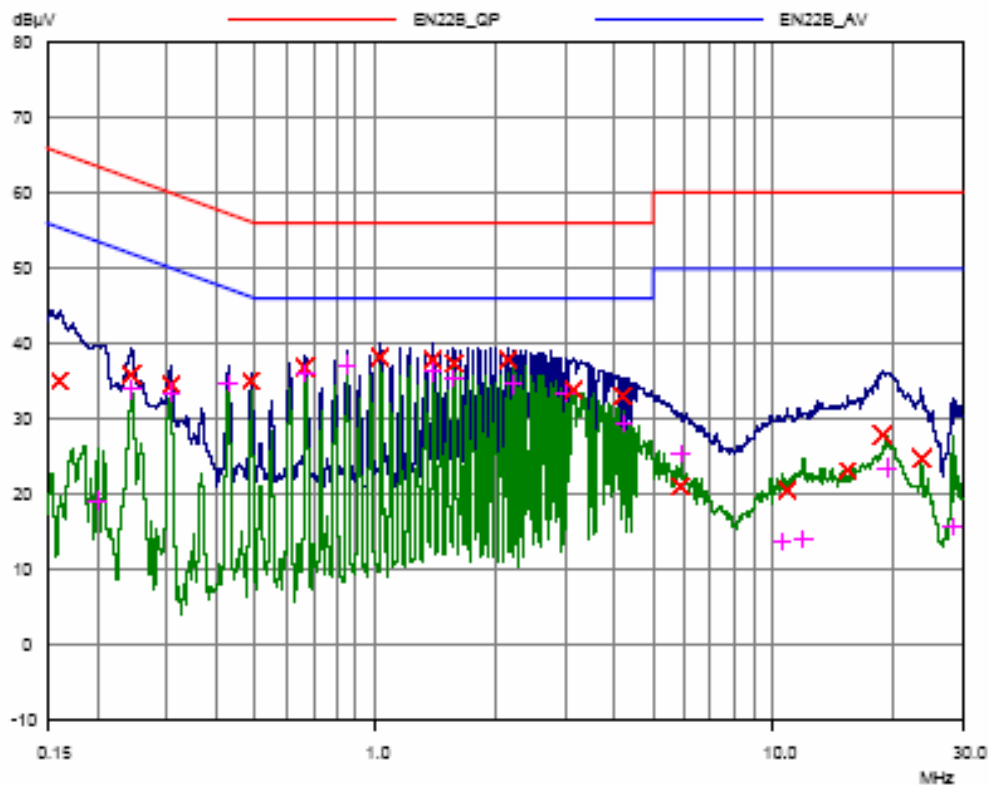
BUT: LCD TV Monitor
 Manuf: Digital Cynos Co., Ltd.
 Op Cond: "H" Scrolling & Audio Playback Mode (Analog Mode)
 Operator: Chang-Goo, Choi
 Test Spec: FCC Part 15 Subpart B Class B
 Comment: MODEL : DCM-26WT
 LINE : NEUTRAL-PE
 Result File: e657n2.dat : DCM-26WT_FCC_Analog

Scan Settings (1 Range)

Frequencies			Step	IF BW	Detector	Receiver Settings		
Start	Stop					M-Time	Atten	Preamp
150kHz	30MHz		3.9053kHz	9kHz	PK+AV	20msec	10 dB	OFF
								OpRge
								60dB

Transducer	No.	Start	Stop	Name
	1	150kHz	30MHz	CE_LINE

Final Measurement: Detectors: X QP / + AV
 Meas Time: 1sec
 Subranges: 16
 Acc Margin: 30 dB



ACCURACY OF MEASUREMENT

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95%

1. Radiation Uncertainty Calculation

<i>Contribution</i>	<i>Probability Distribution</i>	<i>Uncertainty(+/-dB)</i>
Antenna Factor	Normal (k=2)	± 0.5
Cable Loss	Normal (k=2)	± 0.04
Receiver Specification	Rectangular	± 2.0
Antenna directivity	Rectangular	± 1.0
Antenna Factor variation with Height		
Antenna Phase Center Variation		
Antenna Factor Frequency Interpolation		
Measurement Distance Variation		
Site Imperfections	Rectangular	± 2.0
Mismatch:Receiver VRC $r_i=0.3$ Antenna VRC $r_R=0.1(B_i)0.4(L_p)$ Uncertainty Limits $20\log(1+/-r_i r_R)$	U-Shaped	$+ 0.25 / - 0.26$
System Repeatibility	Std.deviation	± 0.05
Repeatability of EUT	-	-
Combined Standard Uncertainty	Normal	± 1.77
Expended Uncertainty U	Normal (k=2)	± 3.5

2. Conducted Uncertainty Calculation

<i>Contribution</i>	<i>Probability Distribution</i>	<i>Uncertainty(+/-dB)</i>
Receiver Specification	Normal (k=2)	± 2.0
LISN coupling spec.	Normal (k=2)	± 0.4
Cable and input attenuator cal.	Rectangular	± 0.4
Mismatch:Receiver VRC $r_i=0.3$ LISN vrc $r_g=0.1$ Uncertainty Limits $20\log(1+/-r_i r_R)$	U-Shaped	± 0.26
System Repeatibility	Std.deviation	± 0.68
Repeatability of EUT	-	-
Combined Standard Uncertainty	Normal	± 1.18
Expended Uncertainty U	Normal (k=2)	± 2.4

TEST EQUIPMENT

No.	Instrument	Manufacturer	Model	Calibration Date
1	*Test Receiver	R & S	ESCS 30	2004.08
2	*Test Receiver	R & S	ESCS 30	2003.12
3	*Amplifier	HP	8447F	2004.01
4	*Amplifier	HP	8447D	2004.07
5	Spectrum Analyzer	Advantest	R3265A	2003.12
6	*Spectrum Analyzer	HP	8566B	2004.03
7	*Logbicon Super Antenna	Schwarzbeck	VULB9166	2004.05
8	Doppels Teg Horn	EMCO	DAA-37121	2003.10
9	Dipole Antenna	R & S	VHA9103	2004.05
10	Dipole Antenna	R & S	UHA9105	2004.05
11	*Biconical Log Antenna	ARA	LPB-2520/A	2004.05
12	High Voltage Probe	R & S	ESH2-Z3	2003.10
13	Signal Generater	R & S	SMP02	2004.03
14	*Matching Pad	R & S	RAM358.5414.02	2004.05
15	*LISN	R & S	ESH3-Z5	2003.11
16	*LISN	Kyoritsu	KNW-407	2004.03
17	LISN	Kyoritsu	KNW-408	2003.12
18	CDN	FCC	NCD-T4	2004.05
19	CDN	FCC	NCD-T2	2004.05
20	*Position Controller	EM Eng.	N/A	N/A
21	*Turn Table	EM Eng.	N/A	N/A
22	*Antenna Mast	EM Eng.	N/A	N/A
23	*Anechoic Chamber	EM Eng.	N/A	N/A

*) Test equipment used during the test