



TDK CORPORATION  
QUALITY ASSURANCE DEPARTMENT  
2-15-7 HIGASHI-OWADA, ICHIKAWA-SHI  
CHIBA 272, JAPAN

**TDK EMC CENTER CHIKUMAGAWA OPEN SITE**  
**REPORT OF MEASUREMENTS ON DIGITAL DEVICE**

Date : May 27, 1999  
Issued in : Saku-city, JAPAN

TDK APPLICATION No. : TDC-99-0506(1)

- |                                   |   |
|-----------------------------------|---|
| 1. Applicant                      | TOSHIBA CORPORATION<br>Digital Media Equipment & Services Company, Administration Group<br>Yanagicho Operations-Digital Media Equipment<br>70 Yanagicho, Saiwai-Ku, Kawasaki-Shi, 210-8501, Japan |
| 2. Factory :                      | Toshiba Multi Media Devices Co., Ltd.<br>19, Aza-Minase, Oaza-Fukihata, Goshogawara-Shi, Aomori-Ken<br>037-0003, Japan  |
| 3. Description of Equipment :     | CD-ROM DRIVE  |
| 3-1. Category :                   | FCC Class B Digital Device  |
| 3-2. FCC ID No. :                 | CJ6AT99-043   |
| 3-3. Trade Name :                 | TOSHIBA   |
| 3-4. Model No. :                  | XM-6702B  |
| 3-5. Serial No. :                 | 2S3-001   |
| 3-6. Power Supply :               | DC power for the EUT was controlled by the personal computer<br>(Model : Manufacturer : DELL COMPUTER)  |
| 3-7. Date of Manufacture :        | May 1999  |
| 4. Regulation Applied :           | FCC Rules and Regulations Part 15 Subpart B   |
| 5. Measurement Procedure Used :   | ANSI C63.4 - 1992   |
| 6. Sampling Procedure :           | Random sampling extracted from 150 units  |
| 7. Place of Measurement :         | TDK EMC CENTER CHIKUMAGAWA OPEN SITE<br>NVLAP Lab Code : 200319-0   |
| 8. Date of Measurement :          | May 24, 1999  |
| 9. Measurement Results :          | The test results show that EUT conform to FCC Class B regulations on the<br>described test condition as shown in the attached sheets.   |
| 10. Deviation from the Standard : | The test is not deviated from the Standard.   |

Note : (1) The test results relate only to items tested.

(2) This report shall not be reproduced except in full without the written approval of testing laboratory.

(3) The report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

(4) The test results are traceable to the national or international standard.

  
Akira Bandoh

Senior Manager of TDK EMC CENTER

TDK Application No. : TDC-99-0506(1)  
Applicant : TOSHIBA CORPORATION  
Model No. : XM-6702B

Standard : FCC 15 , B  
FCC ID : CJ6AT99-043

## Summary of Test Results

The tests were performed in accordance with the procedures described in ANSI C63.4-1992  
Test results show that EUT conforms to the requirement of FCC Rules Part 15 Subpart B  
Section 107 and 109 as shown in the test date on page 5 and page 9.

	Test Result
(1) Radiated Emission Test :	Passed
Minimum margin relative to the Limits :	3.0 dB at 645.050MHz
Measurement Uncertainty :	$\pm 4$ dB

Note : The measurement was performed based on the Test Procedure of Radiated Emission described on page 4 in the EUT operation of " Play mode ".

Tested by : *Junichiro Ooi*  
Test Engineer of TDK Chikumagawa Open Site

	Test Result
(1) AC Power Line Conducted Emission Test :	Passed
Minimum margin relative to the Limits :	14.4 dB at 0.4700MHz
Measurement Uncertainty :	$\pm 2$ dB

Note : The measurement was performed at the plug end of AC power line cord of the EUT in the operation of " Play mode " based on the Test Procedure of AC Power Line Conducted Emission on page 8.

Tested by : *Junichiro Ooi*  
Test Engineer of TDK Chikumagawa Open Site

TDK Application No. : TDC-99-0506(1)

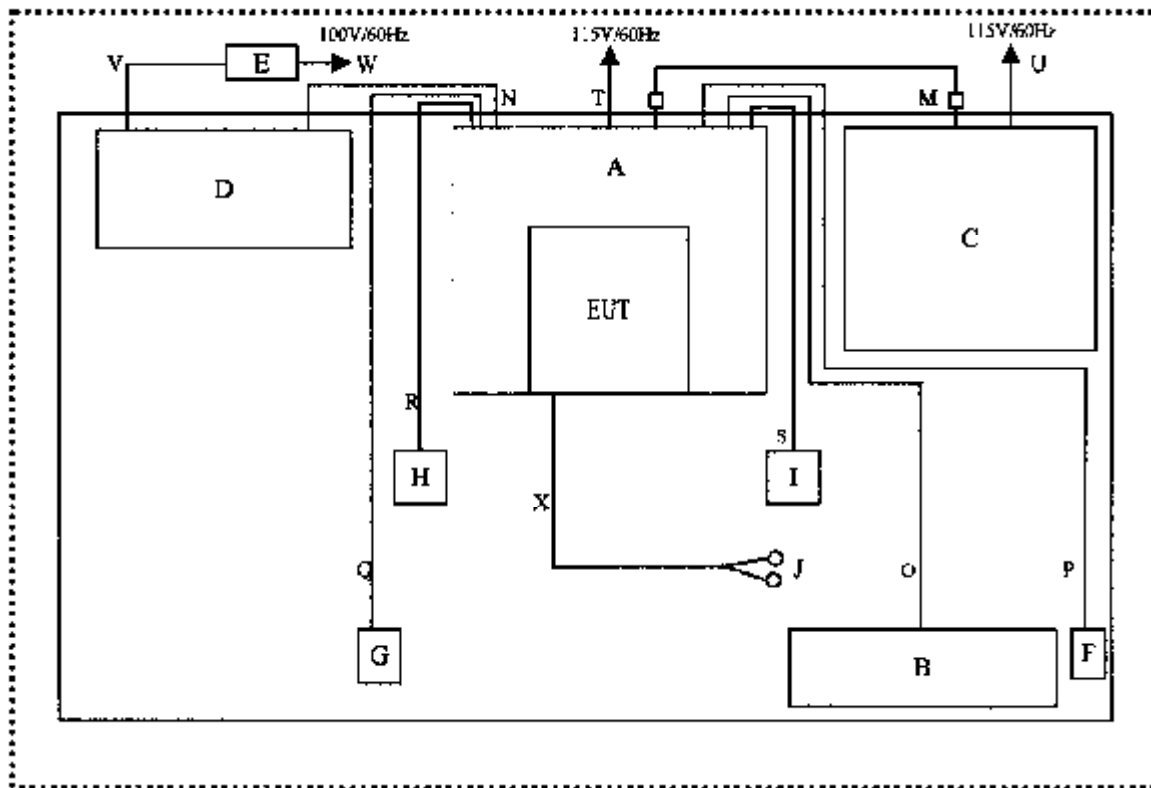
Applicant : TOSHIBA CORPORATION

Model No. : XM-6702B

Standard : FCC 15 , B

FCC ID : CJ6AT99-043

EUT's Test Arrangement



Test Configuration

No.	Device	MODEL No.	FCC ID	S/N	Manufacturer
EUT	CD-ROM Drive	XM-6702B	CJ6AT99-043	2S3-001	TOSHIBA CORPORATION
A	Personal Computer	MMS	----	TFW3P	DELL COMPUTER
B	Key Board	SK-1000REW	GYUR43SK	12741-93H-7450	DELL COMPUTER
C	CRT Display	828FI	----	23011AQBVR 49	DELL COMPUTER
D	Printer	C4608A	B94C2164X	SG71L1B0VC	HEWLETT PACKARD
E	AC Adapter	C2178A	----	----	HEWLETT PACKARD
F	Mouse(1)	intelli Mouse 1.1A PS/2 Compatible	C3KKMP5	63618-OEM-2586347-00000	MICROSOFT
G	Mouse(2)	M-CQ38	DZLM04	LZD74558261	LOGITECH
H	CCD CAMERA(1)	LKD5	LKD5	VU13B3XD	Connectix
I	CCD CAMERA(2)	LKD5	LKD5	VU13B3T3	Connectix
J	Head Phone	----	----	----	TOSHIBA CORPORATION

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## Connection Cables

No.	I/F & Power Cable	Model No.	Cable Length	Ferrite Core	Manufacturer
M	CRT Cable	----	1.8 m	2	DELL COMPUTER
N	Printer Cable	----	1.9 m	----	----
O	Keyboard Cable	----	1.9 m	1	DELL COMPUTER
P	Mouse (1) Cable	----	1.8 m	----	MICROSOFT
Q	Mouse (2) Cable	----	2.1 m	----	Logitech
R	CCD CAMERA Cable (1)	----	1.8 m	----	Connectix
S	CCD CAMERA Cable (2)	----	1.8 m	----	Connectix
T	Power Cable	----	2.3 m	----	DELL COMPUTER
U	Power Cable	----	1.8 m	----	DELL COMPUTER
V	Power Cable	----	1.8 m	----	HEWLETT PACKARD
W	Power Cable	----	0.9 m	----	HEWLETT PACKARD
X	Head Phone Cable	----	1.5 m	----	TOSHIBA CORPORATION

## I/F Cables' shield and connection

No.	I/F Cable	Shield Type	Shield Grounding	Connection
M	CRT Cable	<input checked="" type="checkbox"/> Braid <input type="checkbox"/> Foil	<input type="checkbox"/> 360°metal backshell <input checked="" type="checkbox"/> Drain wire	From CRT port of Device A to Device C
N	Parallel	<input checked="" type="checkbox"/> Braid <input type="checkbox"/> Foil	<input checked="" type="checkbox"/> 360°metal backshell <input type="checkbox"/> Drain wire	From parallel port of Device A to Device D
O	Keyboard	<input checked="" type="checkbox"/> Braid <input type="checkbox"/> Foil	<input checked="" type="checkbox"/> 360°metal backshell <input type="checkbox"/> Drain wire	From keyboard port of Device A to Device B
P	PS/2 Mouse	<input checked="" type="checkbox"/> Braid <input type="checkbox"/> Foil	<input checked="" type="checkbox"/> 360°metal backshell <input type="checkbox"/> Drain wire	From mouse port of Device A to Device F
Q	RS232C	<input checked="" type="checkbox"/> Braid <input type="checkbox"/> Foil	<input checked="" type="checkbox"/> 360°metal backshell <input type="checkbox"/> Drain wire	From RS232C port of Device A to Device G
R	USB(1)	<input checked="" type="checkbox"/> Braid <input type="checkbox"/> Foil	<input checked="" type="checkbox"/> 360°metal backshell <input type="checkbox"/> Drain wire	From USB(1) port of Device A to Device H
S	USB(2)	<input checked="" type="checkbox"/> Braid <input type="checkbox"/> Foil	<input checked="" type="checkbox"/> 360°metal backshell <input type="checkbox"/> Drain wire	From USB(1) port of Device A to Device I

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#### Test Procedure of Radiated Emission :

Preliminary radiated measurements were performed at the measurement distance specified for compliance to determine the emission characteristics of the EUT based on ANSI C63.4-1992 Sec. 8.3.1.1.

The EUT was set up in its typical configuration and operated in its various modes in order. For tabletop systems, cables or wires were manipulated within the range of likely configurations.

For each mode of operation required to be tested, the frequency spectrum was monitored. Antenna height, EUT azimuth, antenna polarization, and cable or wire placement were varied for exploration to produce the maximized emission relative to the limit. Antenna height was varied from 1m to 4m step by step with 1m step, and the EUT on the turn-table was rotated in 360° at each antenna height to detect maximized radiated emission while monitoring spectrum analyzer. The frequency and amplitude of the suspect signals (or the highest 10 to 20 amplitudes and frequencies) were recorded. At the frequency of suspect signal, interface cables positions were varied in order to determine the maximum emission level.

Furthermore, the EUT was rotated 360° and antenna height was varied to maximize the suspected highest amplitude signal.

In case that the EUT has multiple ports all of the same type, additional connecting cables were added to the EUT to determine the effect these cables have on emission from the EUT. The additional cables were added to the condition where the addition of another cables did not significantly affect the emission level, i. e. , varied less than 2dB provided that the emission level remained compliant.

Based on the preliminary radiated measurements, the one EUT configuration, cable or wire configuration, and mode of operation that produced the highest emission level relative to limit was selected for the final test.

The final test was performed and the frequency and amplitude of the suspect signals (or the highest 10 to 20 amplitudes and frequencies) were measured with CISPR QP mode and recorded.

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Applicant : TOSHIBA CORPORATION

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### MEASUREMENT RESULTS OF RADIATED RADIO NOISE at 3m

Date : May 24, 1999

Temp. : 14 °C ; Humi. : 66 %

Test Receiver : Rohde &amp; Schwarz ESVP

Operation Mode : Detector function : CISPR Quasi-Peak

6dB Band width : 120kHz

External Attenuator : none

Description of Equipment : CD-ROM DRIVE

Model No. : XM-6702B

Type : Desk Top

Test Condition of Equipment Under Test (EUT)

1) Configuration of EUT : Refer to sheet No.2,3 and 12

2) EUT Grounding : None.

3) Operating Condition : Running with the program prepared by the applicant.

(1) CD-ROM Drive (EUT) : Random Data Read. (2) Color Computer Display : Displayed the "H" Characters.

(3) Printer : Printing the "H" Characters.

Frequency (MHz)	Correction Factor (dB)	Meter Reading at 3m (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)	Emission Level at 3m (dB $\mu$ V/m)		Margin (dB)
		Hori.	Ver.		Hori.	Ver.	
53.200	11.6	---	17.8	40.0	---	17.8	22.2
67.700	8.1	20.5	18.5	40.0	20.5	18.5	19.5
86.760	9.4	---	26.3	40.0	---	26.3	13.7
94.430	11.0	---	22.4	43.5	---	22.4	21.1
119.480	15.0	27.9	---	43.5	27.9	---	15.6
130.800	16.3	30.6	29.8	43.5	30.6	29.8	12.9
305.550	20.0	37.5	28.0	46.0	37.5	28.0	8.5
333.280	20.6	---	26.1	46.0	---	26.1	19.9
498.970	24.0	36.2	37.1	46.0	36.2	37.1	8.9
509.250	24.2	---	32.6	46.0	---	32.6	13.4
645.050	27.4	43.0	---	46.0	43.0	---	3.0
698.560	28.3	33.6	35.3	46.0	33.6	35.3	10.7

Note : 1) Meter Readings include Correction Factor (Antenna factor, Cable loss).

2) Sample of calculation at 645.050 MHz :

Calculation of Margin : (46.0-43)dB = 3.0dB

Remarks : 1) Emission level was measured at the worst case condition.

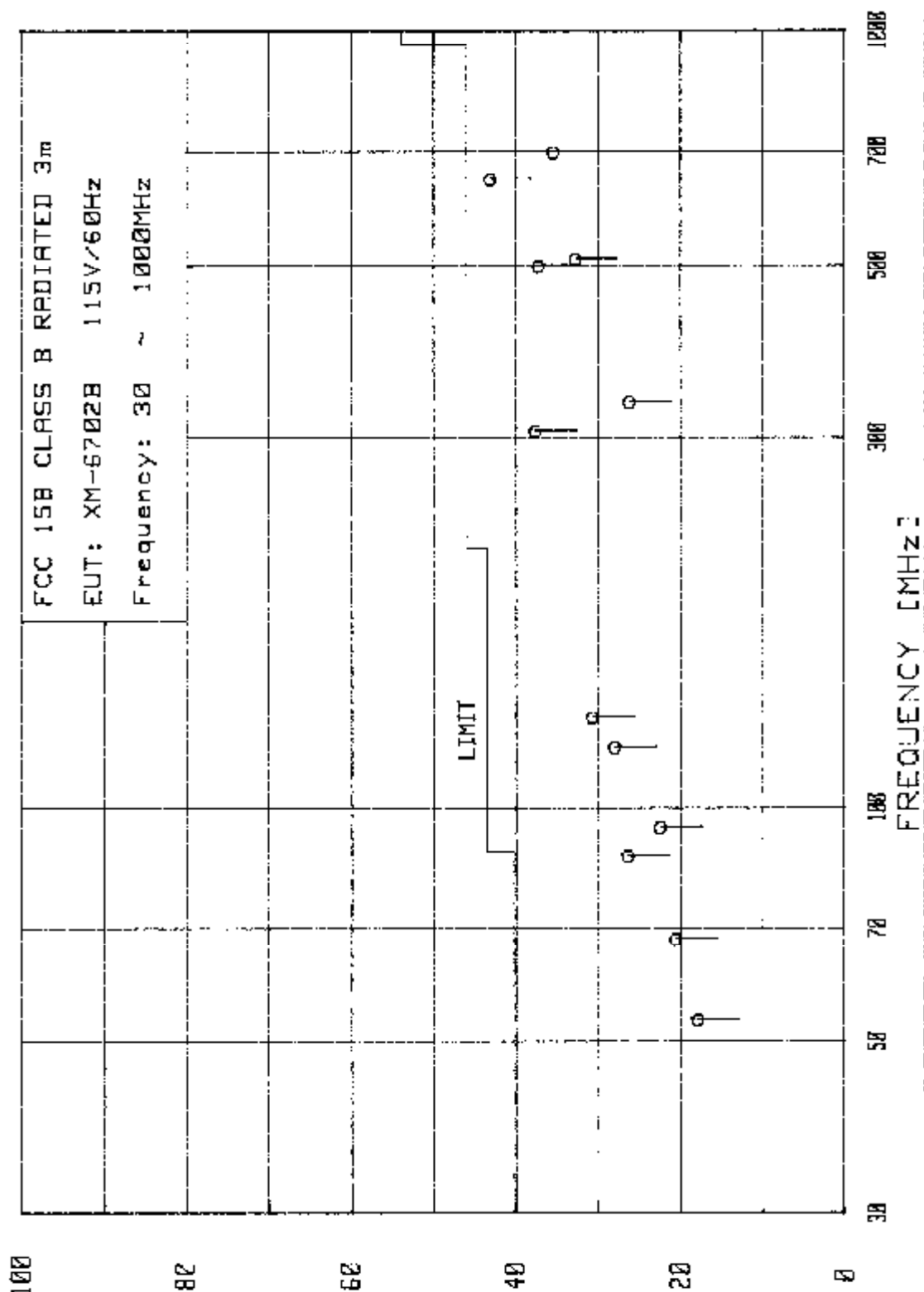
2) The test data include the estimated uncertainty of MAX.4dB in case of Radiated Emission measurement.

Tested by :


  
Engineer of TDK Chikumagawa Open Site

May. 24, 1999

TDK EMC CENTER  
EMISSION LEVEL [dBuV/m]



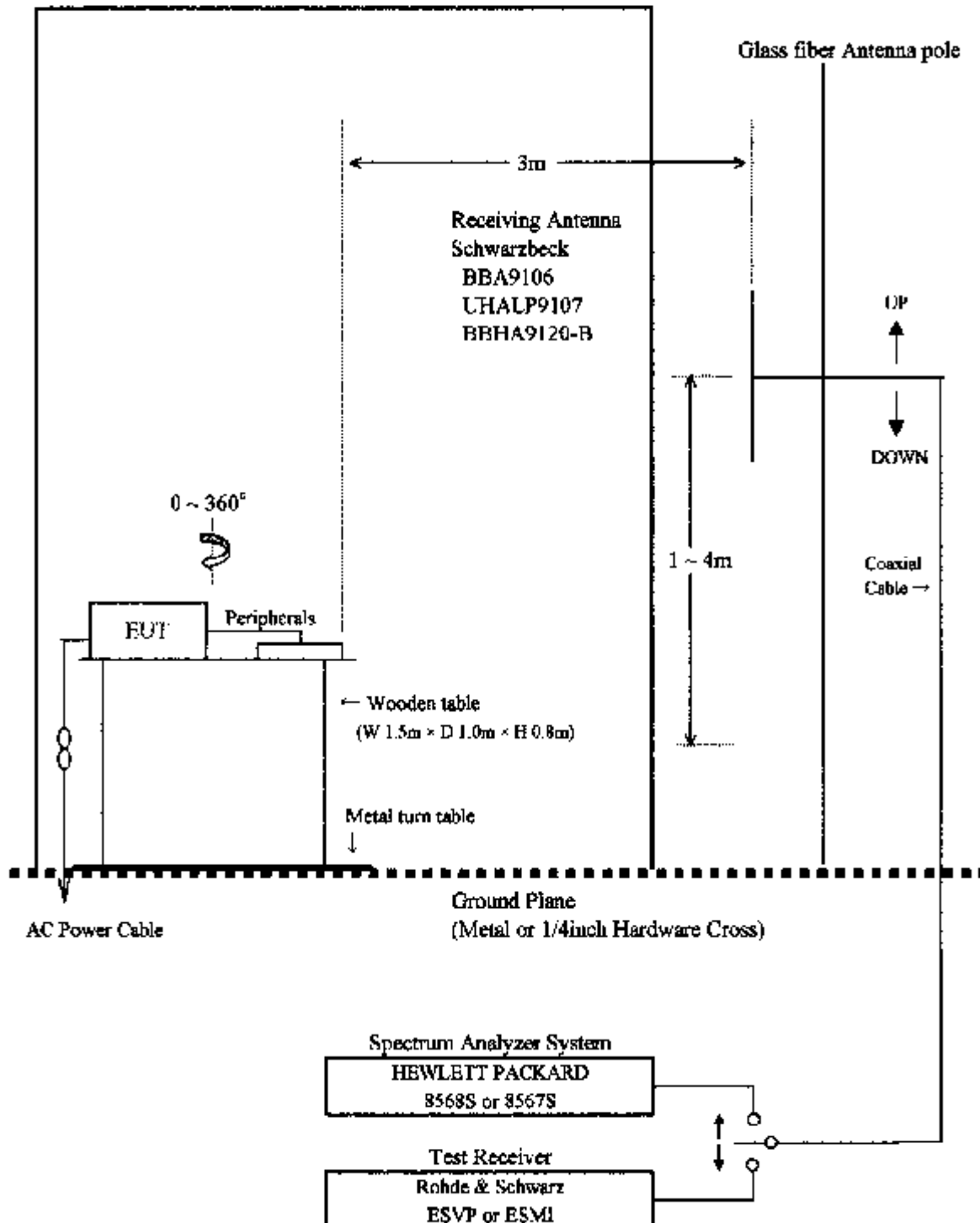
TDK Application No. : TDC-99-0506(1)  
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 Model No. : XM-6702B

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### EUT's Test Arrangement of Radiation

Fig 1

Non metallic (F. R. P.) Dome (W 8.0m × D 6.3m × H 5.5m)



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#### Test Procedure of AC Power Line Conducted Emission :

According to ANSI C63.4 - 1992 Section 7. 2.3, the preliminary AC power line conduction emission measurement was performed.

Tabletop devices were placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The vertical conducting plane was located 40cm to the rear of the EUT.

All other surfaces of EUT were placed at least 80cm from any other grounded conducting surfaces including the cases of LISNs.

Each EUT current - carrying power lead, except the safety lead, was individually connected through the LISN to the input power source. The unused 50  $\Omega$  connector of the LISN was terminated with 50  $\Omega$  terminator. When the EUT comprised multiple units that had their own individual power cords, AC power line conducted emissions measurements were performed with the line cord of the particular unit under test connected to one LISN that was connected to the measuring instrument. Those power cords for the units in the remainder of the configuration not under measurement were connected to a multiple outlet which was connected to an LISN different from the LISN used for the power cord of the EUT.

The preliminary testing was performed to identify the frequency of the emissions that had the heighest amplitude relative to the limit by operating the EUT in selected typical modes of operation, typical cable positions, and with a typical or representative system configuration.

For each mode of operation and for each current - carrying conductor, cable or wire manipulation were performed within the range of likely configurations. For this series of tests, the frequency spectrum of interest were monitored looking for the emission that had the highest amplitude relative to the limit. Once that emission was found for each current carrying conductor of each power cord associated with the EUT, the one configuration and mode of operation that produced the emission closest to the limit was recorded.

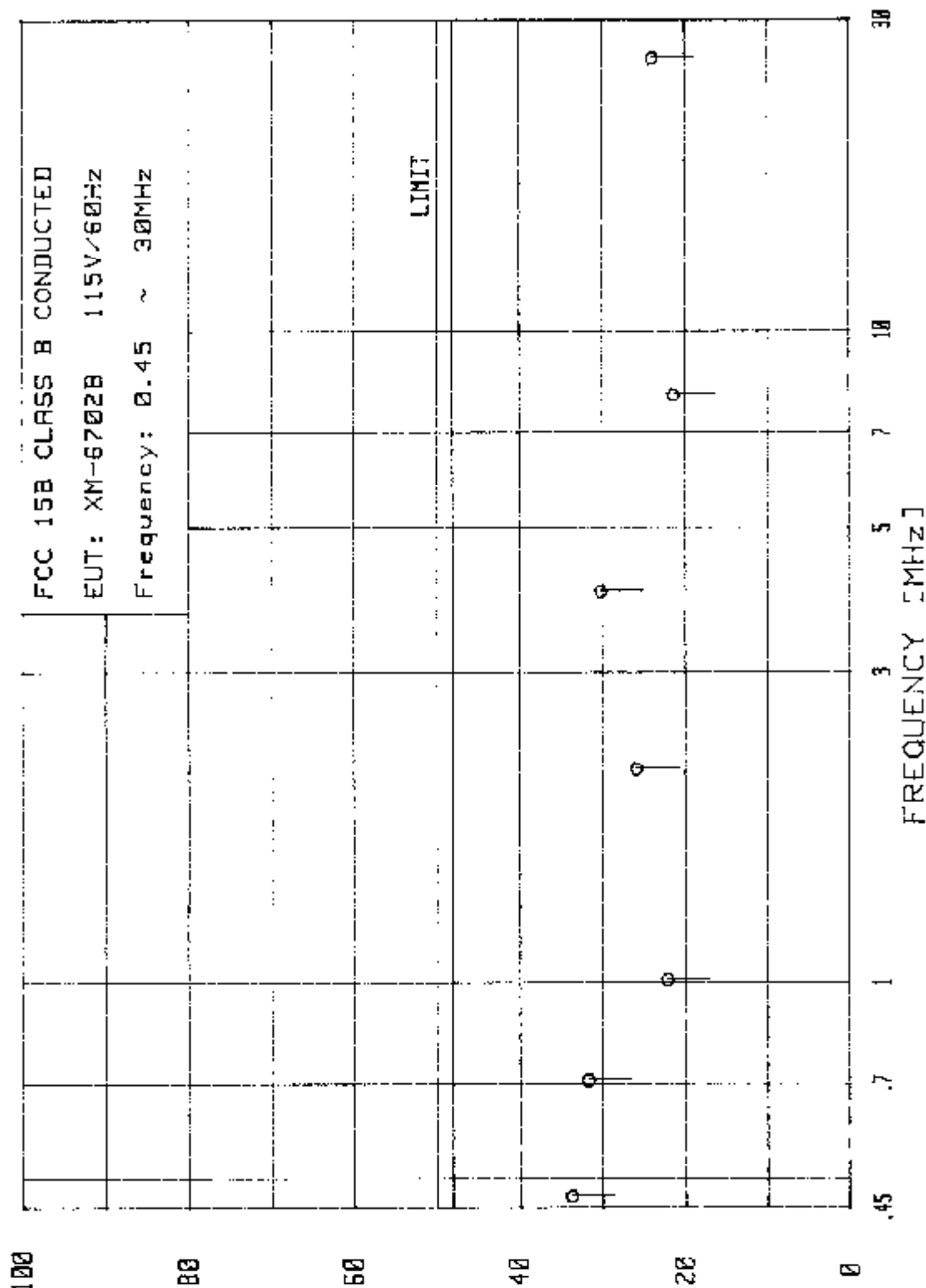
Based on the preliminary tests of EUT, the one EUT and cable or wire configuration and mode of operation that produced the emission with the heighest amplitude relative to the limit was selected for the final test.

The final test was performed and the frequency and amplitude of the suspect signals (or the highest 10 to 20 amplitudes and frequencies) were measured with CISPR QP mode and recorded.



May. 24, 1999

TDK EMC CENTER  
EMISSION LEVEL [dBuV]

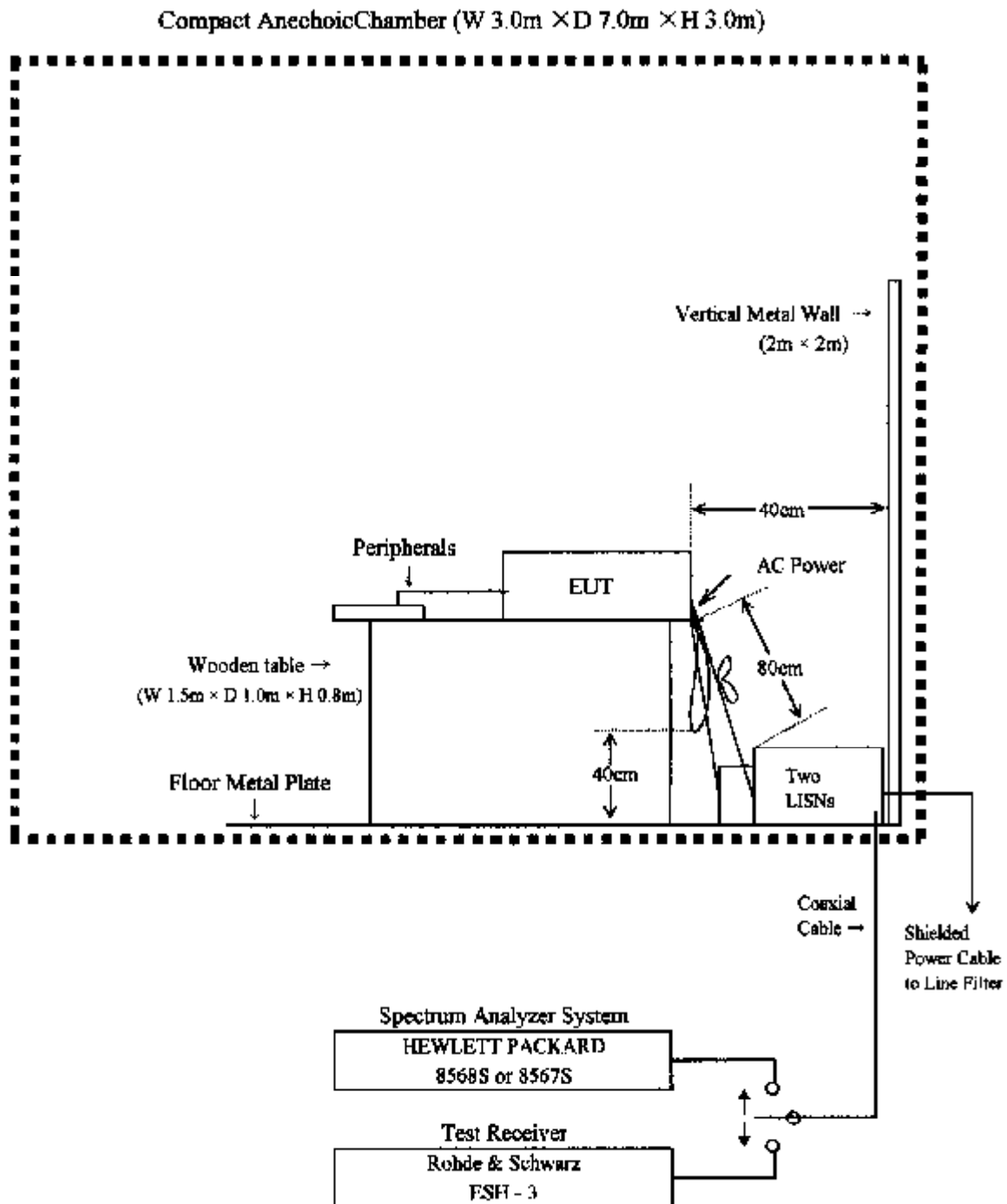


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# EUT's Test Arrangement of Conduction

Fig 2



TDK Application No. : TDC-99-0506(1)  
Applicant : TOSHIBA CORPORATION  
Model No. : XM-6702B

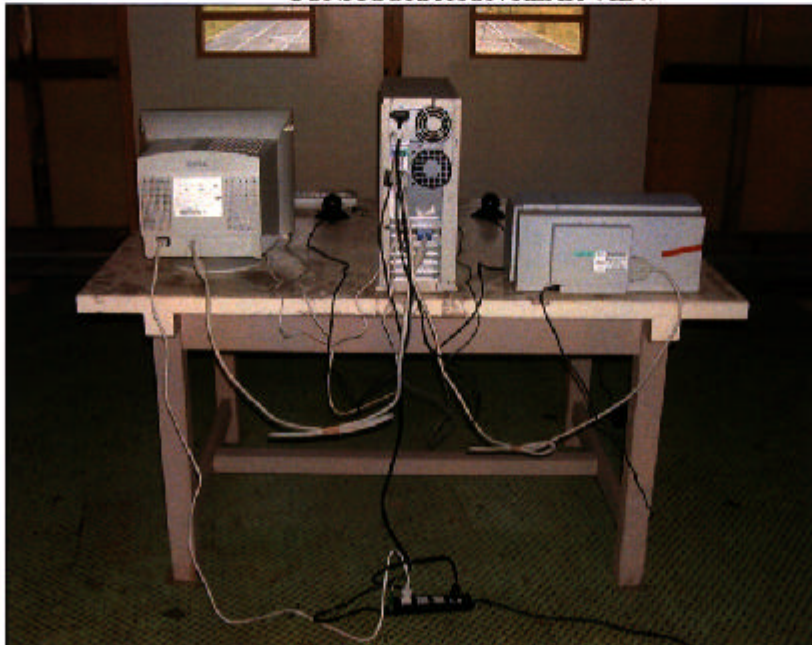
Standard : FCC 15 , B  
FCC ID : CJ6AT99-043

## RADIATION MEASUREMENT

CONFIGURATION FRONT VIEW



CONFIGURATION REAR VIEW



Remark : Photos. Show the worst case test configuration of EUT

Temp. : 14 °C ; Humi. : 66 %

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## CONDUCTION MEASUREMENT

CONFIGURATION FRONT VIEW



CONFIGURATION SIDE VIEW



Remark : Photos. Show the worst case test configuration of EUT

Temp. : 22 °C ; Humi. : 54 %

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Standard : FCC 15 , B  
 FCC ID : CJ6AT99-043

## MEASURING INSTRUMENT USED

NVLAP Lab Code : 200319-0

TDK APPLICATION No. : TDC-99-0506(1)

<u>Instrument</u>	<u>Model No.</u>	<u>Manufacturer</u>	<u>ID No.</u>	<u>Last Calibration Date</u>	<u>Period</u>
<input type="checkbox"/> Spectrum Analyzer	8568B	Hewlett-Packard	2445A00924	Mar. 1999	1 year
<input type="checkbox"/> RF-Preselector	85685A	Hewlett-Packard	2648A00481	May. 1999	1 year
<input checked="" type="checkbox"/> Field Strength Meter	ESVP	Rohde & Schwarz	879529/016	Apr. 1999	1 year
<input checked="" type="checkbox"/> Field Strength Meter	ESH-3	Rohde & Schwarz	872079/020	Apr. 1999	1 year
<input type="checkbox"/> Field Strength Meter	ESMI	Rohde & Schwarz	61360008	Oct.1998	1 year
<input type="checkbox"/> Pre - Amplifier	8447D	Hewlett-Packard	2443A04539	Mar. 1999	1 year
<input checked="" type="checkbox"/> Biconical Antenna	BBA9106	Schwarzbeck	D-6901 No.2	Jun. 1998	1 year
<input checked="" type="checkbox"/> Log-Periodic Antenna	UHALP9107	Schwarzbeck	424/517	Jun. 1998	1 year
<input type="checkbox"/> Dipole Antenna	VHA9103	Schwarzbeck	D-6901 No.3	May. 1999	1 year
<input type="checkbox"/> Dipole Antenna	UHA9105	Schwarzbeck	29-14066	May. 1999	1 year
<input checked="" type="checkbox"/> LISN (50 $\mu$ H/50 $\Omega$ )	KNW-407	Kyoritsu Electrical Works	8-680-7	Apr. 1999	1 year
<input checked="" type="checkbox"/> LISN (50 $\mu$ H/50 $\Omega$ )	KNW-407	Kyoritsu Electrical Works	8-823-10	Apr. 1999	1 year
<input type="checkbox"/> LISN (50 $\mu$ H/50 $\Omega$ )	KNW-408	Kyoritsu Electrical Works	8-652-35	Apr. 1999	1 year
<input type="checkbox"/> LISN (50 $\mu$ H/50 $\Omega$ )	ESH2-Z5	Rohde & Schwarz	881 362/011	May. 1999	1 year
<input checked="" type="checkbox"/> Open Test Site	TCO-10	TDK Corporation	GD-0043-5	Oct. 1998	1 year
<input checked="" type="checkbox"/> Co-axial Cable	AK9513	Schwarzbeck	N-C007	May. 1999	1 year
<input type="checkbox"/> Co-axial Cable	8D-2V	Shinagawa Densen	N-C012	May. 1999	1 year
<input type="checkbox"/> Co-axial Cable	8D-2V	Shinagawa Densen	N-C013	May. 1999	1 year
<input checked="" type="checkbox"/> Co-axial Cable	8D-2V	Shinagawa Densen	N-C014	May. 1999	1 year
<input checked="" type="checkbox"/> Co-axial Cable	8D-2V	Shinagawa Densen	N-C016	May. 1999	1 year
<input checked="" type="checkbox"/> Co-axial Cable	5D-2W	Shinagawa Densen	N-C017	May. 1999	1 year
<input checked="" type="checkbox"/> RF Switch (EMI Interface)	MP59B	Anritsu	N-C025	May. 1999	1 year