EMC Kashima

EMISSION -- TEST REPORT

Test report file no. : TR2-01704F Date of issue: December 3, 2001

Kind of equipment : CD-RW / DVD-ROM DRIVE

Model : SD-R1202

Applicant : Toshiba Corporation
Product Safety Group, Technology & Quality Management Division,
Digital Media Network Company

Manufacturer : Toshiba Multi Media Devices Co., Ltd. (Representative)

Applicant's address : 1-1, Shibaura 1-chome, Minato-ku, Tokyo, 105-8001, Japan

Test result according to the regulation(s) indicated : ● Positive ○ Negative

at page 3

This test report with appendix consists of 28 pages. The test result only responds to the tested sample. It is not allowed to copy this report even partly without the written allowance of the test laboratory. The report must not be used to claim products endorsement by the accreditation body (A2LA, NEMKO and TUV P.S.) or any government agency.

Nemko
Authorized Laboratory

ACCREDITED

Client Laboratory Recognized By
TÜV
PRODUCT SERVICE
EMC Kashima Corporation as aTUV PRODUCT SERVICE(TUV PS) recognized laboratory is entitled to print the logo on its test reports. Reports approved by a TUV PS technical expert additionally must bear the TUV PS stamp and authorized signature.

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DIRECTORY

A) Documentation

B) Test data

C) Appendix

N/A : Not Applicable

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TEST REGULATIONS

The tests were performed according to following regulations :

o - EN 50081-1 :1992
o - EN 50081-2 :1993

o - EN 55011 :1998	o - Group 1	o - Group 2
o - EN 55011 :1998 / A1:1999	o - Class A	o - Class B
o - EN 55014-1 :1993 / A2:1999	o - Household appliances and similar o - Tools o - Semiconductor devices	
o - EN 55022 :1998	o - Class A	o - Class B
o - EN 55022 :1994 / A2:1997	o - Class A	o - Class B
o - EN 60601-1-2:1993		
o - EN 61326 :1997 / A1:1998	o - Class A	o - Class B
o - EN 61000-3-2:1995 / A14:2000	o - Class A	o - Class B
o - EN 61000-3-2:1995 / A2:1998 - Harmonic current emission	o - Class C	o - Class D
o - EN 61000-3-3:1995 - Voltage fluctuations and flicker		

● - FCC Part 15 Subpart B Test Method : ANSI C63.4-1992	o - Class A	● - Class B
o - FCC Part 15 Subpart B Test Method : ANSI C63.4-1992 according to 15.107(e), 15.109(g) : CISPR Pub. 22	o - Class A	o - Class B
o - FCC Part 18 Subpart C Test Method : FCC/OST MP-5 (1985)		

● - ICES-003 :1997	o - Class A	● - Class B

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o - AS/NZS 2064:1997 / A1:1997	o - Group 1 o - Class A	o - Group 2 o - Class B
o - AS/NZS 1044:1995 / A1:1997	o - Household appliances and similar o - Tools o - Semiconductor devices	
o - AS/NZS 3548:1995 / A2:1997	o - Class A	o - Class B

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o - VCCI	o - Class A	o - Class B

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o - CISPR Pub. 11 :1997	o - Group 1	o - Group 2
o - CISPR Pub. 11 :1997 / A1:1999	o - Class A	o - Class B
o - CISPR Pub. 14-1 :1993 / A2:1998	o - Household appliances and similar o - Tools o - Semiconductor devices	
o - CISPR Pub. 22 :1997	o - Class A	o - Class B
o - CISPR Pub. 22 :1993 / A2:1996	o - Class A	o - Class B

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TEST FACILITIES

All measurement facilities are located in 1614, Mushihata, Omigawa-machi, Katori-gun, Chiba-ken, 289-0341 Japan.

Accredited by American Association for Laboratory Accreditation(A2LA) for the emission and immunity tests stated in the scope of the certificate under Certificate Number 1266-01.

Authorized by NEMKO for the emission and immunity tests stated in the scope of the authorization under Authorization Number ELA172.

Approved by the Ministry of Commerce in New Zealand under ENG 3/9 AJD.

Recognized by TUV Product Service for the emission and immunity tests stated in the scope of the certificate under Certificate No. JPN9803C.

Registered by Federal Communications Commission under the registered numbers 90558 for No. 1 test site, 31040/SIT 1300F2 for No. 2 test site, 90557 for No. 4 test site and 99356 for No. 5 test site.

Registered by Voluntary Control Council For Interference by Information Technology Equipment(VCCI) under Registered Numbers R-188 and C-785 for No. 1 open site, C-187 for No. 1 shielded room, R-189 for No. 2 open site, C-188 for No. 2 shielded room, R-656 for No. 4 open site, C-613 for No. 4 shielded room, R-1227 and C-1290 for No.5 open site, and C-1291 for No.5 shielded room.

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TEST METHODS

The test methods are implemented subject to the internal test procedures based on the regulations indicated with "●" on the page 3.

ENVIRONMENTAL CONDITIONS

Temperature	--- ℃	see test data
Humidity	--- %	see test data
Atmospheric pressure	--- hPa	see test data

POWER SUPPLY SYSTEM UTILIZED

Power supply system : DC5V, 12V
AC120V/60Hz for PC

MEASUREMENT UNCERTAINTY

The treatment of the measurement uncertainty shall be based on "Guide to the expression of Uncertainty in Measurement" (GUM).

The uncertainty of measurement result is

Conducted Emission Test	: ± 1.76dB
Radiated Emission Test	: ± 3.73dB

for a level of confidence of approximately 95%, (k=2).

DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT

● - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
o - Blank box indicated that the listed condition, standard or equipment was not applicable for this Report.

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TEST CONDITIONS

The measurement of **the conducted emissions** was performed in **the mains (150/450KHz - 30MHz)** and/or **the telecommunication ports (150KHz - 30MHz)**

● - Test applicable

● - in the mains ports
o - in the telecommunication ports

● - in a shielded enclosure.	o - Shielded room No. 1
	● - Shielded room No. 2
	o - Shielded room No. 4
	o - Shielded room No. 5
o - at a nonreflecting open site.	o - Open site No. 1
	o - Open site No. 2
	o - Open site No. 5

Used test instruments :

	Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o -	ESH2	Test Receiver	Rohde & Schwarz	RCH01	2001.10	2002.10
● -	ESHS10	Test Receiver	Rohde & Schwarz	RCH02	2000.12	2001.12
o -	ESPC	Test Receiver	Rohde & Schwarz	RCV03	2001.6	2002.6
o -	ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2001.4	2002.4
o -	ESCS30	Test Receiver	Rohde & Schwarz	RCV05	2001.5	2002.5
o -	ESH2-Z5	AMN	Rohde & Schwarz	LSN01	2001.8	2002.8
o -	ESH3-Z5	AMN	Rohde & Schwarz	LSN02	2001.3	2002.3
o -	ESH3-Z5	AMN	Rohde & Schwarz	LSN03	2001.1	2002.1
● -	ESH3-Z5	AMN	Rohde & Schwarz	LSN06	2001.7	2002.7
● -	ESH3-Z5	AMN	Rohde & Schwarz	LSN07	2001.5	2002.5
o -	ESH3-Z5	AMN	Rohde & Schwarz	LSN08	2000.12	2001.12
o -	ESH3-Z5	AMN	Rohde & Schwarz	LSN11	2001.5	2002.5
o -	ESH3-Z6	AMN	Rohde & Schwarz	LSN09	2001.2	2002.2
o -	ESH3-Z6	AMN	Rohde & Schwarz	LSN10	2001.2	2002.2
o -	ENY22(50dB)	ISN	Rohde & Schwarz	ISN201	2000.11	2001.11
o -	ENY22(60dB)	ISN	Rohde & Schwarz	ISN201	2000.11	2001.11
o -	ENY22(80dB)	ISN	Rohde & Schwarz	ISN201	2000.11	2001.11
o -	ENY41(50dB)	ISN	Rohde & Schwarz	ISN401	2000.11	2001.11
o -	ENY41(60dB)	ISN	Rohde & Schwarz	ISN401	2000.11	2001.11
o -	ENY41(80dB)	ISN	Rohde & Schwarz	ISN401	2000.11	2001.11
o -	EZ-17	Current Probe	Rohde & Schwarz	CPRB01	2000.11	2001.11
o -	Direct	CDN	EMC Kashima	DIU02	2001.4	2002.4
o -	FTC101	Ferrite Tube	Luthi Elektronik	FT01	2001.4	2002.4
o -	FTC101	Ferrite Tube	Luthi Elektronik	FT02	2001.4	2002.4
o -	FTC101	Ferrite Tube	Luthi Elektronik	FT03	2001.4	2002.4

note : The AMN code no. LSN06 was connected to the EUT during the test.

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Used test instruments :

	Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2001.6	2002.6
o -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2001.6	2002.6
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2001.6	2002.6
● -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
● -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
● -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2001.9	2002.9
o -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2001.9	2002.9
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2001.9	2002.9
o -	8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2001.9	2002.9
o -	8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2001.9	2002.9
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2001.9	2002.9
o -	R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2001.4	2002.4
o -	E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2001.10	2002.10

All used test-instruments are calibrated at least once a year.

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The measurement of **the radiated emissions (150KHz - 30MHz)** was performed at a nonreflecting open site and test distance of:

o - Test applicable

o - Open site No. 1	o - 3 meters
o - Open site No. 2	o - 10 meters
o - Open site No. 5	o - 30 meters

Used test instruments :

Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o - ESH2	Test Receiver	Rohde & Schwarz	RCH01	2001.10	2002.10
o - ESHS10	Test Receiver	Rohde & Schwarz	RCH02	2000.12	2001.12
o - ESPC	Test Receiver	Rohde & Schwarz	RCV03	2001.6	2002.6
o - ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2001.4	2002.4
o - ESCS30	Test Receiver	Rohde & Schwarz	RCV05	2001.5	2002.5
o - HFH2-Z2	Loop Antenna	Rohde & Schwarz	LPA01	2001.2	2002.2
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2001.6	2002.6
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2001.6	2002.6
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2001.6	2002.6
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o - 8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2001.9	2002.9
o - 8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2001.9	2002.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2001.9	2002.9
o - 8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2001.9	2002.9
o - 8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2001.9	2002.9
o - 85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2001.9	2002.9
o - R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2001.4	2002.4
o - E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2001.10	2002.10
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA01	2001.5	2002.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA02	2001.5	2002.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA03	2001.5	2002.5
o - 8447D	Pre-Amplifier	Hewlett Packard	PRA06	2001.10	2002.10
o - SAU-3018M	Pre-Amplifier	Sogo-Denshi	PRA04	2001.5	2002.5

All used test-instruments are calibrated at least once a year.

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The measurement of **the radiated emissions (30MHz - 1000/2000MHz)** was performed in a horizontal and vertical polarization at a nonreflecting open site and test distance of :

● - Test applicable

o - Open site No. 1
● - Open site No. 2
o - Open site No. 4
o - Open site No. 5

● - 3 meters
o - 10 meters
o - 30 meters

Used test instruments :

	Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o -	ESV	Test Receiver	Rohde & Schwarz	RCV01	2001.4	2002.4
● -	ESVS10	Test Receiver	Rohde & Schwarz	RCV02	2001.1	2002.1
o -	ESPC	Test Receiver	Rohde & Schwarz	RCV03	2001.6	2002.6
o -	ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2001.4	2002.4
o -	ESCS30	Test Receiver	Rohde & Schwarz	RCV05	2001.5	2002.5
o -	LPB-2520A	Biconi.-Logperi.	Antenna Research	BL01	2001.8	2002.8
● -	LPB-2520A	Biconi.-Logperi.	Antenna Research	BL02	2001.8	2002.8
o -	LPB-2520A	Biconi.-Logperi.	Antenna Research	BL03	2001.8	2002.8
o -	LPB-2520A	Biconi.-Logperi.	Antenna Research	BL04	2001.9	2002.9
o -	LPB-2520A	Biconi.-Logperi.	Antenna Research	BL05	2001.9	2002.9
o -	3115	Double Ridged Guide	EMCO	DRH01	2001.3	2002.3
o -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2001.6	2002.6
o -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2001.6	2002.6
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2001.6	2002.6
● -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
● -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
● -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2001.9	2002.9
o -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2001.9	2002.9
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2001.9	2002.9
o -	8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2001.9	2002.9
o -	8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2001.9	2002.9
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2001.9	2002.9
o -	R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2001.4	2002.4
● -	E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2001.10	2002.10
o -	8447D	Pre-Amplifier	Hewlett Packard	PRA01	2001.5	2002.5
● -	8447D	Pre-Amplifier	Hewlett Packard	PRA02	2001.5	2002.5
o -	8447D	Pre-Amplifier	Hewlett Packard	PRA03	2001.5	2002.5
o -	8447D	Pre-Amplifier	Hewlett Packard	PRA06	2001.10	2002.10
● -	SAU-3018M	Pre-Amplifier	Sogo-Denshi	PRA04	2001.5	2002.5
o -	8449B	Pre-Amplifier	Hewlett Packard	PRA05	2000.11	2001.11
o -	SUCOFLEX 104	Micro Wave cable	Hewlett Packard	MWC-0.5m	2000.11	2001.11
o -	SUCOFLEX 104	Micro Wave cable	Hewlett Packard	MWC-5m	2000.11	2001.11
o -	ESH3-Z6	AMN	Rohde & Schwarz	LSN09	2001.2	2002.2
o -	ESH3-Z6	AMN	Rohde & Schwarz	LSN10	2001.2	2002.2

All used test-instruments are calibrated at least once a year.

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The measurement of **the interference power (30MHz - 300MHz)** was performed by using the absorbing clamp on the mains or interface cables at :

o - Test applicable

o - Open site No. 1
o - Open site No. 2
o - Open site No. 5
o - Shielded room No. 4

Used test instruments :

	Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o -	ESV	Test Receiver	Rohde & Schwarz	RCV01	2001.4	2002.4
o -	ESVS10	Test Receiver	Rohde & Schwarz	RCV02	2001.1	2002.1
o -	ESPC	Test Receiver	Rohde & Schwarz	RCV03	2001.6	2002.6
o -	ESCS30	Test Receiver	Rohde & Schwarz	RCV04	2001.4	2002.4
o -	ESCS30	Test Receiver	Rohde & Schwarz	RCV05	2001.5	2002.5
o -	MDS21	Absorbing Clamp	Rohde & Schwarz	CLP01	2001.8	2002.8
o -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD01	2001.6	2002.6
o -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR01	2001.6	2002.6
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA01	2001.6	2002.6
o -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD02	2001.3	2002.3
o -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR02	2001.3	2002.3
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA02	2001.3	2002.3
o -	8567A(display)	Spectrum Analyzer	Hewlett Packard	SPD03	2001.9	2002.9
o -	8567A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR03	2001.9	2002.9
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA03	2001.9	2002.9
o -	8568A(display)	Spectrum Analyzer	Hewlett Packard	SPD04	2001.9	2002.9
o -	8568A(RF unit)	Spectrum Analyzer	Hewlett Packard	SPR04	2001.9	2002.9
o -	85650A	Quasi Peak Adapter	Hewlett Packard	QPA04	2001.9	2002.9
o -	R3361B	Spectrum Analyzer	ADVANTEST	SPTG03	2001.4	2002.4
o -	E7405A	Spectrum Analyzer	Hewlett Packard	SPA05	2001.10	2002.10
o -	8447D	Pre-Amplifier	Hewlett Packard	PRA01	2001.5	2002.5
o -	8447D	Pre-Amplifier	Hewlett Packard	PRA02	2001.5	2002.5
o -	8447D	Pre-Amplifier	Hewlett Packard	PRA03	2001.5	2002.5
o -	8447D	Pre-Amplifier	Hewlett Packard	PRA06	2001.10	2002.10
o -	SAU-3018M	Pre-Amplifier	Sogo-Denshi	PRA04	2001.5	2002.5

All used test-instruments are calibrated at least once a year.

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The measurements of **the harmonic currents** and **voltage fluctuations / flicker** were performed in No. 4 shielded room.

o - Test applicable

Used test instruments :

	Model	Name	Manufacturer	Code No.	Cal.date	Next cal.
o -	PM3000A	Power Analyzer	Voltech	UPA01	2001.6	2002.6
o -	SIB-30	Ref. Impedance	DENKENSEIKI	RIN01	2001.6	2002.6
o -	RTI-N5kVA	Supply Source	DENKENSEIKI	CVC03	2001.6	2002.6

All used test-instruments are calibrated at least once a year.

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EQUIPMENT UNDER TEST

Type of the EUT :

o - Production
● - Pre-Production
o - Prototype

Description of the EUT :

The EUT is a CD-RW / DVD-ROM DRIVE which is used for the H/H TYPE DRIVE storage desktop personal computer.

The highest frequency generated or used in the EUT is 350MHz. (Optical Pickup Head Type : SRU3134, Mfr. SANKYO SEIKI MFG.CO.,LTD.)

Operation - mode of the EUT :

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

o - Standby
o - Test program (H - Pattern)
o - Test program (color bar)
o - Test program (customer specific)
● - Continuous mode : EUT 1).Max. 12x speed random access read at DVD-ROM Disc
2).Max. 40x speed random access read at CD-ROM Disc
3).Max. 10x speed sequential write at High Speed CD-RW Disc
4).Standby at High Speed CD-RW Disc
CRT Display : displaying "H"
Printer : printing "H"

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TEST CONFIGURATION

EUT and Peripherals :

Equipment name	Model	Serial	Company	FCC ID
(A) CD-RW / DVD-ROM Drive (EUT)	**SD-R1202**	**2S4-K101**	**TOSHIBA**	**CJ6AT01-048**
(B) Personal Computer	DTPC-16	SG01172764	HP	DoC*
(C) Keyboard	SK-D100M	M9508-007235	DELL	GYUR93SK
(D) Mouse	M-S34	LZE94400777	HP	DZL211029
(E) Microphone	MM-MO1	none	SANWA SUPPLY	N/A
(F) Cassette Player	WM-EQ7	46800	SONY	N/A
(G) Game Pad	GP4	6323700664299	Microsoft	DoC*
(H) CRT Display	EV500A	15052C019280	Gateway	BEJCB575B
(I) Printer	C4608A	SG77H1F1WX	HP	B94C2164X
(J) AC Adapter	C2178A	none	HP	N/A
(K) Headphone	MDR-E837	none	SONY	N/A
(L) Modem	C202A	010305	EPSON	BKM552C202A
(M) AC Adapter	H00CAA	019629	EPSON	N/A

*note : Authorized under a Declaration of Conformity

Cable(s) used :

Cable name	Length	Shielded	Model	Remarks (Company etc.)
(1) USB	2.0 m	Yes	none	
(2) Keyboard	1.4 m	Yes	none	
(3) Mouse	1.8 m	Yes	none	
(4) Microphone	2.2 m	no	none	
(5) Line IN cable	1.5 m	no	none	
(6) Line OUT cable	1.5 m	no	none	
(7) Network cable	3.0 m	no	none	
(8) RS-232C	1.5 m	Yes	C232N-J31	ELECOM
(9) Video	1.8 m	Yes	none	
(10) Centronics	1.8 m	Yes	CPC-D	ELECOM
(11) Headphone	1.8 m	no	none	
(12) AC Power (PC)	2.2 m	no	none	
(13) AC Power (Monitor)	1.8 m	no	none	
(14) DC Power (Printer)	1.8 m	no	none	
(15) AC Power (Printer)	0.9 m	no	none	
(16) DC Power (Modem)	1.9 m	no	none	

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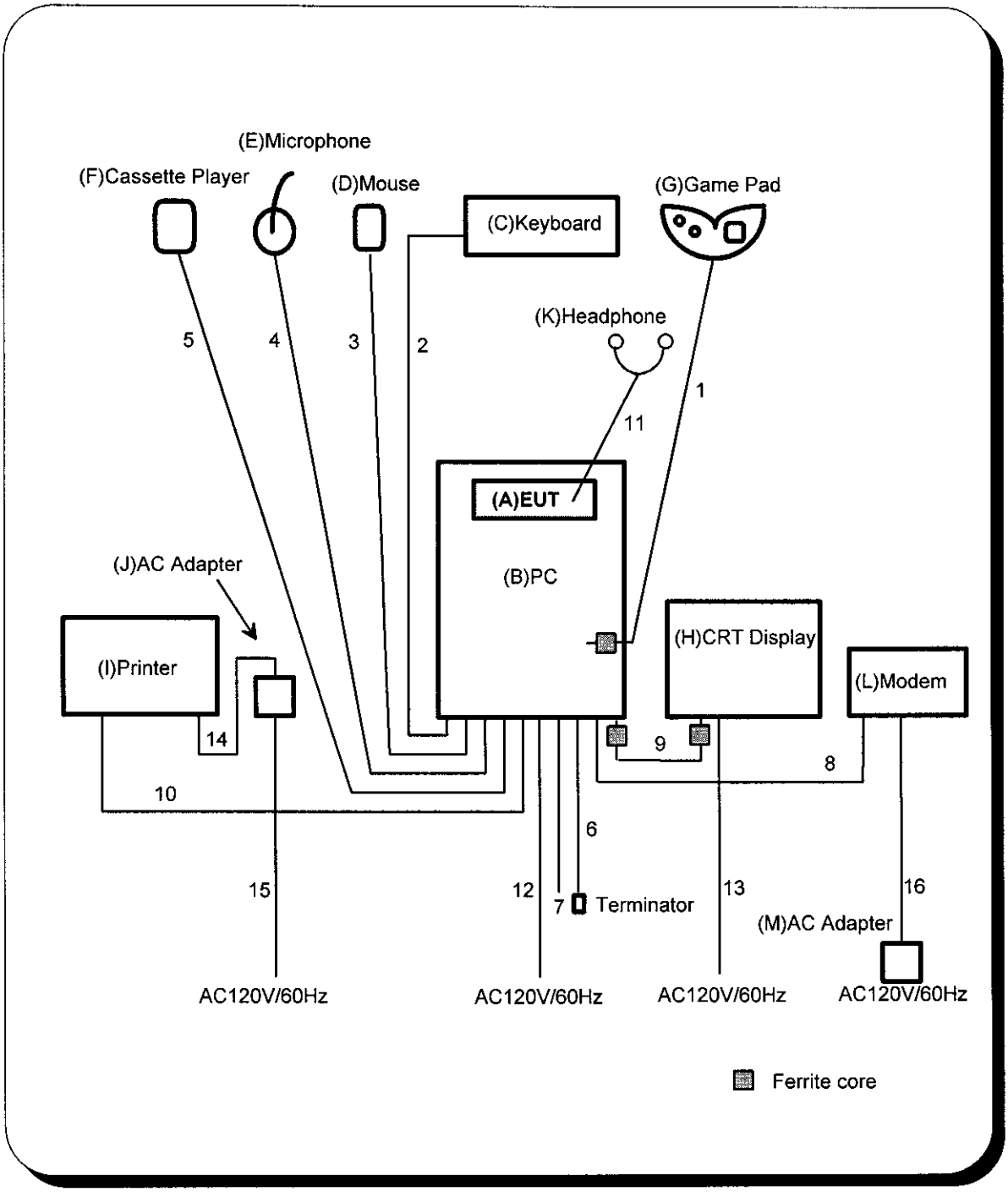
TEST CONFIGURATION



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TEST RESULT

The measurement data presented in this report reflects the worst case configuration.

Conducted emissions (Mains) 150/450kHz - 30MHz

[● - Test applicable]

The requirements are ● - MET o - NOT MET

Min. limit margin :

Quasi-peak	4.9	dB	at 22.0309	MHz
Average		dB	at	MHz

Remarks : This data is from Random Access Read at DVD-ROM Disc mode and Random Access Read at CD-ROM Disc mode.

Conducted emissions (Telecommunication ports) 150kHz - 30MHz

[o - Test applicable]

The requirements are o - MET o - NOT MET

Min. limit margin :

Quasi-peak		dB	at	MHz
Average		dB	at	MHz

Remarks : _____

Radiated emissions 150kHz - 30MHz

[o - Test applicable]

The requirements are o - MET o - NOT MET

Min. limit margin _____ dB at _____ MHz

Remarks : _____

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Radiated emissions 30MHz - 1000/2000MHz

[● - Test applicable]

The requirements are ● - **MET** o - **NOT MET**

Min. limit margin 5.5 dB at 1049 MHz

Remarks : This data is from Random Access Read at DVD-ROM Disc mode.

Interference power at the mains and interface cables 30MHz - 300MHz

[o - Test applicable]

The requirements are o - **MET** o - **NOT MET**

Min. limit margin :

Quasi-peak _____ dB at _____ MHz

Average _____ dB at _____ MHz

Remarks : _____

Equivalent radiated emissions 1GHz - 18GHz

[o - Test applicable]

The requirements are o - **MET** o - **NOT MET**

Min. limit margin _____ dB at _____ MHz

Remarks : _____

note : The measuring receivers are in compliance with the requirements of CISPR 16.

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Harmonic currents

o - Test applicable

The requirements are o - **MET** o - **NOT MET**

Remarks : _____

Voltage fluctuations and flicker

o - Test applicable

The requirements are o - **MET** o - **NOT MET**

short-term flicker indicator	: Pst	=	_____
relative steady-state voltage change	: dc	=	_____ %
maximum relative voltage change	: dmax	=	_____ %
relative voltage change characteristic	: d(t)	=	_____ ms
long-term flicker indicator	: Plt	=	_____

Remarks : _____

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SUMMARY

GENERAL REMARKS :

FINAL JUDGMENT :

The requirements according to the technical regulations are

● - met
o - **not** met

The equipment under test does

● - **Fulfills** the general approval requirements mentioned on page 3.
o - **Does not** fulfill the general approval requirements mentioned on page 3.

The engineers of EMC Kashima Corporation were not involved in modification for the tested sample.

Testing start date : November 26, 2001
Testing end date : November 27, 2001

EMC Kashima Corporation

Kenichi Suda
Director

Test engineer

Takahiro Yamazaki
Manager

EMC Kashima Corporation 1614,Mushihata,Omigawa-machi,Katori-gun,Chiba-ken,289-0341Japan TEL 81-478-82-0963 FAX 81-478-82-3373

No.2 Test Site

Conducted Emission Test

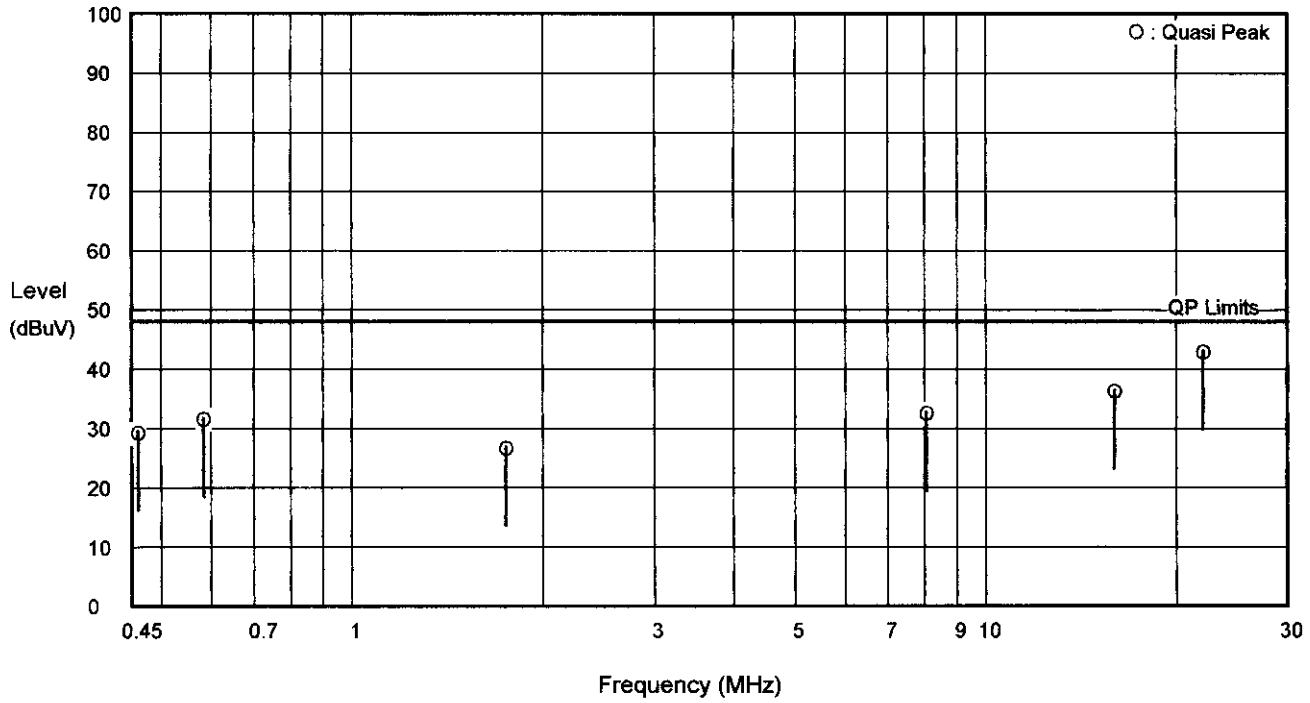
(0.45MHz - 30MHz at Mains Ports)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/27
Model	: SD-R1202	Temperature	: 22℃
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 48 %
Test Mode	: Random Access Read at DVD-ROM Disc	Atmos. Press.	: 1015 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B		

Engineer : Takahiro Yamazaki

No.	Frequency (MHz)	N QP (dBuV)	N AV (dBuV)	L QP (dBuV)	L AV (dBuV)	Correction Factor (dB)	Result QP (dBuV)	Result AV (dBuV)	Limits QP (dBuV)	Limits AV (dBuV)	Margin QP (dB)	Margin AV (dB)
1	0.4603	29.0	-	29.3	-	0.2	29.5	-	48.0	-	18.5	-
2	0.5829	29.5	-	31.5	-	0.3	31.8	-	48.0	-	16.2	-
3	1.7470	26.5	-	26.5	-	0.4	26.9	-	48.0	-	21.1	-
4	8.0636	32.0	-	32.0	-	0.8	32.8	-	48.0	-	15.2	-
5	15.9743	35.0	-	35.0	-	1.5	36.5	-	48.0	-	11.5	-
6	22.0309	41.3	-	41.3	-	1.8	43.1	-	48.0	-	4.9	-

Result = Reading(higher data of N or L) + AMN factor + cable loss



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No.2 Test Site

Conducted Emission Test

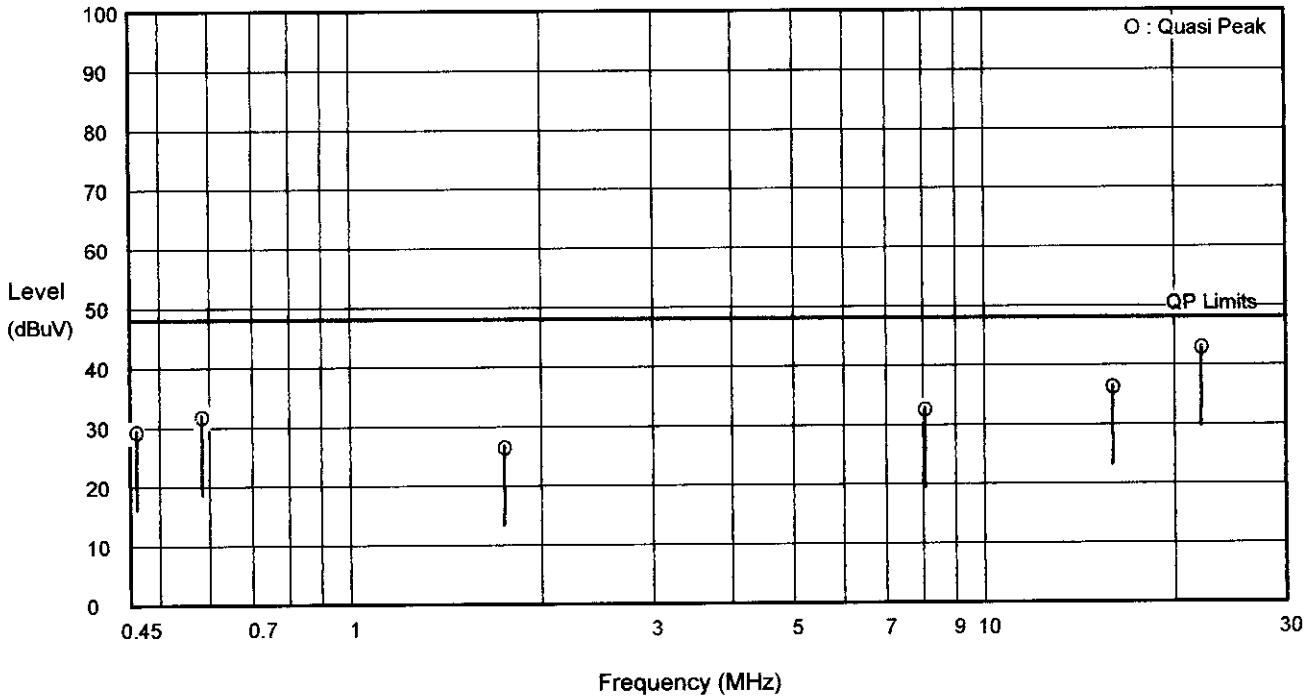
(0.45MHz - 30MHz at Mains Ports)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/27
Model	: SD-R1202	Temperature	: 22℃
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 48 %
Test Mode	: Random Access Read at CD-ROM Disc	Atmos. Press.	: 1015 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B		

Engineer : Takahiro Yamazaki

No.	Frequency (MHz)	N QP (dBuV)	N AV (dBuV)	L QP (dBuV)	L AV (dBuV)	Correction Factor (dB)	Result QP (dBuV)	Result AV (dBuV)	Limits QP (dBuV)	Limits AV (dBuV)	Margin QP (dB)	Margin AV (dB)
1	0.4603	29.0	–	29.3	–	0.2	29.5	–	48.0	–	18.5	–
2	0.5829	29.3	–	31.7	–	0.3	32.0	–	48.0	–	16.0	–
3	1.7470	26.3	–	26.0	–	0.4	26.7	–	48.0	–	21.3	–
4	8.0636	32.0	–	32.0	–	0.8	32.8	–	48.0	–	15.2	–
5	15.9743	35.0	–	35.0	–	1.5	36.5	–	48.0	–	11.5	–
6	22.0309	41.0	–	41.3	–	1.8	43.1	–	48.0	–	4.9	–

Result = Reading(higher data of N or L) + AMN factor + cable loss



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No.2 Test Site

Conducted Emission Test

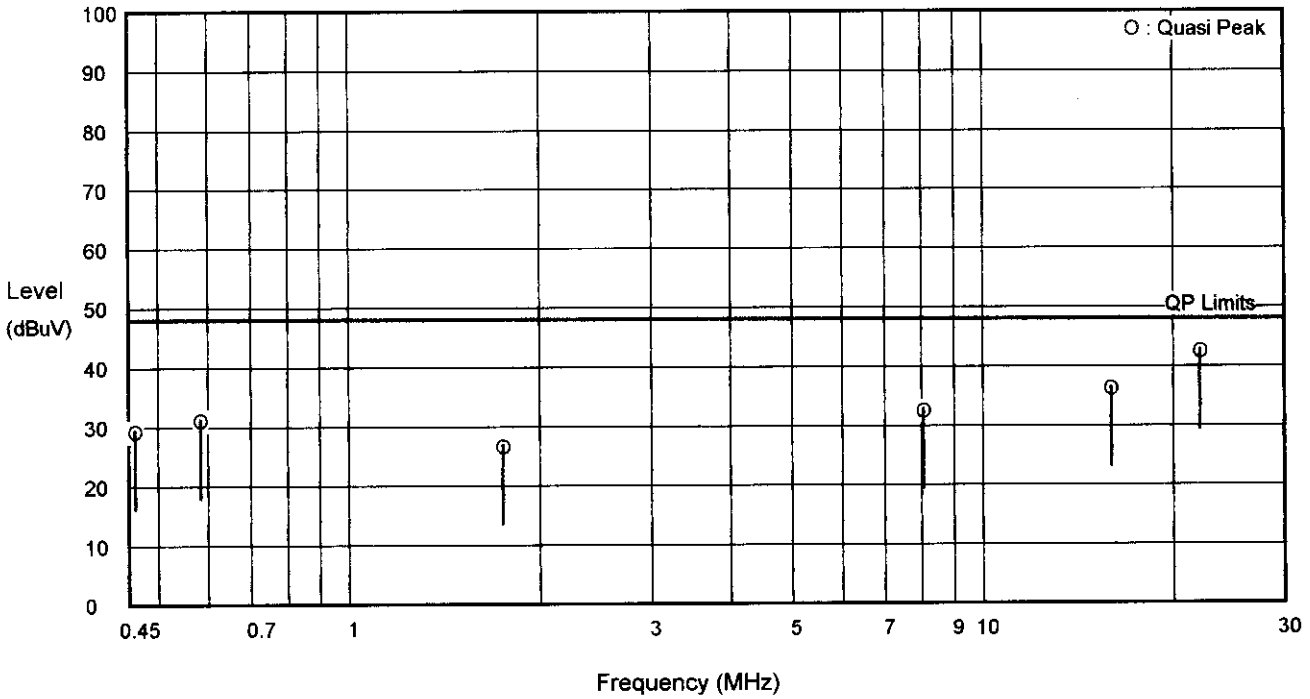
(0.45MHz - 30MHz at Mains Ports)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/27
Model	: SD-R1202	Temperature	: 22℃
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 48 %
Test Mode	: Sequential Write at High Speed CD-RW Disc	Atmos. Press.	: 1015 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B		

Engineer : Takahiro Yamazaki

No.	Frequency	N		L		Correction	Result		Limits		Margin	
		QP	AV	QP	AV	Factor	QP	AV	QP	AV	QP	AV
	(MHz)	(dBuV)		(dBuV)		(dB)	(dBuV)		(dBuV)		(dB)	
1	0.4603	29.0	-	29.3	-	0.2	29.5	-	48.0	-	18.5	-
2	0.5829	29.7	-	31.0	-	0.3	31.3	-	48.0	-	16.7	-
3	1.7470	26.3	-	26.5	-	0.4	26.9	-	48.0	-	21.1	-
4	8.0636	32.0	-	31.5	-	0.8	32.8	-	48.0	-	15.2	-
5	15.9743	35.0	-	35.0	-	1.5	36.5	-	48.0	-	11.5	-
6	22.0309	41.0	-	41.0	-	1.8	42.8	-	48.0	-	5.2	-

Result = Reading(higher data of N or L) + AMN factor + cable loss



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No.2 Test Site

Conducted Emission Test

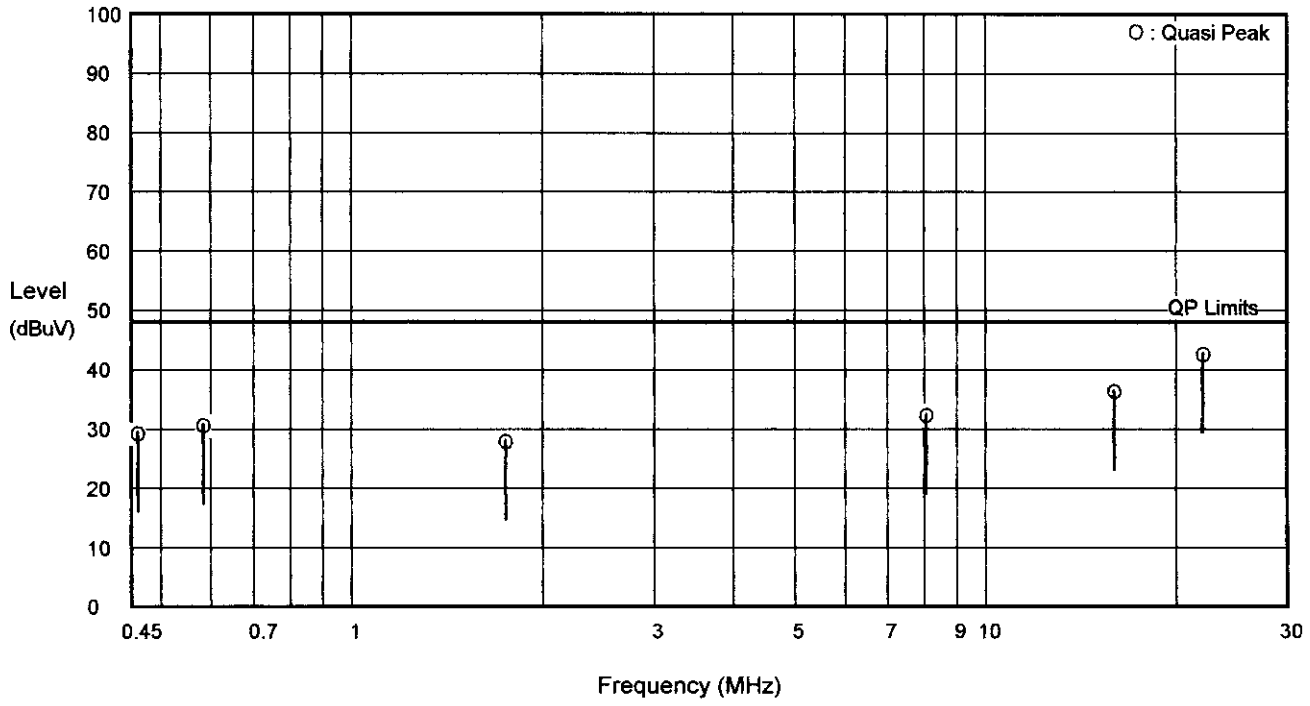
(0.45MHz - 30MHz at Mains Ports)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/27
Model	: SD-R1202	Temperature	: 22℃
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 48 %
Test Mode	: Standby at High Speed CD-RW Disc	Atmos. Press.	: 1015 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B		

Engineer : Takahiro Yamazaki

No.	Frequency (MHz)	N QP (dBuV)	N AV (dBuV)	L QP (dBuV)	L AV (dBuV)	Correction Factor (dB)	Result QP (dBuV)	Result AV (dBuV)	Limits QP (dBuV)	Limits AV (dBuV)	Margin QP (dB)	Margin AV (dB)
1	0.4603	29.0	-	29.3	-	0.2	29.5	-	48.0	-	18.5	-
2	0.5829	29.3	-	30.5	-	0.3	30.8	-	48.0	-	17.2	-
3	1.7470	27.7	-	27.0	-	0.4	28.1	-	48.0	-	19.9	-
4	8.0636	31.7	-	31.7	-	0.8	32.5	-	48.0	-	15.5	-
5	15.9743	35.0	-	35.0	-	1.5	36.5	-	48.0	-	11.5	-
6	22.0309	41.0	-	41.0	-	1.8	42.8	-	48.0	-	5.2	-

Result = Reading(higher data of N or L) + AMN factor + cable loss



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No.2 Test Site

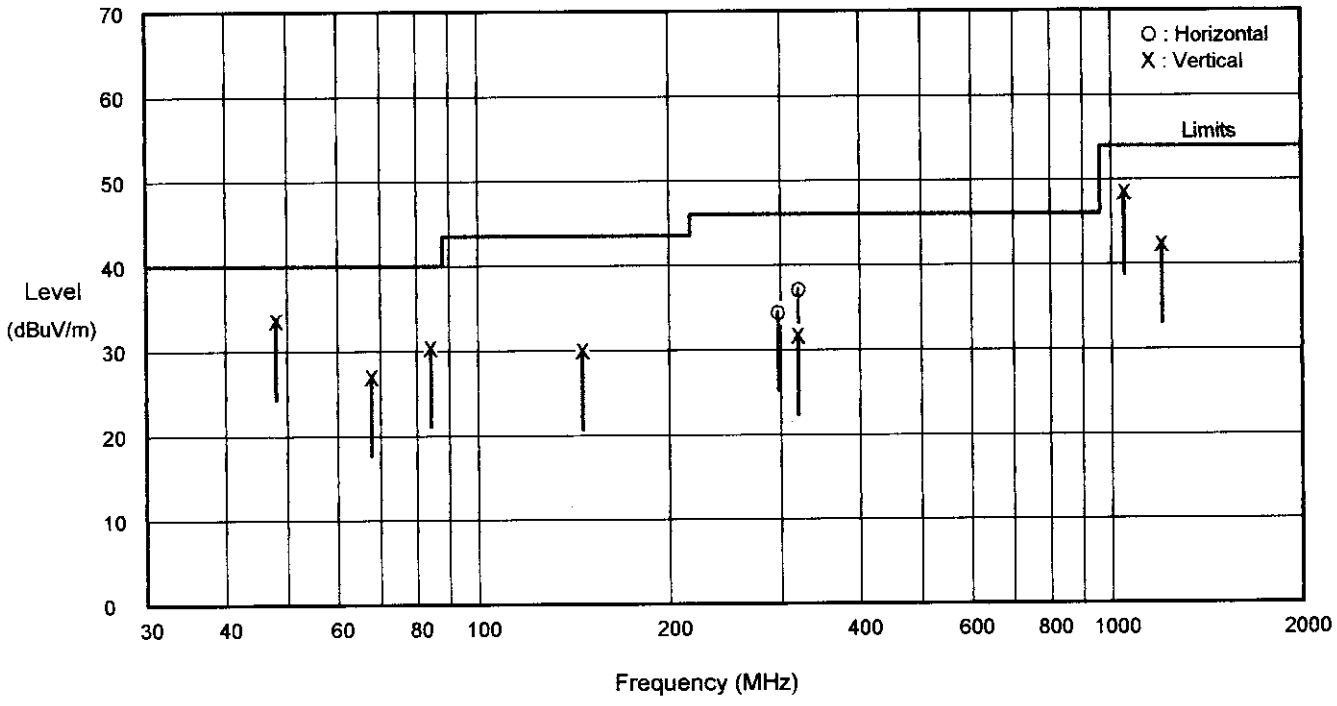
Radiated Emission Test

(30MHz - 2000MHz)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/26
Model	: SD-R1202	Temperature	: 23℃
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 50 %
Test Mode	: Random Access Read at DVD-ROM Disc	Atmos. Press.	: 1012 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B (30MHz-2GHz)		
Test Distance	: 3 m		
Attenuator	: 6 dB	Engineer	: Takahiro Yamazaki

No.	Freq	Horizontal			Vertical			Ant.	Cable	Preamp	Result		Limits	Margin	
		Read	T/T	A/M	Read	T/T	A/M	Factor	Loss	Gain	Hor	Ver		Hor	Ver
	(MHz)	(dBuV)	(degr)	(cm)	(dBuV)	(degr)	(cm)	(dB/m)	(dB)	(dB)	(dBuV/m)		(dBuV/m) 3 m	(dB)	
1	48.01	-	-	-	38.5	255	100	13.8	1.8	26.5	-	33.6	40.0	-	6.4
2	67.82	-	-	-	37.0	243	100	8.4	2.0	26.4	-	27.0	40.0	-	13.0
3	84.23	-	-	-	40.5	250	126	8.0	2.3	26.4	-	30.4	40.0	-	9.6
4	146.06	-	-	-	38.0	340	100	9.1	3.0	26.1	-	30.0	43.5	-	13.5
5	297.01	36.5	290	100	-	-	-	13.0	4.5	25.5	34.5	-	46.0	11.5	-
6	319.99	38.5	291	100	33.0	31	100	13.7	4.7	25.7	37.2	31.7	46.0	8.8	14.3
7	1049.00	43.5	0	100	44.0	0	142	23.3	9.0	33.8	48.0	48.5	54.0	6.0	5.5
8	1203.13	37.0	0	100	36.5	200	150	24.8	9.9	34.8	42.9	42.4	54.0	11.1	11.6

Result = Reading Level + Antenna Factor + Cable Loss - Preamp Gain + Attenuator + 20xLog(Test Distance/Standard Distance)
Antenna Type : Biconical Logperiodic(30MHz-2GHz)
An average detector was used for the measurement in the data above 1000MHz.



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No.2 Test Site

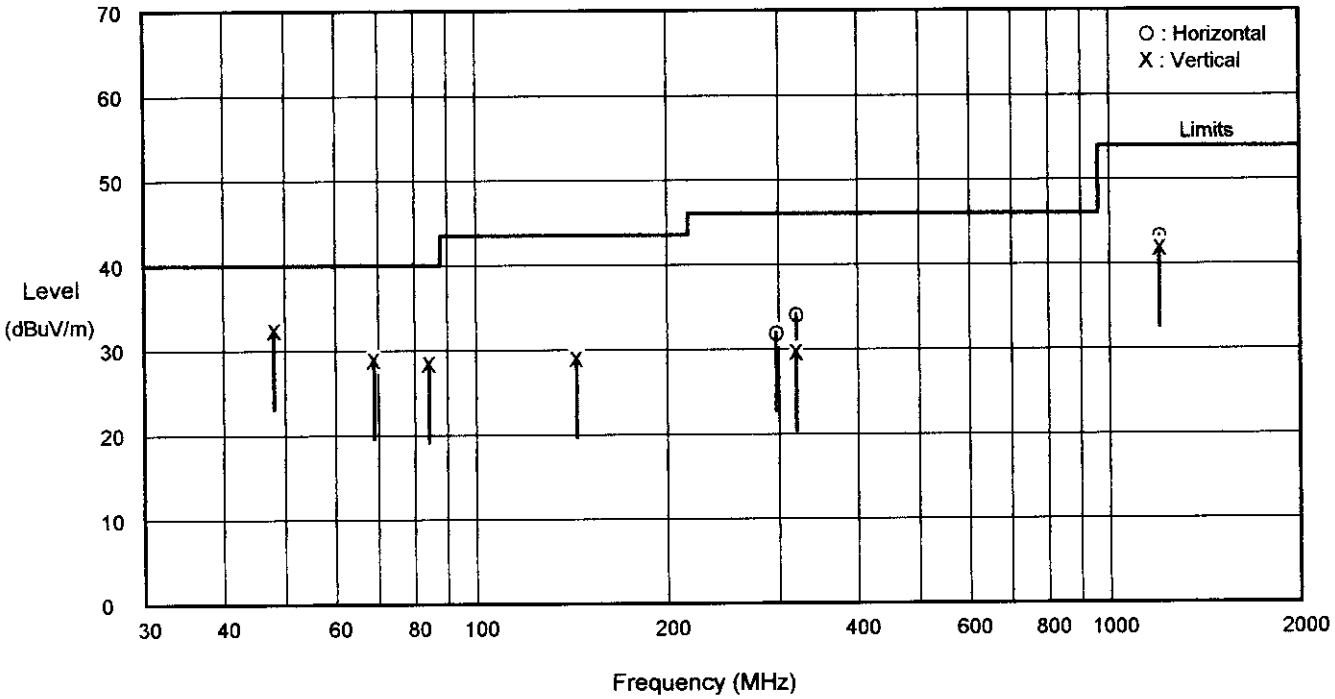
Radiated Emission Test

(30MHz - 2000MHz)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/26
Model	: SD-R1202	Temperature	: 23°C
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 50 %
Test Mode	: Random Access Read at CD-ROM Disc	Atmos. Press.	: 1012 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B (30MHz-2GHz)		
Test Distance	: 3 m		
Attenuator	: 6 dB	Engineer	: Takahiro Yamazaki

No.	Freq	Horizontal			Vertical			Ant.	Cable	Preamp	Result		Limits	Margin	
		Read	T/T	A/M	Read	T/T	A/M	Factor	Loss	Gain	Hor	Ver		Hor	Ver
	(MHz)	(dBuV)	(degr)	(cm)	(dBuV)	(degr)	(cm)	(dB/m)	(dB)	(dB)	(dBuV/m)		(dBuV/m) 3 m	(dB)	
1	48.00	-	-	-	37.3	260	100	13.8	1.8	26.5	-	32.4	40.0	-	7.6
2	68.94	-	-	-	39.3	212	100	7.9	2.1	26.4	-	28.9	40.0	-	11.1
3	84.23	-	-	-	38.5	250	124	8.0	2.3	26.4	-	28.4	40.0	-	11.6
4	144.02	37.0	107	225	37.0	0	100	9.1	3.0	26.1	29.0	29.0	43.5	14.5	14.5
5	297.01	34.0	255	100	-	-	-	13.0	4.5	25.5	32.0	-	46.0	14.0	-
6	319.99	35.5	291	100	31.0	31	100	13.7	4.7	25.7	34.2	29.7	46.0	11.8	16.3
7	1201.20	37.5	0	100	36.0	215	143	24.8	9.9	34.8	43.4	41.9	54.0	10.6	12.1

Result = Reading Level + Antenna Factor + Cable Loss - Preamp Gain + Attenuator + 20xLog(Test Distance/Standard Distance)
Antenna Type : Biconical Logperiodic(30MHz-2GHz)
An average detector was used for the measurement in the data above 1000MHz.



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No.2 Test Site

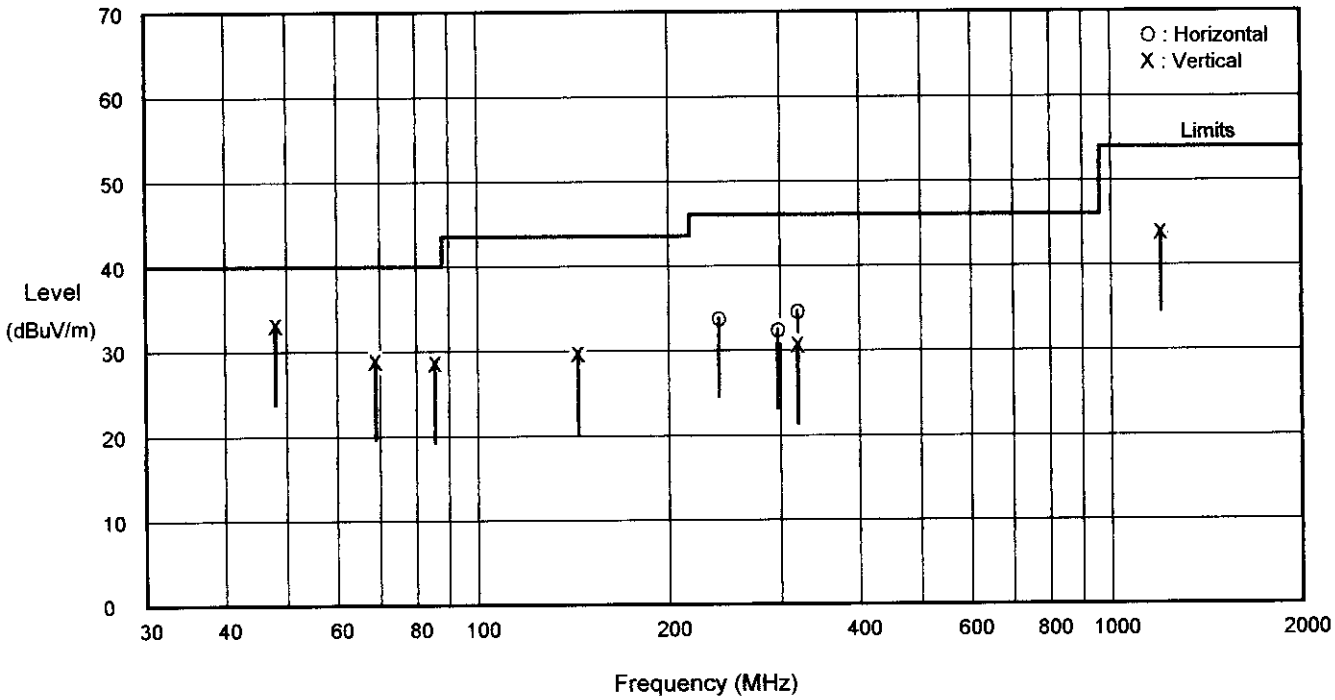
Radiated Emission Test

(30MHz - 2000MHz)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/26
Model	: SD-R1202	Temperature	: 23℃
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 50 %
Test Mode	: Sequential Write at High Speed CD-RW Disc	Atmos. Press.	: 1012 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B (30MHz-2GHz)		
Test Distance	: 3 m		
Attenuator	: 6 dB	Engineer	: Takahiro Yamazaki

No.	Freq	Horizontal			Vertical			Ant.	Cable	Preamp	Result		Limits	Margin	
		Read	T/T	A/M	Read	T/T	A/M	Factor	Loss	Gain	Hor	Ver		Hor	Ver
	(MHz)	(dBuV)	(degr)	(cm)	(dBuV)	(degr)	(cm)	(dB/m)	(dB)	(dB)	(dBuV/m)		(dBuV/m) 3 m	(dB)	
1	48.00	-	-	-	38.0	262	100	13.8	1.8	26.5	-	33.1	40.0	-	6.9
2	68.94	-	-	-	39.3	228	100	7.9	2.1	26.4	-	28.9	40.0	-	11.1
3	85.64	-	-	-	38.3	240	124	8.3	2.3	26.3	-	28.6	40.0	-	11.4
4	144.02	37.3	101	225	37.7	337	100	9.1	3.0	26.1	29.3	29.7	43.5	14.2	13.8
5	240.04	37.0	252	100	-	-	-	12.5	4.0	25.6	33.9	-	46.0	12.1	-
6	297.01	34.5	250	100	-	-	-	13.0	4.5	25.5	32.5	-	46.0	13.5	-
7	319.99	36.0	280	100	32.0	31	100	13.7	4.7	25.7	34.7	30.7	46.0	11.3	15.3
8	1200.28	38.0	0	100	38.0	200	150	24.8	9.9	34.8	43.9	43.9	54.0	10.1	10.1

Result = Reading Level + Antenna Factor + Cable Loss - Preamp Gain + Attenuator + 20xLog(Test Distance/Standard Distance)
Antenna Type : Biconical Logperiodic(30MHz-2GHz)
An average detector was used for the measurement in the data above 1000MHz.



EMC Kashima Corporation 1614, Mushihata, Omigawa-machi, Katori-gun, Chiba-ken, 289-0341 Japan TEL 81-478-82-0963 FAX 81-478-82-3373

No.2 Test Site

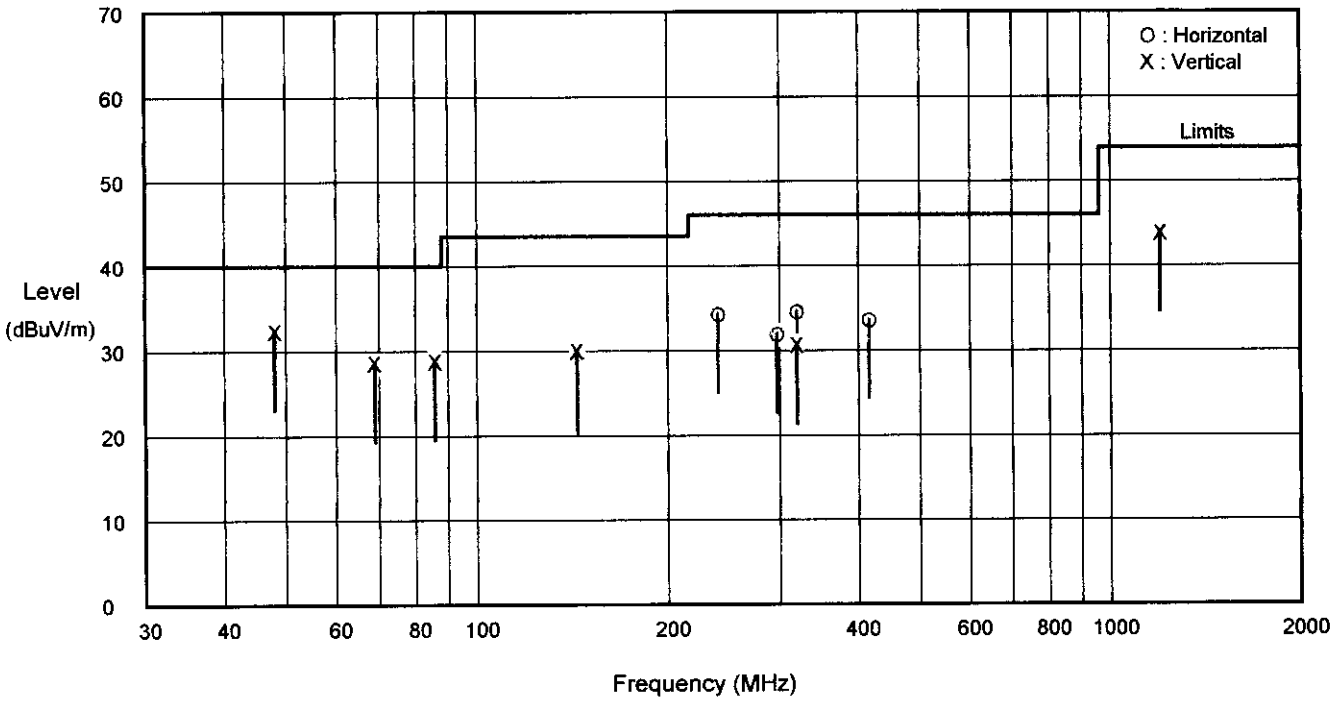
Radiated Emission Test

(30MHz - 2000MHz)

Company	: TOSHIBA CORPORATION	Report No.	: TR2-01704F
Equipment	: CD-RW/DVD-ROM DRIVE	Tested Date	: 2001/11/26
Model	: SD-R1202	Temperature	: 23℃
Power	: DC 5V, 12V (PC:AC120V/60Hz)	Humidity	: 50 %
Test Mode	: Standby at High Speed CD-RW Disc	Atmos. Press.	: 1012 hPa
Remarks	: SN/2S4-K101		
Regulation	: FCC Part15B Class B (30MHz-2GHz)		
Test Distance	: 3 m		
Attenuator	: 6 dB	Engineer	: Takahiro Yamazaki

No.	Freq	Horizontal			Vertical			Ant.	Cable	Preamp	Result		Limits	Margin	
		Read	T/T	A/M	Read	T/T	A/M	Factor	Loss	Gain	Hor	Ver		Hor	Ver
	(MHz)	(dBuV)	(degr)	(cm)	(dBuV)	(degr)	(cm)	(dB/m)	(dB)	(dB)	(dBuV/m)		(dBuV/m) 3 m	(dB)	
1	48.00	-	-	-	37.3	251	100	13.8	1.8	26.5	-	32.4	40.0	-	7.6
2	68.94	-	-	-	39.0	228	100	7.9	2.1	26.4	-	28.6	40.0	-	11.4
3	85.78	-	-	-	38.5	257	124	8.3	2.3	26.3	-	28.8	40.0	-	11.2
4	144.02	37.5	101	225	38.0	341	100	9.1	3.0	26.1	29.5	30.0	43.5	14.0	13.5
5	240.04	37.5	246	100	-	-	-	12.5	4.0	25.6	34.4	-	46.0	11.6	-
6	297.01	34.0	255	100	-	-	-	13.0	4.5	25.5	32.0	-	46.0	14.0	-
7	319.99	36.0	286	100	32.0	31	100	13.7	4.7	25.7	34.7	30.7	46.0	11.3	15.3
8	415.94	32.5	270	100	-	-	-	16.2	5.5	26.5	33.7	-	46.0	12.3	-
9	1201.68	38.5	0	100	38.0	210	140	24.8	9.9	34.8	44.4	43.9	54.0	9.6	10.1

Result = Reading Level + Antenna Factor + Cable Loss - Preamp Gain + Attenuator + 20xLog(Test Distance/Standard Distance)
Antenna Type : Biconical Logperiodic(30MHz-2GHz)
An average detector was used for the measurement in the data above 1000MHz.



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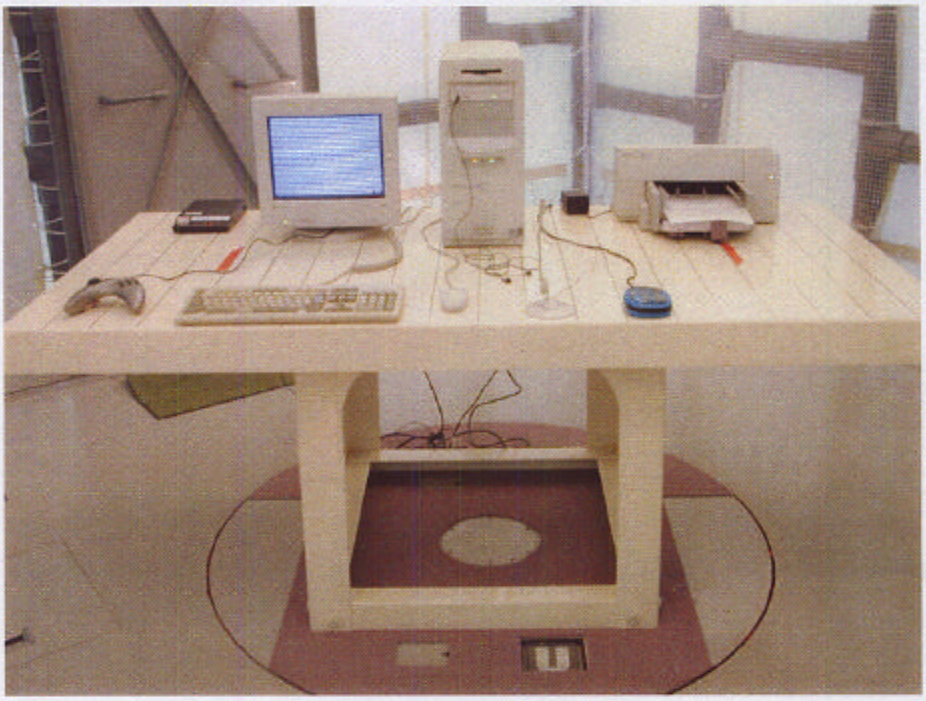
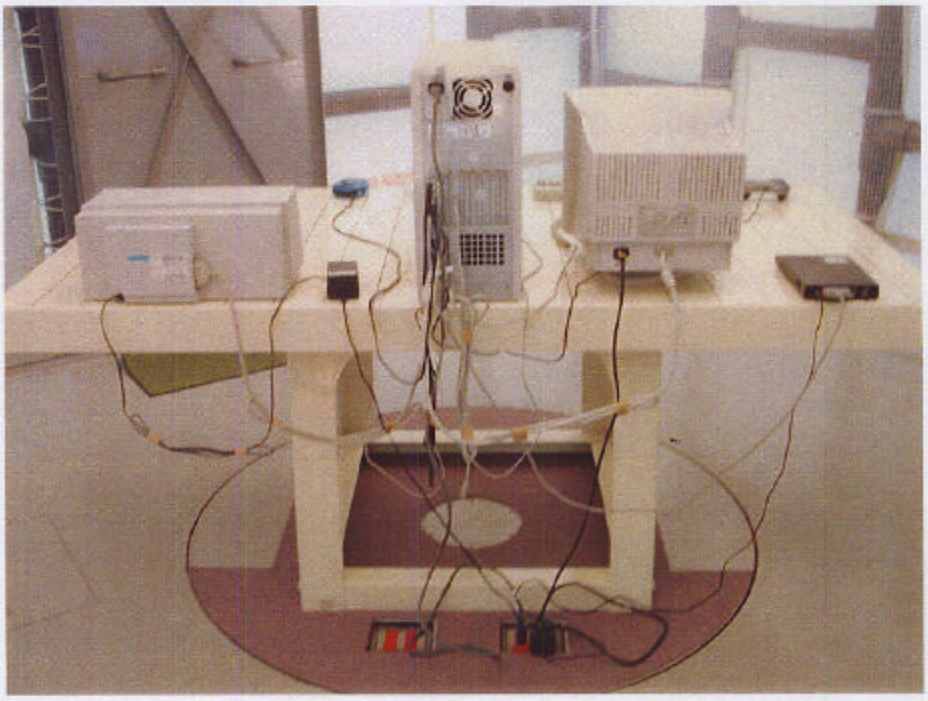
THE PHOTOS OF TEST-SETUPS





Radiated emission 30MHz - 1000/2000MHz

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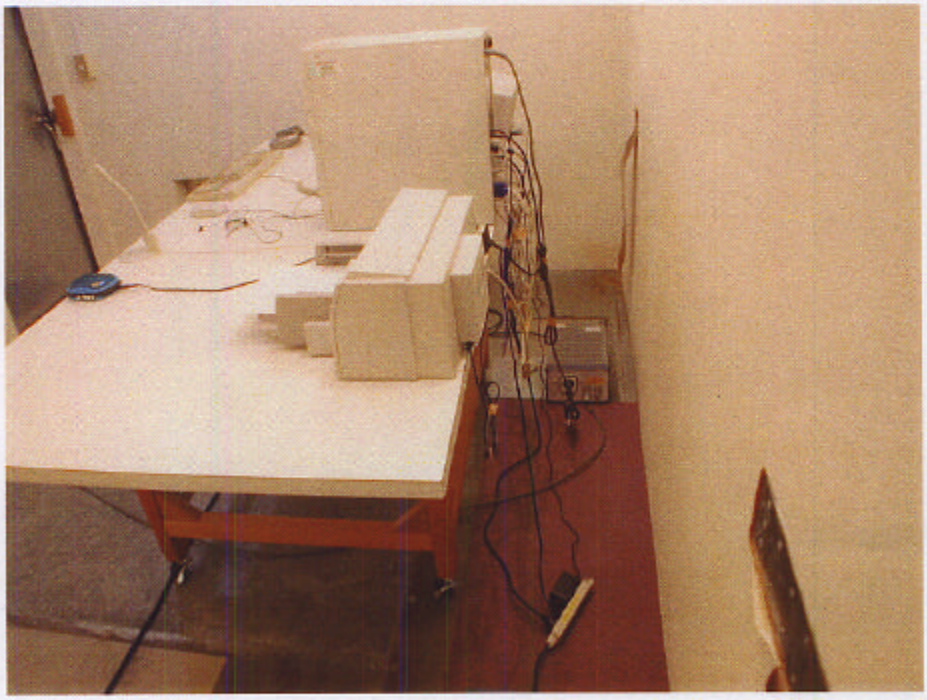
THE PHOTOS OF TEST-SETUPS



Conducted emission 150/450kHz - 30MHz (Mains ports)

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