



EMISSION TEST REPORT

Test report file No. : **02-IST-024/FB**Date of issue : Feb. 15, 2001Model / Type No. : L520BAV☒ Basic ☐ AlternateKind of product : LCD MonitorBrand name : DaewooApplicant : Daewoo Electronics Co., Ltd. Display Business DivisionManufacturer : Daewoo Electronics Co., Ltd. Display Business DivisionLicense holder : Daewoo Electronics Co., Ltd. Display Business DivisionAddress : 543, Dangjung-Dong, Kunpo-City, Kyonggi-Do, Korea**Test result** according to the regulation(s)☒ Positive ☐ Negative

at page 3.

This test report with appendix consists of 23 pages.

The test result only responds to the tested sample.

It is not allowed to copy this report even partly without the allowance of the Test Laboratory.

This equipment is complied with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-1992.

DIRECTORY

A) Documentation.

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C) Appendix

TEST REGULATIONS

The tests were performed according to the following regulations ;

- - FCC Part 15, Subpart B (Unintentional Radiators, Class B)

Information of Test Laboratory

IST EMC Lab.

San 21-8 Goan-Ri, Baekam-Myun, Yongin-Si, Kyunggi-Do, Korea

International - Tel : 82-31 - 333 - 4093. Fax : 82-31 - 333 - 4094.

Domestic - Tel : 031 - 333 - 4093. Fax : 031 - 333 - 4094.

EQUIPMENT UNDER TEST

Equipment Description :

LCD Pannel :	15.0 inch TFT LCD
	Pixel Pinch 0.297 x 0.297 mm
Frequency Range :	Vertical 50 ~ 75 Hz, Horizontal 30 ~ 62 kHz
Vedio Bandwidth :	80 MHz
PC Input Signal :	H / V separated (TTL)
	15 pin mini D-Sub (Analog RGB)
AV Input Signal :	Video - CVBS, S-VHS input
	Audio1 - Left,Right Stereo RCA
	Audio2 - mini jact for sound card
Speaker :	Maximum output 6 W (L-3W, R-3W)
	Input signal – 100 mV, 8 ohm
Power Supply Input :	100 ~ 240 Vac, 50/60 Hz
Power consumption :	26 W
Micom Type :	MTV312MV64 (MYSON) – clock 12 MHz
Dimensions (W x H x D) :	370 x 352 x 205 mm (with stand)

EQUIPMENT UNDER TEST

EUT Type :

- ☒ Table-Top.
☐ Floor-Standing.
☐ Table-Top and Floor-Standing(Combination).

Operation – mode of the E.U.T. :

The equipment under test was operated during the measurement under following conditions :

- ☐ Standby.
- ☒ Operational Condition :
- 1) Scrolling “H” characters under MS Windows 98,
Test mode : 1024 X 768, 75 Hz (60 kHz)
- 2) Displaying color bar and sounding 1 kHz audio

Configuration of the equipment under test :

Following peripheral devices and interface cables were connected during the measurement :

Equipment	Type	Brand	Serial No.
PC	Brio BA600/550	HP	SG01902402
Keyboard	SK-2502C	HP	M0004102821
Mouse1	M-S48A	HP	LZE01251424
Printer	A0302384	Northern Telecom	26633S60168
Mouse2	M-MD14-2	Logitech	N/A
Pattern Generator	PM5418	Fluke	945205418003

Connecting Interface Cables :

- Unshielded AC power cable : 1.8 m
- Shielded monitor's signal cable : 1.5 m
- Shielded printer's signal cable : 1.5 m

TEST CONDITIONS

The **measurement of the conducted emissions (Interference voltage)** was performed in a shielded room.

Test location :

☒ Shielded room. No.1

☐ Compact chamber 2

Used testing instruments :

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESH 3	Test Receiver	Rohde & Schwarz	Jun. 16, 2001	861742/015
3725/2	LISN	EMCO	Jul. 30, 2001	9101-2068
KNW-407	LISN	Hyup-Rip	Jul. 26, 2001	8-883-10
ESH 3-Z2	Pulse Limiter	Rohde & Schwarz	Jul. 13, 2001	357.8810.52

Test - accessories :

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

Measurement Procedures :

Conducted emissions measurements were made in accordance with ANSI C-63.4-1992, "Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The measurement were performed over the frequency range of 0.45MHz to 30MHz using a 50 Ω /50uH LISN as the input transducer to an EMI/Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within an IF bandwidth of 10kHz or for "quasi-peak" within a bandwidth of 9kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

Test engineer :



S. J. Oh / Research Engineer
IST EMC Lab.

The **measurement of the radiated emissions (Electric field)** in the frequency range from 30 MHz to 1GHz was performed in horizontal and vertical antenna polarization at a open-site which meet the site attenuation requirement of ANSI C63.4-1992 and a test distance of :

Location : ☒ Open Site No. 1 ☐ Open Site No. 2 ☐ Open Site No. 3
 Distance : ☒ 3 meters ☐ 10 meters

Used testing instruments :

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESVP	Test Receiver	Rohde & Schwarz	Jun. 12, 2001	861744/018
VULB 9160	Antenna	Schwarzbeck	Jun. 04, 2001	3048

Test - accessories :

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

Measurement procedures

Radiated measurements were in accordance with ANSI C63.4-1992 “Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz”. The measurements were performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a EMI/Field Intensity Meter. The measurements were made with the detector set for “quasi-peak” within a bandwidth of 120kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

Test engineer :



S. J. Oh / Research Engineer
IST EMC Lab.

TEST RESULT

Test Condition : Scrolling 'H' characters under MS Windows 98

Conducted emissions : 450 kHz - 30 MHz

The requirements are. ☒ KEPT ☐ NOT KEPT
Min. limit margin 8.5 dB at 0.454 MHz
Remarks : See test-graph to be attached at pages 11 ~ 13.

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are. ☒ KEPT ☐ NOT KEPT
Min. limit margin 3.5 dB at 393.7 MHz
Remarks : See test-data at page 14 ~ 15.

Test Condition : Displaying color bar and sounding 1 kHz audio

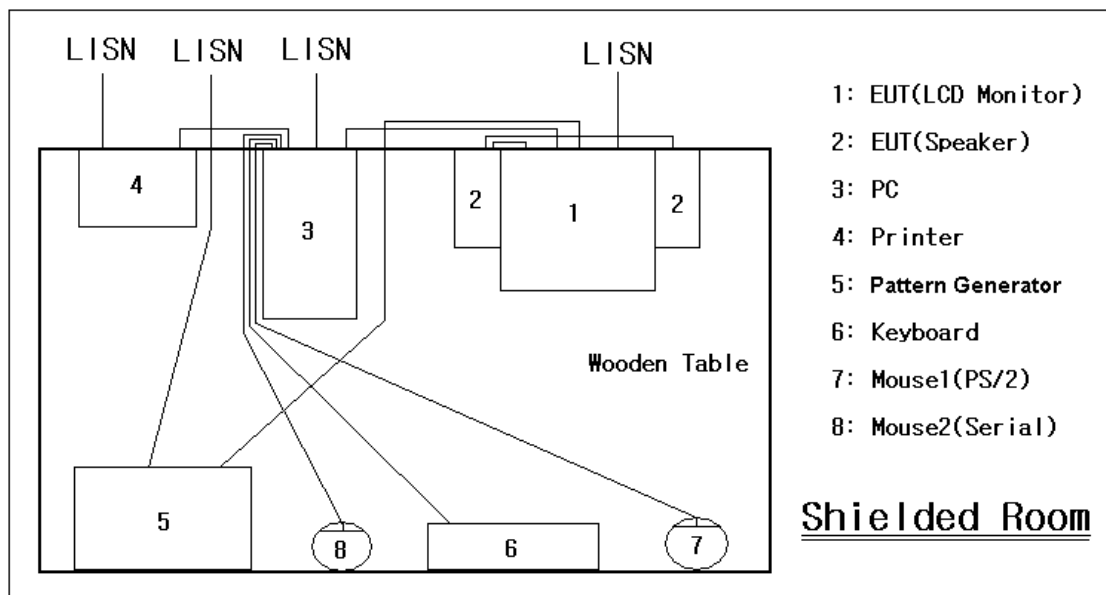
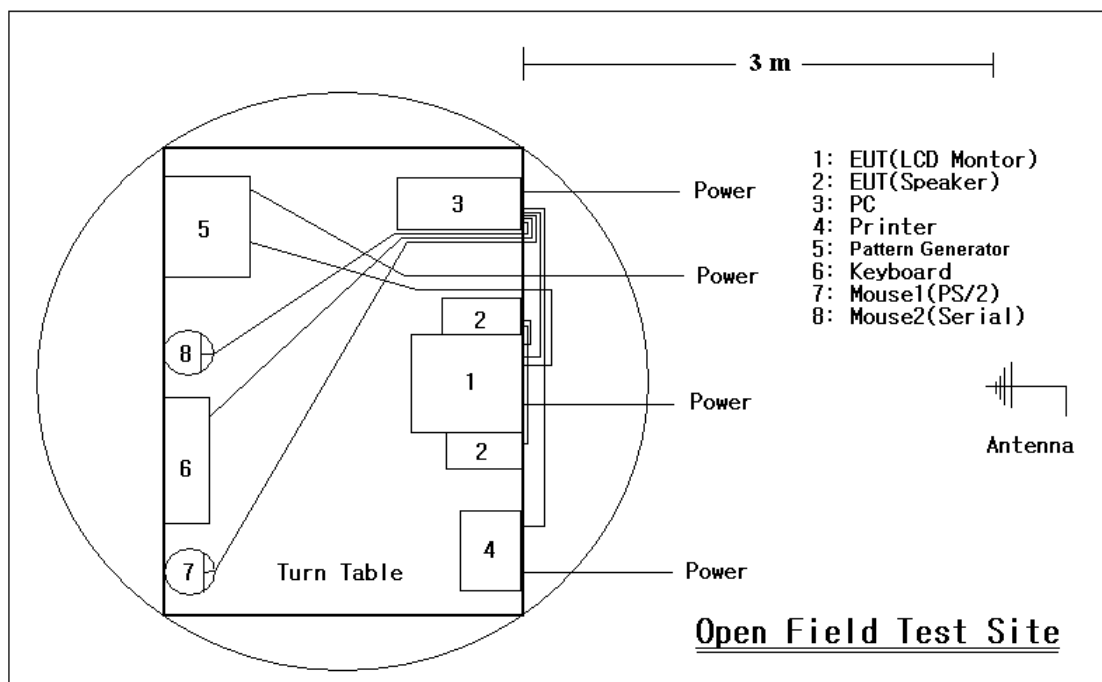
Conducted emissions : 450 kHz - 30 MHz

The requirements are. ☒ KEPT ☐ NOT KEPT
Min. limit margin 10.2 dB at 0.453 MHz
Remarks : See test-graph to be attached at pages 18 ~ 20.

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are. ☒ KEPT ☐ NOT KEPT
Min. limit margin 3.4 dB at 320.2 MHz
Remarks : See test-data at page 21 ~ 22.

TEST SETUP (Drawings)

Type : L520BAVConducted Emissions 0.15 MHz - 30 MHzRadiated Emissions 30 MHz - 1000 MHz

TEST SETUP (Photos)

Test Condition : Scrolling 'H' characters under MS Windows 98

Type : L520BAV



Conducted Emissions 0.15 MHz - 30 MHz



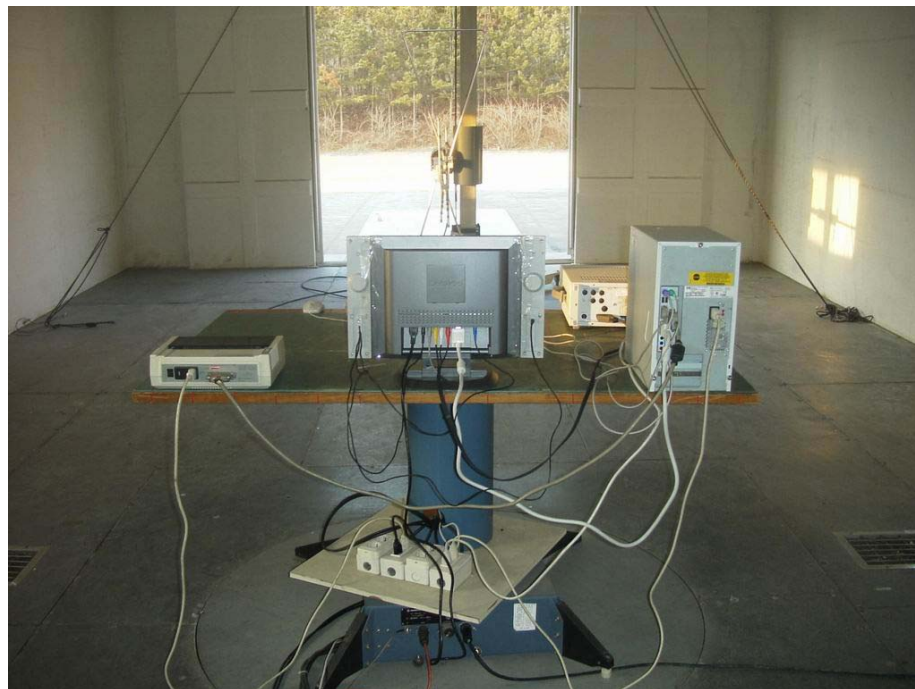
TEST SETUP (Photos)

Test Condition : Scrolling 'H' characters under MS Windows 98

Type : L520BAV



Radiated Emissions 30 MHz - 1000 MHz



Conducted Emission Test Data

Type L520BAV
 Manufacturer Daewoo Electronics Co., Ltd. Display Business Division
 Operation mode Scrolling "H" pattern display 1024 x 768, 75Hz
 Environmental Condition Temperature : 18 °C
 Humidity : 40 %
 Atmospheric pressure : 1000 mbar
 Date Feb. 04, 2002

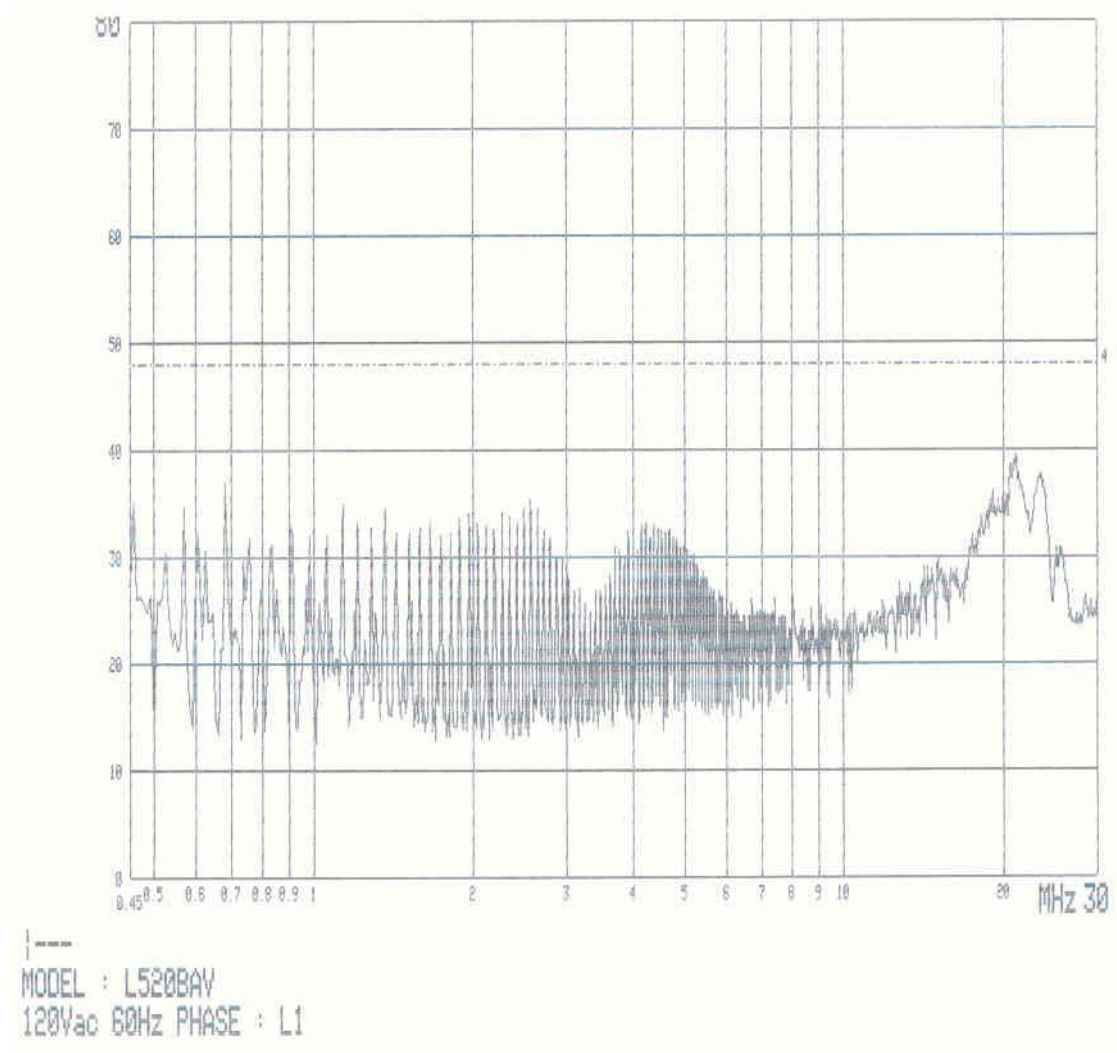
Highest Emissions relative to the limit

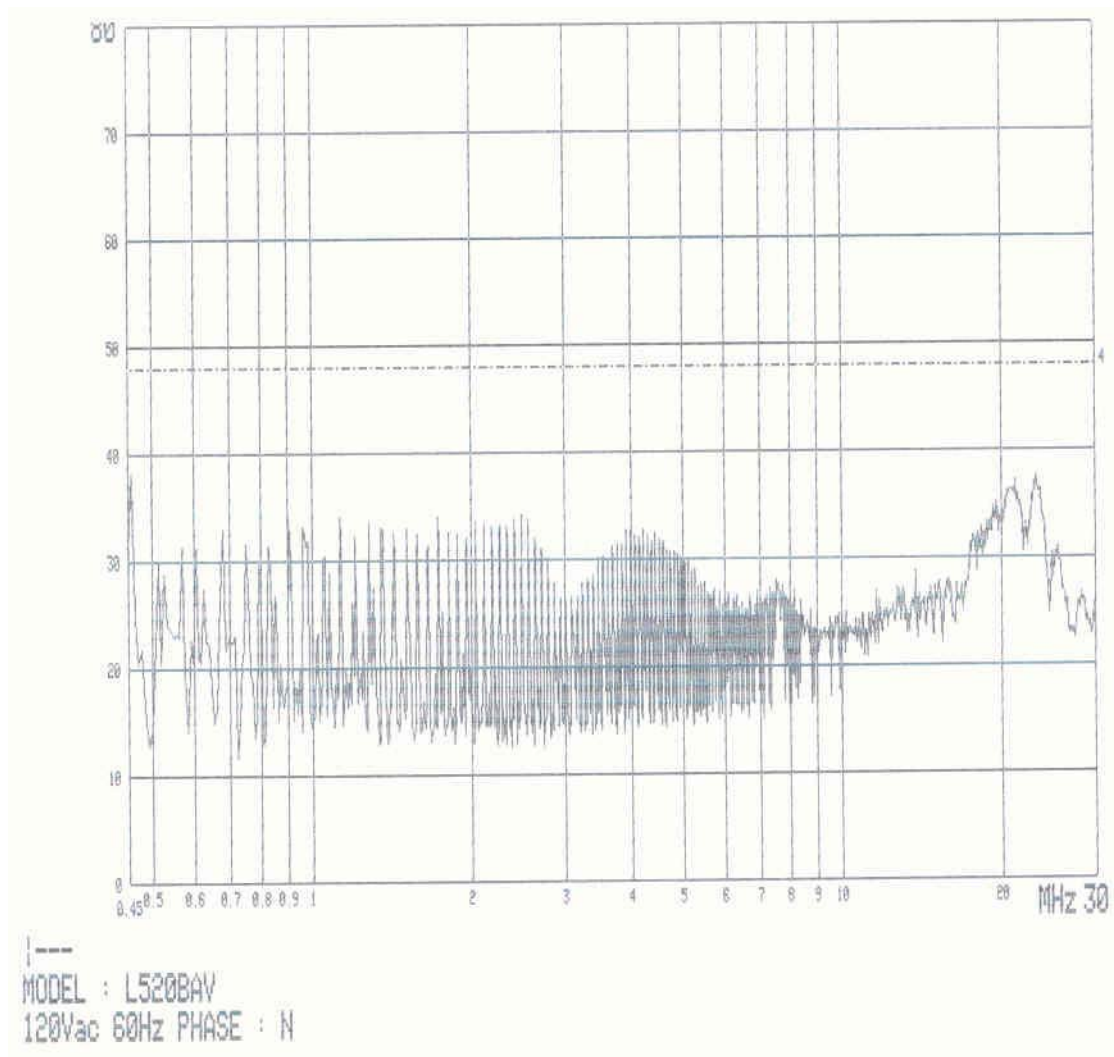
Frequency [MHz]	Reading [dBμV]	Insertion loss [dB]	Phase (L1/N)	Result [dBμV]	Limit [dBμV]	Margin [dB]
0.454	36.2	0.8	L1	37.0	48.0	11.0
0.680	36.0	0.8		36.8	48.0	11.2
2.564	34.8	0.8		35.6	48.0	12.4
4.222	32.5	0.8		33.3	48.0	14.7
21.126	34.6	0.8		35.4	48.0	12.6
23.583	34.1	0.8		34.9	48.0	13.1
0.454	38.7	0.8	N	39.5	48.0	8.5
1.131	33.3	0.8		34.1	48.0	13.9
1.731	32.8	0.8		33.6	48.0	14.4
2.485	33.3	0.8		34.1	48.0	13.9
4.212	32.1	0.8		32.9	48.0	15.1
23.192	33.8	0.8		34.6	48.0	13.4
Cable loss are less than 0.1 dB						

*L1 : Live Line

**N : Neutral Line

*** Please refer to data graphs at page 12 ~ 13.



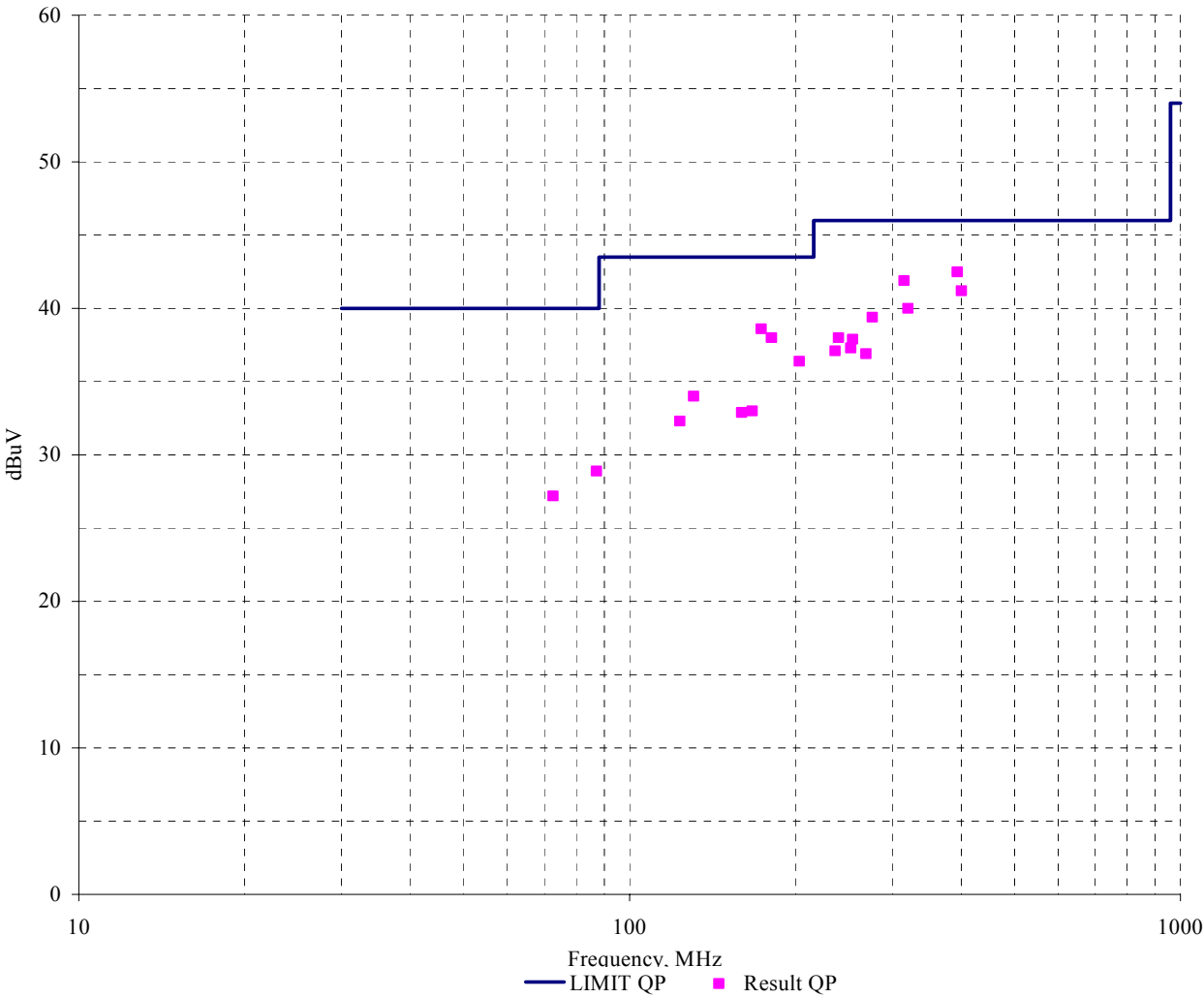


Radiation Test Data

Type	L520BAV
Manufacturer	Daewoo Electronics Co., Ltd. Display Business Division
Operation mode	Scrolling "H" pattern display 1024 x 768, 75Hz
Environmental Condition	Temperature : 17 °C
	Humidity : 41 %
	Atmospheric pressure : 1000 mbar
Test distance	3 m
Antenna	VULB9160
Date	Feb. 05, 2002

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
72.6	16.4	9.2	1.6	117	110	V	27.2	40.0	12.8
87.1	20.0	7.2	1.7	11	100	V	28.9	40.0	11.1
123.4	20.0	10.2	2.1	58	100	V	32.3	43.5	11.2
130.7	21.4	10.5	2.1	130	100	V	34.0	43.5	9.5
159.7	18.3	12.3	2.3	275	262	H	32.9	43.5	10.6
167.0	18.3	12.3	2.4	267	258	H	33.0	43.5	10.5
173.3	24.3	11.9	2.4	264	100	V	38.6	43.5	4.9
181.1	25.1	10.5	2.4	310	100	V	38.0	43.5	5.5
203.3	25.2	8.5	2.7	264	100	H	36.4	46.0	9.6
236.2	24.3	9.9	2.9	253	100	H	37.1	46.0	8.9
239.6	25.0	10.1	2.9	68	210	H	38.0	46.0	8.0
252.0	23.7	10.8	2.8	45	202	H	37.3	46.0	8.7
254.1	24.2	10.9	2.8	153	181	H	37.9	46.0	8.1
268.6	22.4	11.5	3.0	285	104	H	36.9	46.0	9.1
275.9	24.6	11.7	3.1	299	158	H	39.4	46.0	6.6
315.0	26.8	11.7	3.4	281	160	H	41.9	46.0	4.1
320.3	24.9	11.7	3.4	0	188	H	40.0	46.0	6.0
393.7	25.5	12.9	4.1	21	189	H	42.5	46.0	3.5
400.4	23.6	13.3	4.3	100	100	V	41.2	46.0	4.8

MEASUREMENT OF DISTURBANCE RADIATION



TEST SETUP (Photos)

Test Condition : Displaying color bar and sounding 1 kHz audio

Type : L520BAV



Conducted Emissions 0.15 MHz - 30 MHz



TEST SETUP (Photos)

Test Condition : Displaying color bar and sounding 1 kHz audio

Type : L520BAV



Radiated Emissions 30 MHz - 1000 MHz



Conducted Emission Test Data

Type	L520BAV		
Manufacturer	Daewoo Electronics Co., Ltd. Display Business Division		
Operation mode	Displaying color bar and sounding 1 kHz audio		
Environmental Condition	Temperature	:	18 °C
	Humidity	:	41 %
	Atmospheric pressure	:	1000 mbar
Date	Feb. 06, 2002		

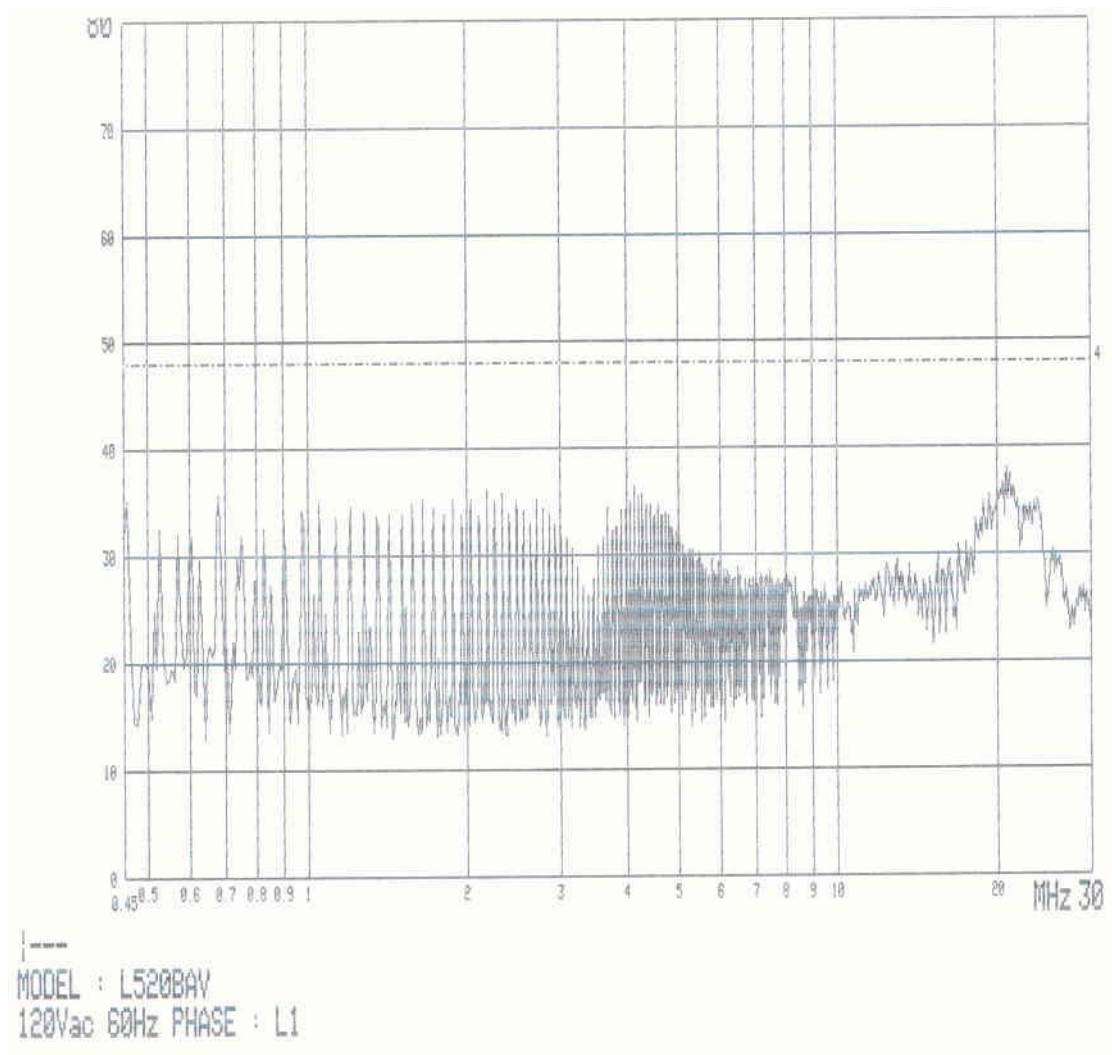
Highest Emissions relative to the limit

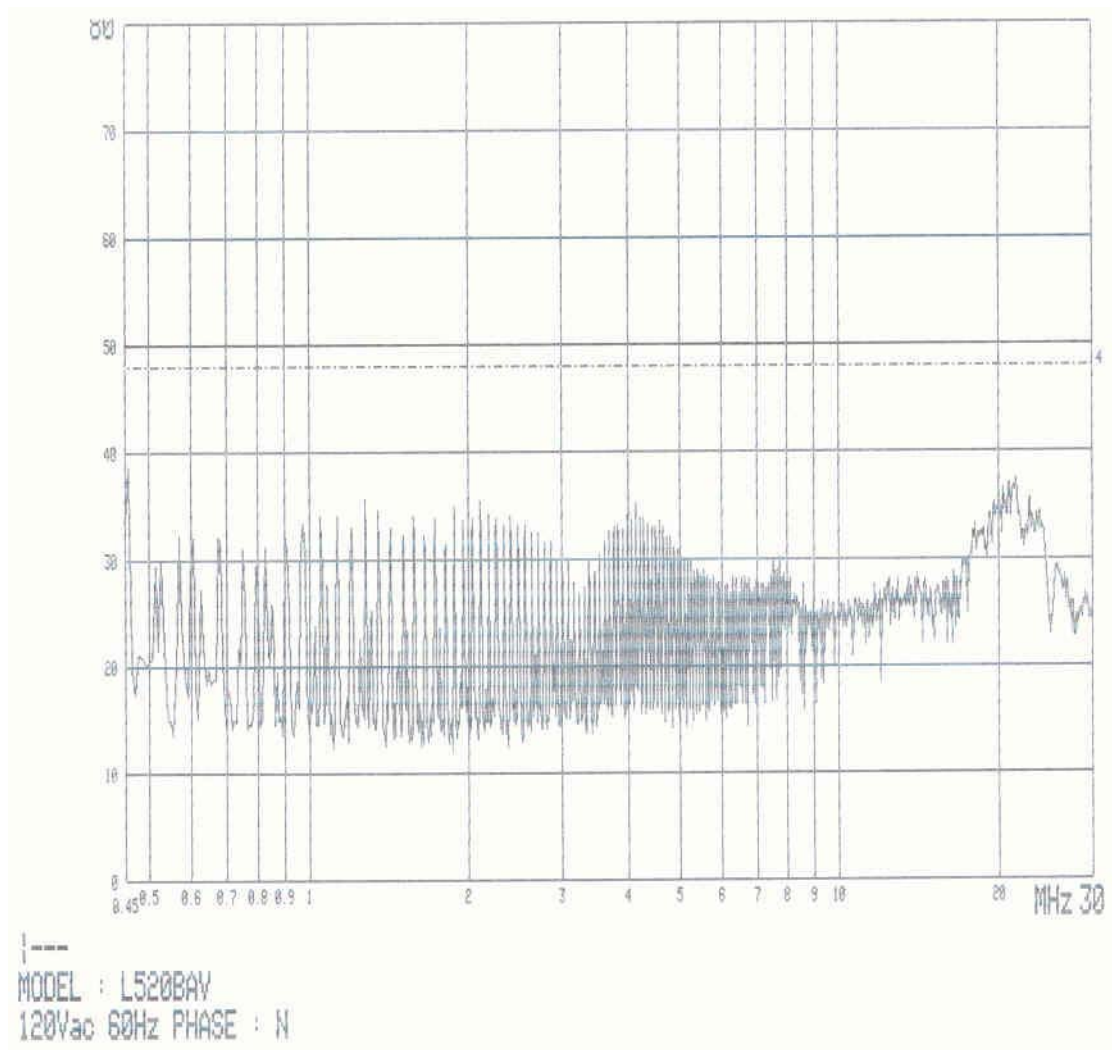
Frequency [MHz]	Reading [dBμV]	Insertion loss [dB]	Phase (L1/N)	Result [dBμV]	Limit [dBμV]	Margin [dB]
0.453	37.0	0.8	L1	37.8	48.0	10.2
0.680	35.4	0.8		36.2	48.0	11.8
1.053	34.2	0.8		35.0	48.0	13.0
2.180	34.3	0.8		35.1	48.0	12.9
4.133	34.4	0.8		35.2	48.0	12.8
20.823	34.6	0.8		35.4	48.0	12.6
0.454	38.6	0.8	N	39.4	48.0	10.6
1.278	34.3	0.8		35.1	48.0	12.9
2.105	33.3	0.8		34.1	48.0	13.9
4.133	33.5	0.8		34.3	48.0	13.7
7.746	26.7	0.8		27.5	48.0	20.5
21.577	33.7	0.8		34.5	48.0	13.5
Cable loss are less than 0.1 dB						

*L1 : Live Line

**N : Neutral Line

*** Please refer to data graphs at page 19 ~ 20.



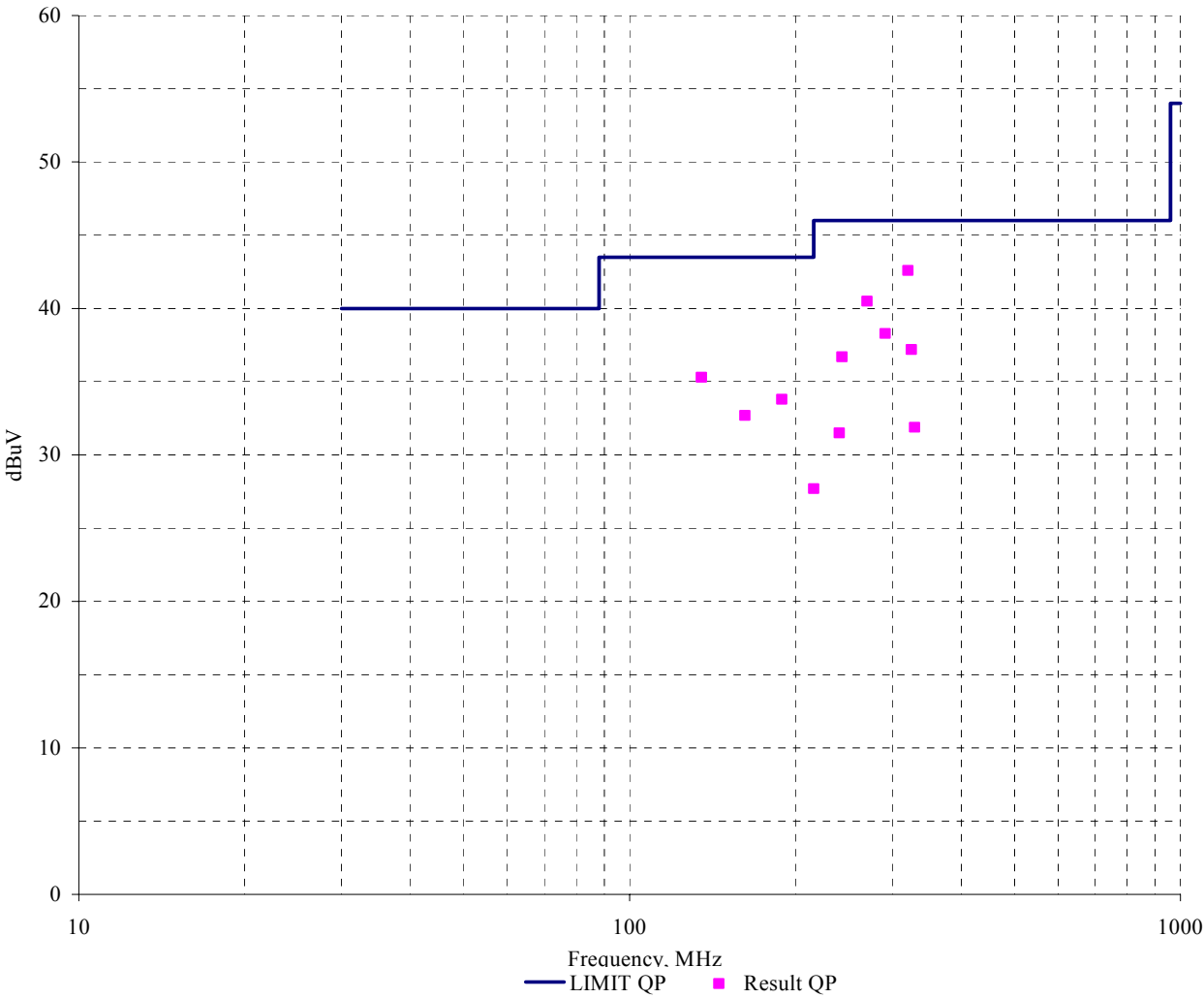


Radiation Test Data

Type	L520BAV
Manufacturer	Daewoo Electronics Co., Ltd. Display Business Division
Operation mode	Displaying color bar and sounding 1 kHz audio
Environmental Condition	Temperature : 18 °C Humidity : 42 % Atmospheric pressure : 1000 mbar
Test distance	3 m
Antenna	VULB9160
Date	Feb. 07, 2002

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
135.0	22.2	11.0	2.1	21	100	V	35.3	43.5	8.2
162.0	18.1	12.3	2.3	223	100	V	32.7	43.5	10.8
189.0	22.0	9.3	2.5	24	100	V	33.8	43.5	9.7
216.0	16.6	8.4	2.7	130	100	V	27.7	43.5	15.8
240.0	18.3	10.3	2.9	275	200	H	31.5	46.0	14.5
243.0	23.4	10.4	2.9	266	100	V	36.7	46.0	9.3
270.0	26.0	11.5	3.0	164	100	V	40.5	46.0	5.5
291.1	23.4	11.8	3.1	110	212	H	38.3	46.0	7.7
320.2	27.5	11.7	3.4	164	200	H	42.6	46.0	3.4
324.7	22.1	11.7	3.4	153	189	H	37.2	46.0	8.8
329.3	16.8	11.7	3.4	222	192	H	31.9	46.0	14.1

MEASUREMENT OF DISTURBANCE RADIATION



SUMMARY

GENERAL REMARKS :

The equipment is not modified anything, mechanical or circuit to improve EMI status during a measurement and complied the regulation "Part 15 subpart B Class B of CFR 47"

FINAL JUDGMENT :

The requirements according to the technical regulations are

☒ Kept ☐ Not kept

The equipment under test does

☒ Fulfill the general approval requirements mentioned on page 3.
☐ Not fulfill the general approval requirements mentioned on page 3.

Begin of testing : Feb. 01, 2002

End of testing : Feb. 08, 2002

Reviewed by :

Approved by :



Joon H. Lee. EMC Manager
IST EMC Lab.



G. Chung Chief of EMC Lab.