



JAPAN QUALITY ASSURANCE ORGANIZATION

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JQA APPLICATION NO.: 400-10074

Issue Date : May 10, 2001

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EMI TEST REPORT

JQA APPLICATION NO. : 400-10074

Model No. : RR1220H

Type of Equipment : Radio Controlled Toy
(Superregenerative Type)

Regulations Applied : CFR 47 FCC Rules and Regulations Part 15

FCC ID : CVTRR1220H

Applicant : NIKKO CO., LTD.

Address : 1-7-14, Mizumoto, Katsushika-ku,
Tokyo 125-0032, Japan

Manufacture : NIKKO TEC INTERNATIONAL LTD.

Address : Room 812, Houston Center, 63 Mody Road,
Tsimshatsui, Kowloon, Hong Kong

Received date of EUT : May 2, 2001

Final Judgment : Passed

TEST RESULTS IN THIS REPORT are obtained in use of equipment that is traceable to Electro-Technical Lab. of METI Japan and Communications Research Lab. of MPHPT Japan.

The test results only respond to the tested sample. This report should not be reproduced except in full, without the written approval of JQA EMC Engineering Dept. Testing Div.

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1 DOCUMENTATION

1.1 TEST REGULATION

FCC Rules and Regulations Part 15 Subpart A and B (June 23, 1989) Superregenerative Receiver

Test procedure :

AC power line conducted emission and radiated emission tests were performed according to the procedures in ANSI C63.4-1992.

1.2 GENERAL INFORMATION

1.2.1 Test facility :

1) Test Facility located at EMC Engineering Dept. Testing Div. :

- No.2 and 3 Anechoic Chambers(3 meters Site).

- Shielded Enclosure.

Expiration date of FCC test facility filing : June 04, 2002

2) EMC Engineering Dept. Testing Div. is recognized under the National Voluntary Laboratory accreditation Program for satisfactory compliance established in title 15, Part 285 Code of Federal Regulations.

NVLAP Lab Code : 200189-0 (Effective through : June 30, 2001)

1.2.2 Description of the Equipment Under Test (EUT) :

1) Type of Equipment	: Radio Controlled Toy
2) Product Type	: Production
3) Category	: Superregenerative Receiver
4) EUT Authorization	: Certification
5) FCC ID	: CVTRR1220H
6) Trade Name	: NIKKO
7) Model No.	: RR1220H
8) Tuning Frequency Range	: 49.830 MHz - 49.890 MHz
9) Highest Frequency Used in the EUT	: -
10) Serial No.	: None
11) Date of Manufacture	: April 2001
12) Power Rating	: DC 12V(Battery)
13) EUT Grounding	: None

1.2.3 Definitions for symbols used in this test report :

 x - indicates that the listed condition, standard or equipment is applicable for this report.

 - indicates that the listed condition, standard or equipment is not applicable for this report.

1.3 TEST CONDITION

1.3.1 The measurement of the AC Power Line Conducted Emission

___ - was performed in the following test site.

x - was not applicable.

Test location :

Safety Testing Center EMC Engineering Dept. Testing Div.
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

___ - Shielded Enclosure

___ - Anechoic Chamber No. 2 (portable Type)

Used test instruments :

Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
___ - Test Receiver	ESH-2	Rohde & Schwarz	880370/016	Sep. 2000	1 Year
___ - Test Receiver	ESH-3	Rohde & Schwarz	881460/030	June 2000	1 Year
___ - LISN(for Peripheral)	KNW-407	Kyoritsu Electrical	8-833-6	Apr. 2001	1 Year
___ - LISN(for EUT)	KNW-407	Kyoritsu Electrical	8-855-2	Apr. 2001	1 Year
___ - LISN	KNW-407	Kyoritsu Electrical	8-757-1	Apr. 2001	1 Year
___ - RF Cable	3D-2W	Fujikura	155-21-006E0	Apr. 2001	1 Year
___ - RF Cable	3D-2W	Fujikura	155-21-007E0	Apr. 2001	1 Year
___ - 50ohm Termination		SUHNER	154-06-501E0	Jan. 2001	1 Year
___ - 50ohm Termination		SUHNER	154-06-502E0	Jan. 2001	1 Year

1.3.2 The measurement of the Radiated Emission(30 MHz - 1000 MHz)

 x - was performed in the following test site.

 - was not applicable.

Test location :

Safety Testing Center EMC Engineering Dept. Testing Div.
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

 x - Anechoic Chamber No. 2 (3 meters)

 - Anechoic Chamber No. 3 (3 meters)

Validation of Site Attenuation :

1) Last Confirmed Date :March, 2001

2) Interval :1 year

Used test instruments :

Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
<u> </u> - Test Receiver	ESH-2	Rohde & Schwarz	880370/016	Sep. 2000	1 Year
<u> x </u> - Test Receiver	ESVS10	Rohde & Schwarz	826148/002	May 2001	1 Year
<u> </u> - Test Receiver	ESVS10	Rohde & Schwarz	832699/001	May 2001	1 Year
<u> x </u> - Antenna	KBA-511A	Kyoritsu Electrical	0-170-1	Nov. 2000	1 Year
<u> </u> - Antenna	KBA-511A	Kyoritsu Electrical	0-201-13	Nov. 2000	1 Year
<u> x </u> - Antenna	KBA-611	Kyoritsu Electrical	0-147-14	Nov. 2000	1 Year
<u> </u> - Antenna	KBA-611	Kyoritsu Electrical	0-210-5	Nov. 2000	1 Year
<u> x </u> - Biconical Antenna	BBA9106	Schwarzbeck	VHA91031150	May 2000	1 Year
<u> </u> - Biconical Antenna	BBA9106	Schwarzbeck	11905078E0	May 2000	1 Year
<u> </u> - Log-Periodic Antenna	UHALP9107	Schwarzbeck	11905079E0	May 2000	1 Year
<u> </u> - Log-Periodic Antenna	UHALP9107	Schwarzbeck	11905110	May 2000	1 Year
<u> x </u> - RF Cable	5D-2W	Fujikura	155-21-001E0	Feb. 2001	1 Year
<u> </u> - RF Cable	5D-2W	Fujikura	155-21-002E0	Feb. 2001	1 Year
<u> x </u> - Signal Generator	6061A	Gigatronix	5130593	Mar. 2001	1 Year



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1.3.3 The measurement of the Radiated Emission(Above 1000 MHz)

☐ - was performed in the following test site.

☒ - was not applicable.

Test location :

Safety Testing Center EMC Engineering Dept. Testing Div.
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

☐ - No. 2 site (3 meters)

☐ - No. 3 site (3 meters)

Validation of Site Attenuation :

1) Last Confirmed Date :N/A

2) Interval :N/A

Used test instruments :

Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
<input type="checkbox"/> - Spectrum Analyzer	8560E	Hewlett Packard	3240A00189	Nov. 2000	1 Year
<input type="checkbox"/> - Spectrum Analyzer	8566B	Hewlett Packard	2140A01091	Apr. 2001	1 Year
<input type="checkbox"/> - RF Pre-selector	85685A	Hewlett Packard	2648A00522	Apr. 2001	1 Year
<input type="checkbox"/> - Spectrum Analyzer	8566B	Hewlett Packard	2747A05855	June 2000	1 Year
<input type="checkbox"/> - RF Pre-selector	85685A	Hewlett Packard	2091A00933	June 2000	1 Year
<input type="checkbox"/> - Log-Periodic Antenna	HL 025	Rohde & Schwarz	340182/015	Nov. 2000	1 Year
<input type="checkbox"/> - RF Amplifier	DBP-0102N5334272B	DBS Microwave Inc.	012	Mar. 2001	1 Year
<input type="checkbox"/> - RF Amplifier	WJ-6882-814	Watkins-Johnson	0414	June 2000	1 Year
<input type="checkbox"/> - RF Amplifier	WJ-5315-556	Watkins-Johnson	106	June 2000	1 Year
<input type="checkbox"/> - RF Amplifier	WJ-5320-307	Watkins-Johnson	645	June 2000	1 Year
<input type="checkbox"/> - RF Cable(10m)	S 04272B	Suhner	155-21-011E0	May 2000	1 Year
<input type="checkbox"/> - RF Cable(2m)	SUCOFLEX 104	Suhner	155-21-012E0	May 2000	1 Year
<input type="checkbox"/> - RF Cable(1m)	SUCOFLEX 104	Suhner	155-21-013E0	May 2000	1 Year



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1.4 EUT MODIFICATION / Deviation from Standard

1.4.1 EUT MODIFICATION

- ☒ -No modifications were conducted by JQA to achieve compliance to Class B levels.
☐ -To achieve compliance to Class B levels, the following changes were made by JQA during the compliance test.

The modifications will be implemented in all production models of this equipment.

Applicant :

Date :

Typed Name :

Position :

1.4.2 Deviation from Standard:

- ☒ -No deviations from the standard described in clause 1.1.
☐ - The following deviations were employed from the standard described in clause 1.1:



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1.5 TEST RESULTS / UNCERTAINTY

AC Power Line Conducted Emission

☐ - Applicable ☒ - NOT Applicable

The requirements are

☐ - PASSED ☐ - NOT PASSED

Min. Limit Margin

dB at MHz

Max. Limit Exceeding

dB at MHz

Uncertainty of Measurement Results

+/- 2.4 dB (Level of confidence 95%)

Remarks :

Radiated Emission

☒ - Applicable ☐ - NOT Applicable

The requirements are

☒ - PASSED ☐ - NOT PASSED

Min. Limit Margin

16.3 dB at 288.52 MHz

Max. Limit Exceeding

dB at MHz

Uncertainty of Measurement Results

+/- 3.4 dB (Level of confidence 95%)

Remarks:

1.6 SUMMARY

General Remarks :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A and B (June 23, 1989) under the test configuration, as shown in clause 1.7 to 1.9.

The conclusion for the test items of which are required by the applied regulation is indicated under the final judgment.

Final Judgment :

The "as received" sample;

- x - fulfill the test requirements of the regulation mentioned on clause 1.1.
- fulfill the test requirements of the regulation mentioned on clause 1.1, but with certain qualifications.
- doesn't fulfill the test regulation mentioned on clause 1.1.

Begin of testing : May 9, 2001

End of testing : May 9, 2001

- JAPAN QUALITY ASSURANCE ORGANIZATION -
Approved by:

Signatories:
Issued by:



Masaaki Takahashi
Manager
JQA EMC Engineering Dept.



Shigeru Osawa
Assistant Manager
JQA EMC Engineering Dept.



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1.7 TEST CONFIGURATION / OPERATION OF EUT

1.7.1 Test Configuration

The equipment under test (EUT) consists of :

Item	Manufacturer	Model No.	FCC ID	Serial No.
Radio Controlled Toy	NIKKO TEC INTERNATIONAL LTD.	RR1220H	CVTRR1220H	None

1.7.2 Operating condition

Power supply Voltage : DC 12V(Battery)

The tests have been carried out under the receiving condition.

COPY

1.8 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)

1.8.1 AC Power Line Conducted Emission (450 kHz - 30 MHz) :

According to description of ANSI C63.4-1992 sec.7.2.3, the AC power line preliminary conducted emissions measurements were carried out.

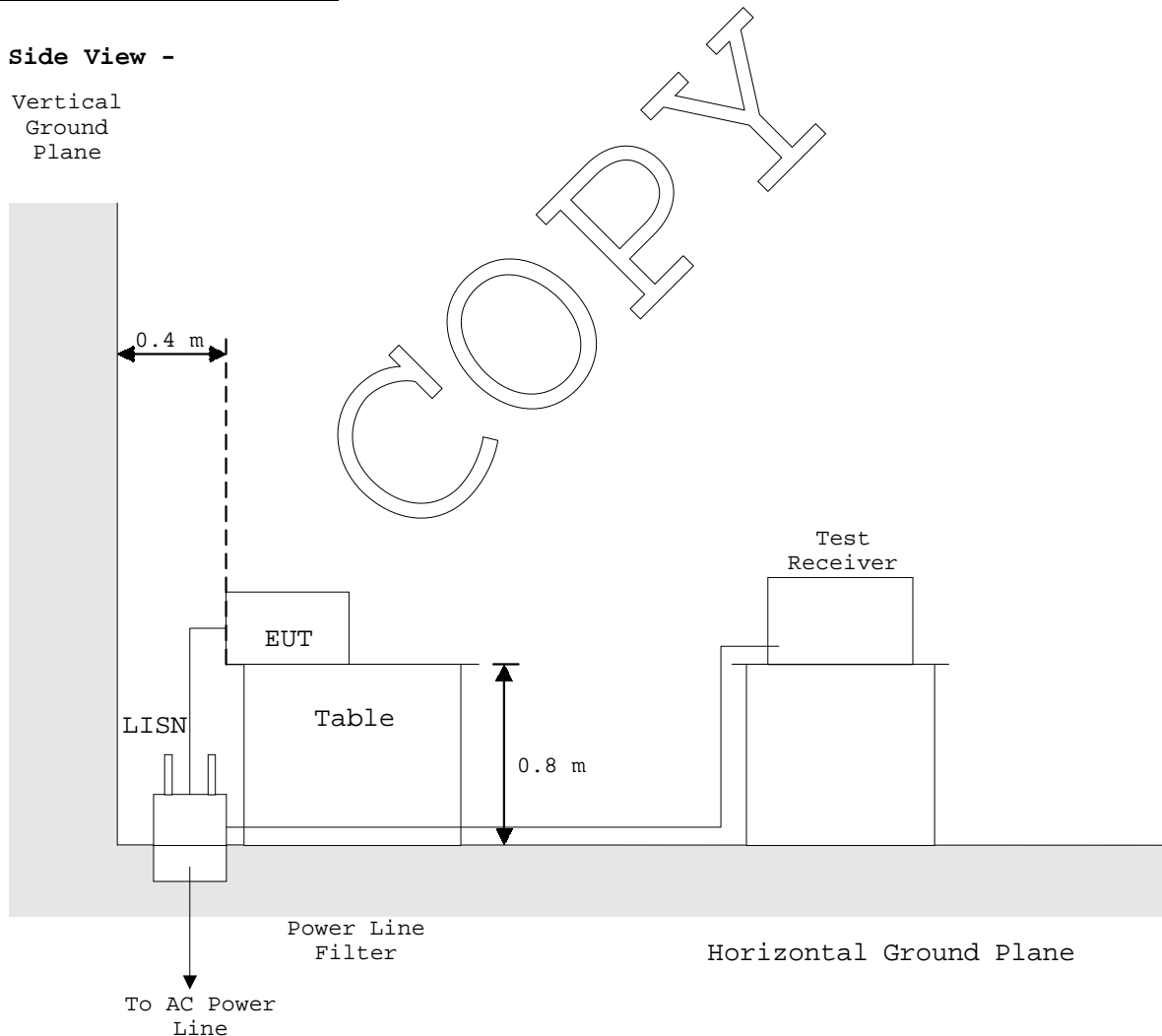
The preliminary conducted measurements were performed using the spectrum analyzer to observe the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for final AC power line conducted emissions measurements.

Shielded Enclosure

- Side View -

Vertical
Ground
Plane



1.8.2 Radiated Emission (30 MHz - 1000 MHz) :

According to description of ANSI C63.4-1992 sec.8.3.1.1, the preliminary radiated emissions measurements were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

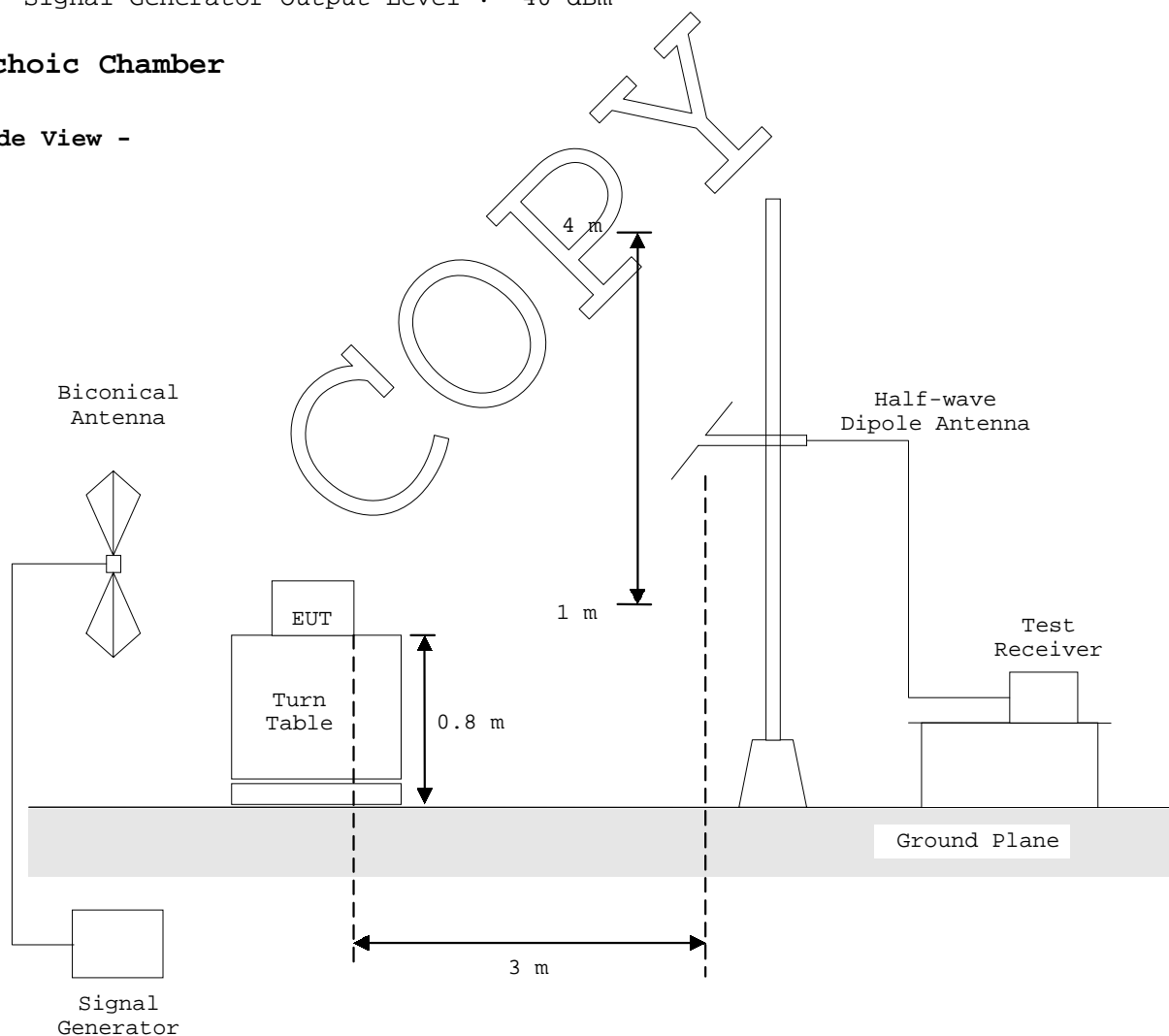
The EUT is a superregenerative receiver. The radiated measurements were carried out according to ANSI C63.4-1992 sec.12.1.1.1. Refer to the "cohere" plot below.

Signal Generator Frequency : 49.86 MHz

Signal Generator Output Level : -40 dBm

Anechoic Chamber

- Side View -



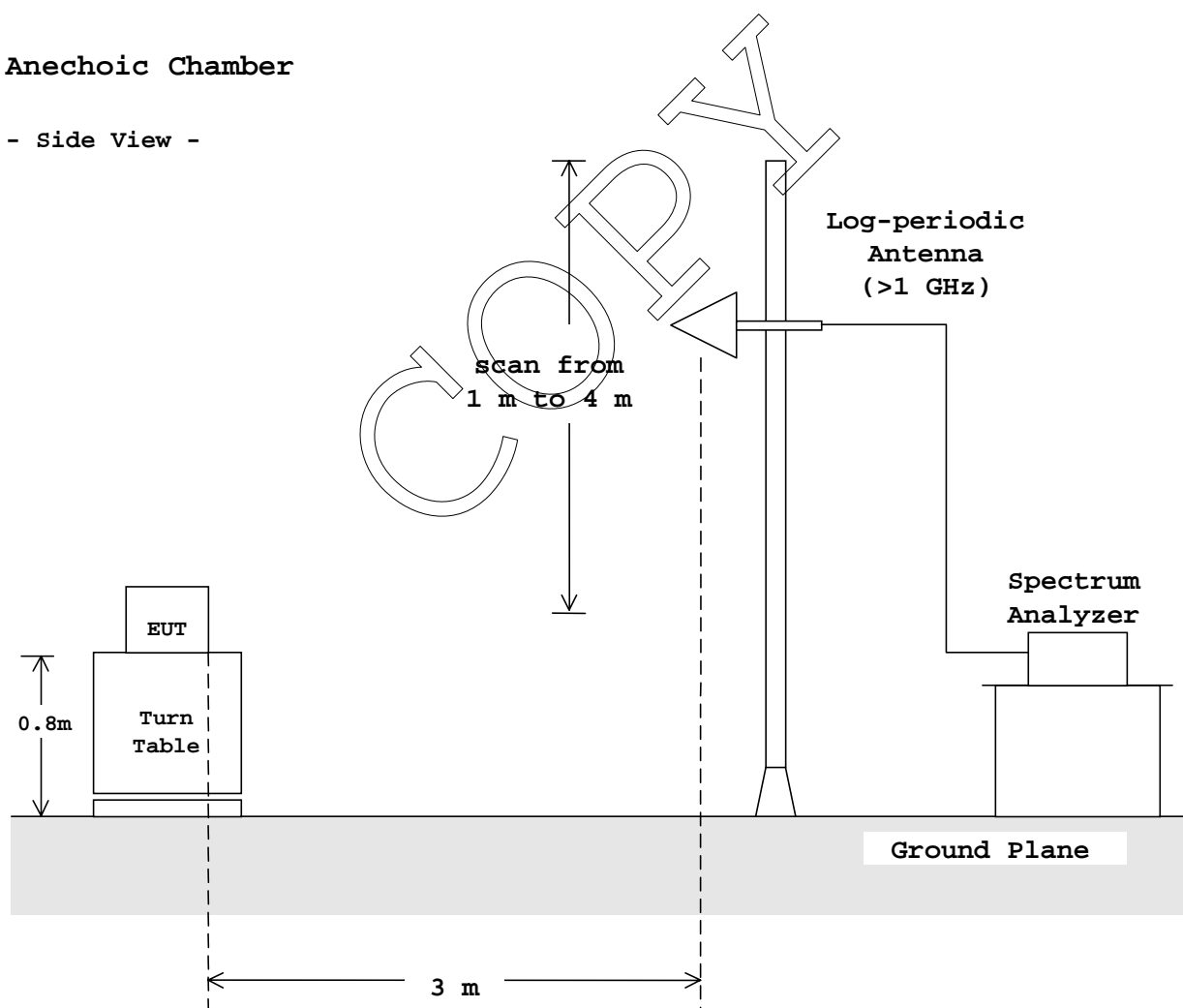
1.8.3 Radiated Emission (Above 1 GHz) :

According to description of ANSI C63.4-1992 sec.8.3.1.1, the preliminary radiated emissions measurements were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

Anechoic Chamber

- Side View -



1.9 TEST ARRANGEMENT (PHOTOGRAPHS)**PHOTOGRAPHS OF EUT CONFIGURATION FOR RADIATED EMISSIONS MEASUREMENT**

Photograph present configuration with maximum emission





TEST DATA

2.2 Radiated Emissions Measurement(30 MHz - 1000 MHz)

Date : May 9, 2001

Temp.: 23 °C Humi.: 70 %

Tuning Frequency : 49.860 MHz

Distance of Measurement : 3.0 meters

Frequency (MHz)	Antenna Factor (dB/m)	Meter Reading		Limits (dBμV/m)	Field Strength at 3 m		Margins	
		Horiz. (dBμV)	Vert. (dBμV)		Horiz. (dBμV/m)	Vert. (dBμV/m)	Horiz. (dB)	Vert. (dB)
55.46	4.5	5.5	1.5	40.0	10.0	6.0	30.0	34.0
85.00	8.4	1.5	0.6	40.0	9.9	9.0	30.1	31.0
267.10	19.2	5.8	< 0.0	46.0	25.0	< 19.2	21.0	> 26.8
288.52	20.0	9.7	1.3	46.0	29.7	21.3	16.3	24.7
301.39	20.4	7.1	0.2	46.0	27.5	20.6	18.5	25.4
331.61	21.3	6.6	< 0.0	46.0	27.9	< 21.3	18.1	> 24.7
369.85	22.4	4.0	< 0.0	46.0	26.4	< 22.4	19.6	> 23.6

Note: 1. The spectrum was checked from 30 MHz to 1000 MHz.

All emissions not listed were found to be more than 20 dB below the limits.

2. The symbol of "<" means "or less".

3. The cable loss was included in the antenna factor.

4. Sample calculation:

at 55.46 MHz

$$Af + Mr = 4.5 + 5.5 = 10.0 \text{ dB}\mu\text{V/m}$$

Where,

Af = Antenna Factor including the cable loss.

Mr = Meter Reading

5. Measuring Instrument Setting:

Detector function : CISPR quasi-peak

IF Bandwidth : 120 kHz

Tested by :

Shigeru Osawa

Testing Engineer

Radiated Spurious Emissions

FCC ID : CVTRR1220H

Tuning Frequency : 49.86 MHz

Test Condition :

