IST EMC LAB.

E M I S S I O N T E S T R E P O R T

Test report file No. : **01-IST-047/FB** Date of issue : Apr. 13, 2001.

Model / Type No. : 7U790

Kind of product : 17" Color Display Monitor

Applicant : Orion Electric Co.,Ltd

Manufacturer : Orion Electric Co.,Ltd

Address : 165 Gongdan-Dong, Gumi-City, Kyongbuk, Korea

Test result according to the regulation(s)

■ Positive ☐ Negative

at page 3.

This test report without appendix consists of 13 pages.
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.

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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
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ENVIRONMENTAL CONDITIONS

Temperature	21 °C
Humidity	45 %
Atmospheric pressure	999 mbar

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	Oct. 08, 2000	861742/018
▮ 3725/2	LISN	EMCO	Oct. 08, 2000	9102-1788
▮ 3825/2	LISN	EMCO	Dec. 20, 2000	9103-1788
▮ ESH 3-Z2	Pulse Limiter	Rohde & Schwarz	Mar. 30, 2001	357.8810.52

Test - accessories :

Type	Manufacturer
▮ Aneroid Barometer	Sato
▮ Hygrometer	Sato

Measurement Procedures :

Conducted emissions measurments 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 50Ω/ 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 :

B. K, Bae. / Research Engineer
IST EMC Lab.

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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 :

- ▮ - Open-site 1
- ▮ - 3 meters.
- □ - Compact chamber
- □ - 10 meters

Used testing instruments :

Name	Type	Manufacturer	Calibration. Date	Serial Number
▮ ESVP	Test Receiver	Rohde & Schwarz	July. 21, 2000	861744/004
▮ VULB 9160	Antenna	Schwarzbeck	July. 11, 2000	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 :

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EQUIPMENT UNDER TEST

Equipment Description

The Equipment Under Test (EUT) is the **17" Color Display Monitor of Orion Electric Co., Ltd. (FCC ID: EWB7U790)**

Maximum Resolution :	1280 X 1024 Non –Interlaced H-Sync: 64kHz / V-Sync: 60 Hz
Frequency Range :	H-Sync: 30 kHz – 70 kHz / V-sync: 50 Hz – 150Hz
CRT Picture Tube :	17 inch diagonal (Orion M41KXU100XX***)
Dot Pitch :	0.27 mm Pitch Black Matrix Screen
Power Supply Input :	100-240 Vac, 50/60 Hz
Power consumption :	100 W (max)
Port(s)/Input Connector(s) :	15-pin D-sub type signal connector
Cable(s) :	Shielded D-sub (with ferrite on both ends)
Dimensions (W x H x D) :	560 x 520 x 495 mm

Operation - mode of the E.U.T. :

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

- □ Standby.
- ▮ Test program (H – Pattern) : Scrolling "H" characters under MS Windows98
- □ Test program (customer specific)

Configuration of the equipment under test :

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

Equipment	Type	Brand	Serial No	FCC ID
PC	Brio BA600/550	HP	SG01901756	DoC
Keyboard	M-S34	Logitek	LZA72050837	DZL211029
Printer	A0302384	Northern Telecom	26633S60168	BS16XU2225C-L
Mouse1	M-S48A	HP	LZA00850320	JNZ201213
Mouse2	M-MD14-2	Logitech	N/A	DELMMD142

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

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TEST RESULT

Conducted emissions : 450 kHz - 30 MHz

The requirements are.

▮ KEPT □ NOT KEPT

Min. limit margin

5.1 dB at 0.464 MHz

Remarks : See test-graph to be attached at pages 9~11.

Radiated emissions (magnetic field) : 10 kHz - 30 MHz

The requirements are

□ KEPT □ NOT KEPT

Max. limit margin. _____ dB at _____ MHz

Remarks :

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are

▮ KEPT □ NOT KEPT

Min. limit margin 7.3 dB at 86.7 MHz

Remarks : See test-data at page 12.

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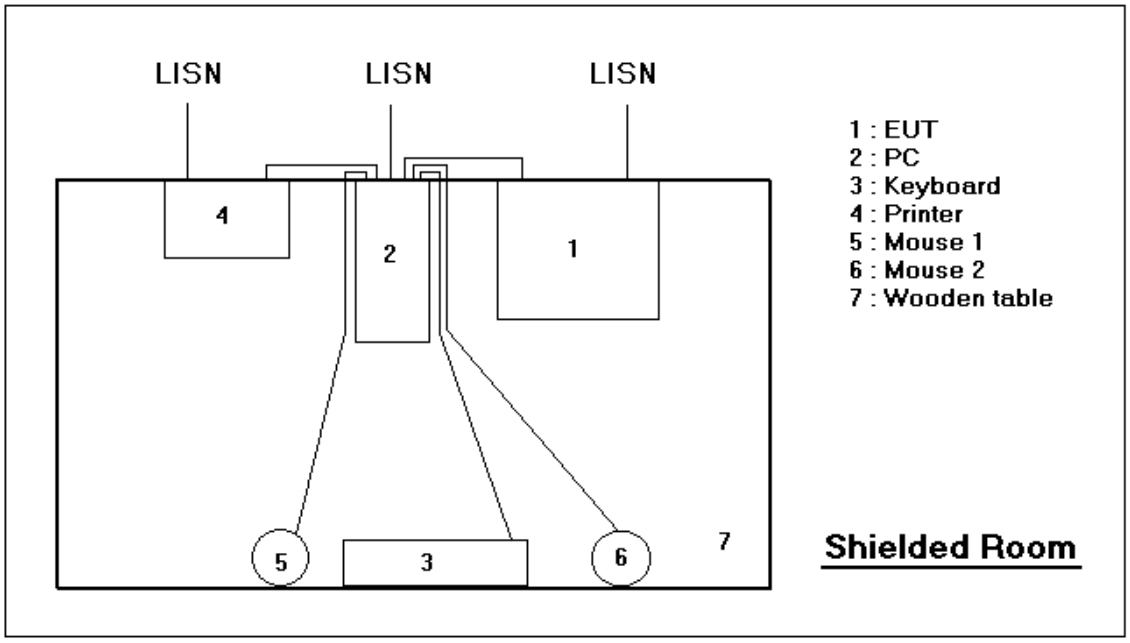
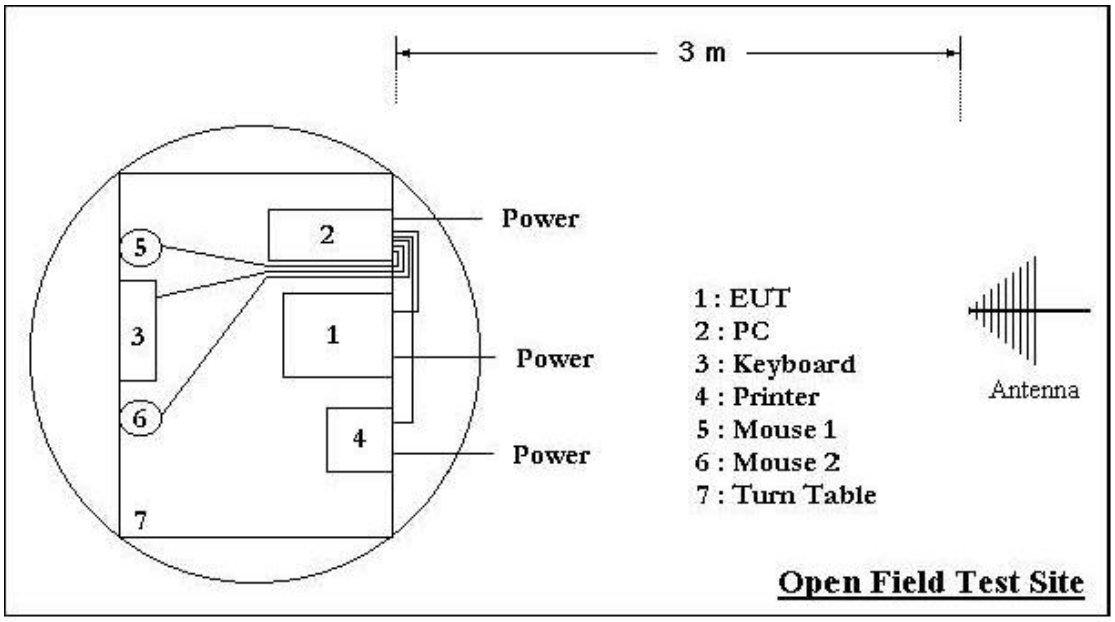
Test Set-Up
(Type : 7U790)



Picture 1 : Conducted emission 450kHz ~ 30MHz



Picture 2 : Radiated emission 30MHz ~ 1000MHz

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Conducted Emission Test Data

Type : 7U790
Manufacturer : Orion Electric Co.,Ltd.
Operation mode : Scrolling "H" pattern display 1280 X 1024, 60Hz
Date : Apr. 04, 2001

Highest Emissions ralative to the limit

Frequency [MHz]	Reading [dBμV]	Insertion loss [dB]	Phase (*L1/**N)	Limit [dBμV]	Margin [dB]
0.450	40.5	0.8	L1	48.0	6.7
0.464	42.1	0.8		48.0	5.1
15.840	20.3	0.8		48.0	26.9
21.640	35.6	0.8		48.0	11.6
21.708	36.4	0.8		48.0	10.8
23.760	36.7	0.8		48.0	10.5
0.513	31.2	0.8	N	48.0	16.0
0.578	27.3	0.8		48.0	19.9
15.840	20.4	0.8		48.0	26.8
21.643	32.5	0.8		48.0	14.7
21.711	36.5	0.8		48.0	10.7
23.754	32.8	0.8		48.0	14.4
Cable loss are less than 0.1 dB					

*L1 : Live Line
**N : Neutral Line
*** **Please refer to data graphs at page 12 ~ 13**

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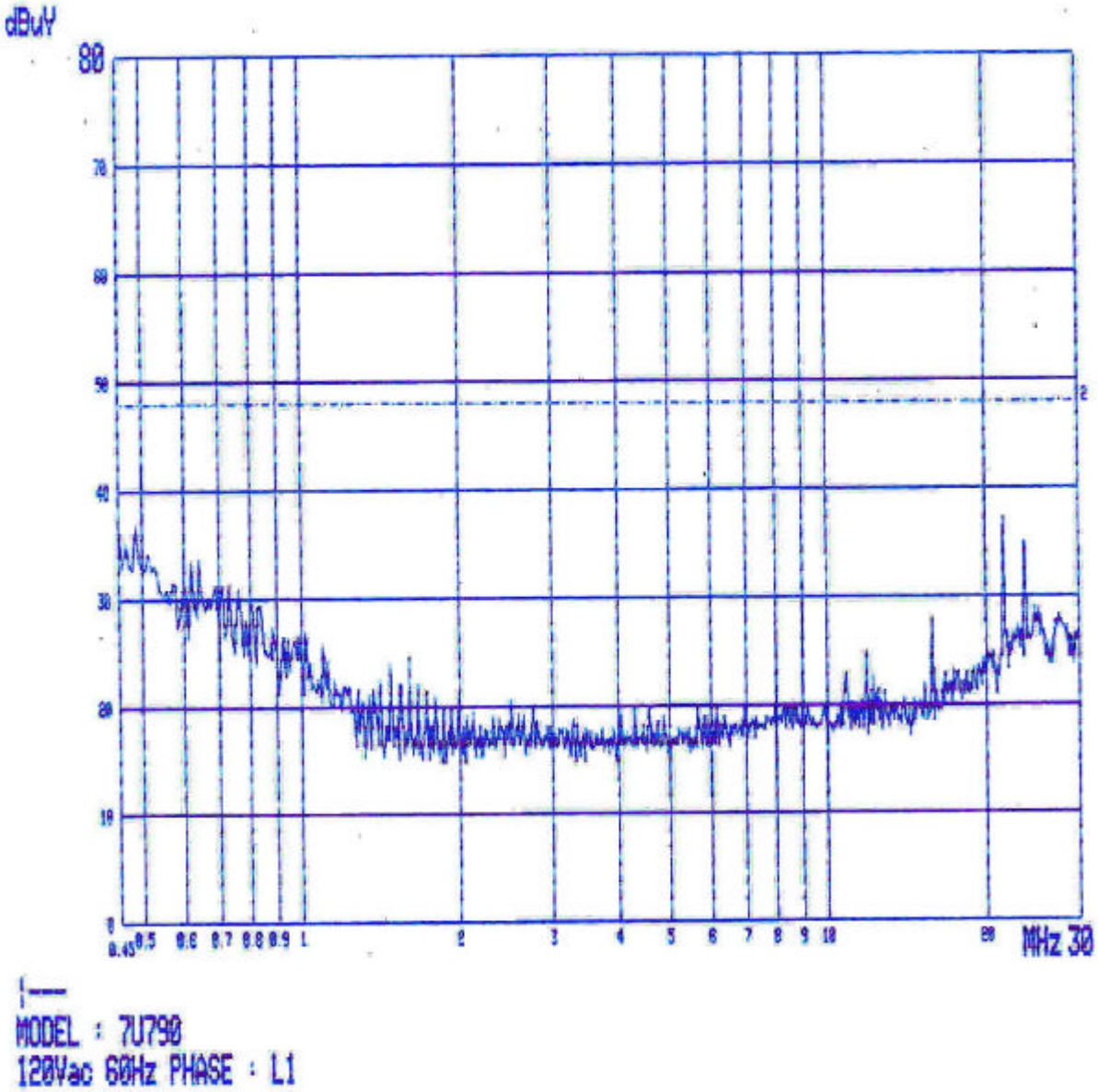

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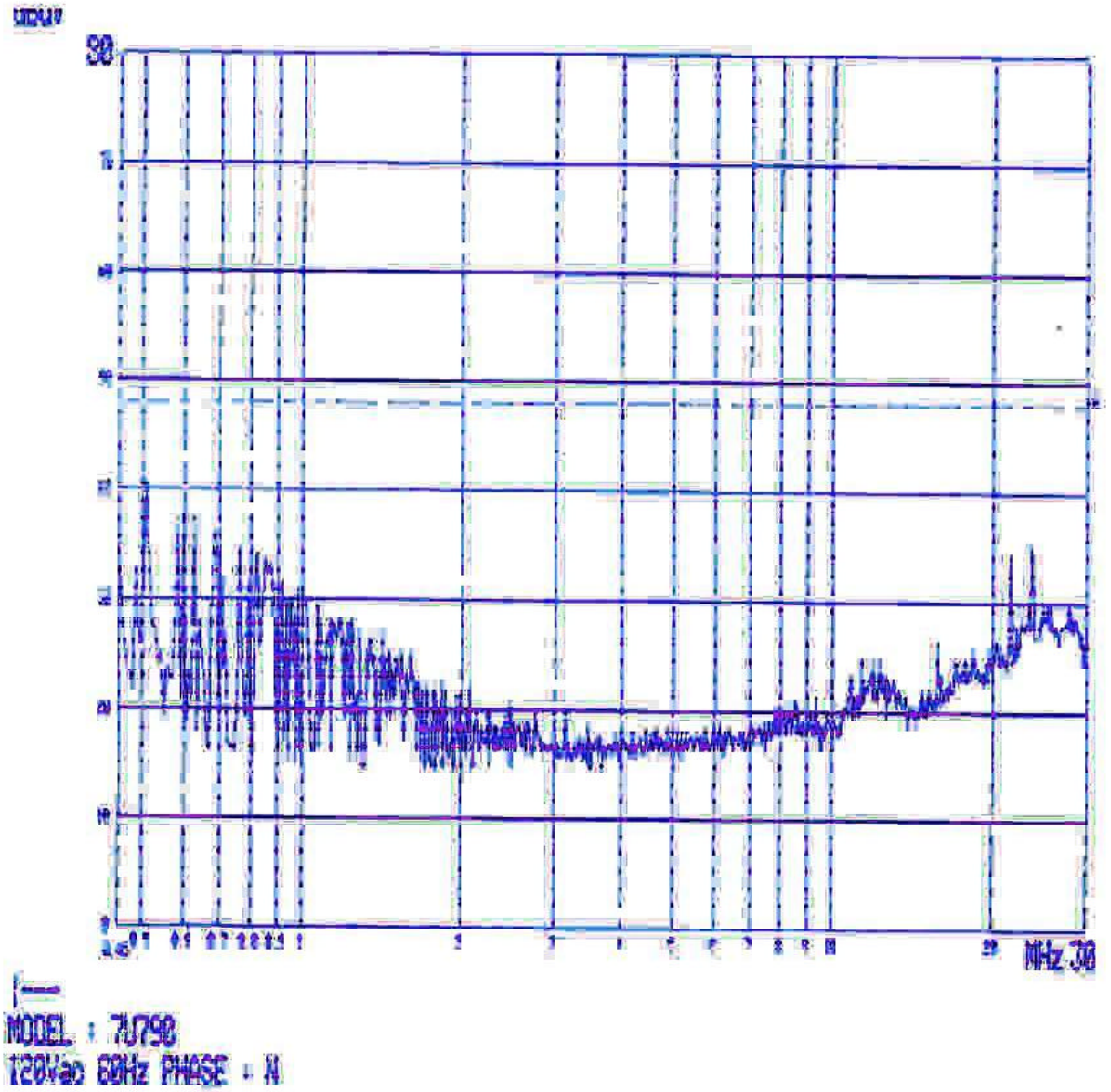

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Radiation Test Data

Type : 7U790
Manufacturer : Orion Electric Co.,Ltd.
Operation mode : Scrolling “H” pattern display 1280 X 1024, 60Hz
Test distance : 3 m
Antenna : VULB9160
Date : Apr. 09, 2001.

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
52.6	15.0	10.8	1.3	120	100	V	27.1	40.0	12.9
64.5	20.0	10.6	1.5	121	100	V	32.1	40.0	7.9
86.7	23.8	7.2	1.7	108	100	V	32.7	40.0	7.3
130.0	22.6	10.5	2.1	107	100	V	35.2	43.5	8.3
140.9	18.0	11.6	2.2	309	173	V	31.8	43.5	11.7
184.3	17.2	10.0	2.4	62	116	H	29.6	43.5	13.9
216.8	20.8	8.4	2.7	273	135	H	31.9	46.0	14.1
292.7	18.5	11.8	3.2	270	130	H	33.4	46.0	12.6
303.6	16.3	11.7	3.3	273	135	H	31.3	46.0	14.7
314.4	18.5	11.7	3.4	244	130	V	33.6	46.0	12.4
346.9	18.9	11.7	3.6	247	100	V	34.2	46.0	11.8
357.7	20.2	11.7	3.6	270	100	V	35.5	46.0	10.5
368.6	19.7	12.1	3.7	344	174	H	35.5	46.0	10.5
411.9	17.3	13.3	4.3	330	100	V	34.9	46.0	11.1
433.6	17.1	13.7	4.4	341	100	V	35.2	46.0	10.9
455.3	16.0	14.0	4.5	338	100	V	34.5	46.0	11.5
487.8	16.0	14.8	4.8	321	100	V	35.6	46.0	10.4
509.5	17.5	15.1	4.8	331	100	V	37.4	46.0	8.6

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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 : Apr. 02, 2001

End of testing : Apr. 10, 2001

Reviewed by : **Approved by :**

Joon H. Lee. EMC Manager
IST EMC Lab.

G. Chung Chief of EMC Lab.

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