JAPAN QUALITY ASSURANCE ORGANIZATION
21-25, KINUTA 1-CHOME, SETAGAYA-KU, TOKYO 157-8573 JAPAN
PHONE (03) 3416-0111, TELEX 242-2531 JQA J FAX (03) 3416-9691

EMI TEST REPORT

JQA APPLICATION NO.	: 400-20139
Model No.	: AAO6004322R1
Type of Equipment	: Radio Controlled Toy (Superregenerative Type)
Regulations Applied	: CFR 47 FCC Rules and Regulations Part 15
FCC ID	: AAO6004322R1
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 21, 2002
Final Judgment	**: Passed**

Test results in this report are obtained in use of equipment that is traceable to National Institute of Advanced Industrial Science and Technology (AIST) of Japan and Communication Research Laboratory (CRL) of 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, 2002)

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	: AAO6004322R1
6)	Trade Name	: NIKKO
7)	Model No.	: AAO6004322R1
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	: May 2002
12)	Power Rating	: 9.0 VDC(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 & EMC 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	May 2002	1 Year
___	- Test Receiver	ESH-3	Rohde & Schwarz	881460/030	May 2002	1 Year
___	- Test Receiver	ESHS10	Rohde & Schwarz	835871/004	May 2002	1 Year
___	- LISN(for Peripheral)	KNW-407	Kyoritsu Electrical	8-833-6	Apr. 2002	1 Year
___	- LISN(for EUT)	KNW-407	Kyoritsu Electrical	8-855-2	Apr. 2002	1 Year
___	- LISN	KNW-407	Kyoritsu Electrical	8-757-1	Apr. 2002	1 Year
___	- RF Cable	3D-2W	Fujikura	155-21-006E0	Apr. 2002	1 Year
___	- RF Cable	3D-2W	Fujikura	155-21-007E0	Apr. 2002	1 Year
___	- 50ohm Termination	-	SUHNER	154-06-501E0	Jan. 2002	1 Year
___	- 50ohm Termination	-	SUHNER	154-06-502E0	Jan. 2002	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 & EMC Center EMC Engineering Dept. Testing Div.
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

___ - Anechoic Chamber No. 2 (3 meters)
_x_ - Anechoic Chamber No. 3 (3 meters)

Validation of Site Attenuation :

1) Last Confirmed Date :March, 2002
2) Interval :1 year

Used test instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
___	Spectrum Analyzer	8560E	Hewlett Packard	3240A00189	Nov. 2001	1 Year
___	Spectrum Analyzer	8566B	Hewlett Packard	2140A01091	Mar. 2002	1 Year
___	RF Pre-selector	85685A	Hewlett Packard	2648A00522	Oct. 2001	1 Year
___	Spectrum Analyzer	8566B	Hewlett Packard	2747A05855	Apr. 2002	1 Year
___	RF Pre-selector	85685A	Hewlett Packard	2091A00933	Apr. 2002	1 Year
___	Test Receiver	ESV	Rohde & Schwarz	872148/039	May 2002	1 Year
___	Test Receiver	ESVS10	Rohde & Schwarz	826148/002	May 2002	1 Year
_x_	Test Receiver	ESVS10	Rohde & Schwarz	832699/001	May 2002	1 Year
___	Antenna	KBA-511	Kyoritsu Electrical	0-170-1	Nov. 2001	1 Year
___	Antenna	KBA-511A	Kyoritsu Electrical	0-201-13	Nov. 2001	1 Year
___	Antenna	KBA-611	Kyoritsu Electrical	0-147-14	Nov. 2001	1 Year
___	Antenna	KBA-611	Kyoritsu Electrical	0-210-5	Nov. 2001	1 Year
_x_	Biconical Antenna	BBA9106	Schwarzbeck	VHA91031150	Nov. 2001	1 Year
_x_	Biconical Antenna	BBA9106	Schwarzbeck	11905078E0	Nov. 2001	1 Year
___	Log-Periodic Antenna	UHALP9107	Schwarzbeck	11905079E0	Nov. 2001	1 Year
_x_	Log-Periodic Antenna	UHALP9107	Schwarzbeck	11905110	Nov. 2001	1 Year
___	RF Cable	5D-2W	Fujikura	155-21-001E0	Feb. 2002	1 Year
_x_	RF Cable	5D-2W	Fujikura	155-21-002E0	Feb. 2002	1 Year
_x_	Signal Generator	6061A	Gigatronix	5130593	Mar. 2002	1 Year

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

___ - was performed in the following test site.
_x_ - was not applicable.

Test location :

Safety & EMC 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
___ -	Spectrum Analyzer	8560E	Hewlett Packard	3240A00189	Nov. 2001	1 Year
___ -	Spectrum Analyzer	8566B	Hewlett Packard	2140A01091	Mar. 2002	1 Year
___ -	RF Pre-selector	85685A	Hewlett Packard	2648A00522	Oct. 2002	1 Year
___ -	Spectrum Analyzer	8566B	Hewlett Packard	2747A05855	Apr. 2002	1 Year
___ -	RF Pre-selector	85685A	Hewlett Packard	2091A00933	Apr. 2002	1 Year
___ -	Log-Periodic Antenna	HL 025	Rohde & Schwarz	340182/015	Jan. 2002	1 Year
___ -	RF Amplifier	DBP-0102N5334272B	DBS Microwave Inc.	012	June 2001	1 Year
___ -	RF Amplifier	WJ-6882-814	Watkins-Johnson	0414	June 2001	1 Year
___ -	RF Amplifier	WJ-5315-556	Watkins-Johnson	106	June 2001	1 Year
___ -	RF Amplifier	WJ-5320-307	Watkins-Johnson	645	June 2001	1 Year
___ -	RF Cable(10m)	S 04272B	Suhner	155-21-011E0	May 2002	1 Year
___ -	RF Cable(2m)	SUCOFLEX 104	Suhner	155-21-012E0	May 2002	1 Year
___ -	RF Cable(1m)	SUCOFLEX 104	Suhner	155-21-013E0	May 2002	1 Year
___ -	RF Cable(1m)	S 04272B	Suhner	155-21-015E0	June 2001	1 Year
___	Test Receiver	ESI26	Rohde & Schwarz	100043	Aug. 2001	1 Year

1.4 EUT MODIFICATION / Deviation from Standard

1.4.1 EUT MODIFICATION

x - 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:

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

1.5 TEST RESULTS / UNCERTAINTY

AC Power Line Conducted Emission ___ **- Applicable** _x_ **- 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 _x_ **- Applicable** ___ **- NOT Applicable**

The requirements are _x_ **- PASSED** ___ **- NOT PASSED**

Min. Limit Margin 7.6 dB at 210.18 MHz
Max. Limit Exceeding dB at MHz

Uncertainty of Measurement Results
Biconical Antenna +/- 3.8 dB (level of confidence:95%)
Log-Periodic Antenna +/- 4.7 dB (level of confidence:95%)
Half Wave Dipole Antenna +/- 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 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 22, 2002

End of testing : May 22, 2002

- JAPAN QUALITY ASSURANCE ORGANIZATION -

Signatories:

Approved by:

M. Takahashi

Masaaki Takahashi
Senior Manager
JQA EMC Engineering Dept.

Issued by:

Shigeru Osawa

Shigeru Osawa
Assistant Manager
JQA EMC Engineering Dept.

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.	AAO6004322R1	AAO6004322R1	None

1.7.2 Operating condition

Power supply Voltage : 9.0 VDC(Battery)
The tests have been carried out under the receiving condition.

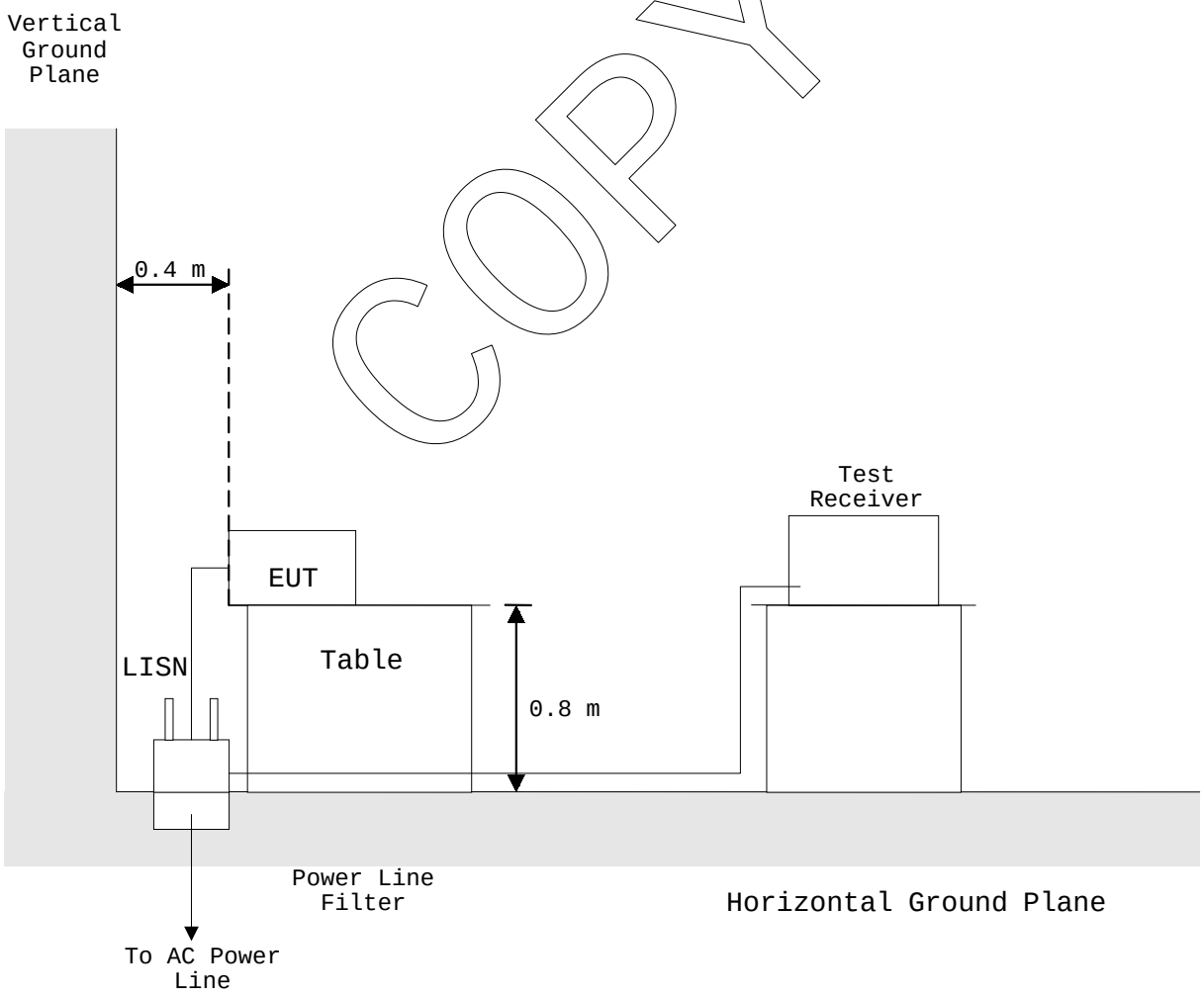
1.8 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)

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 -

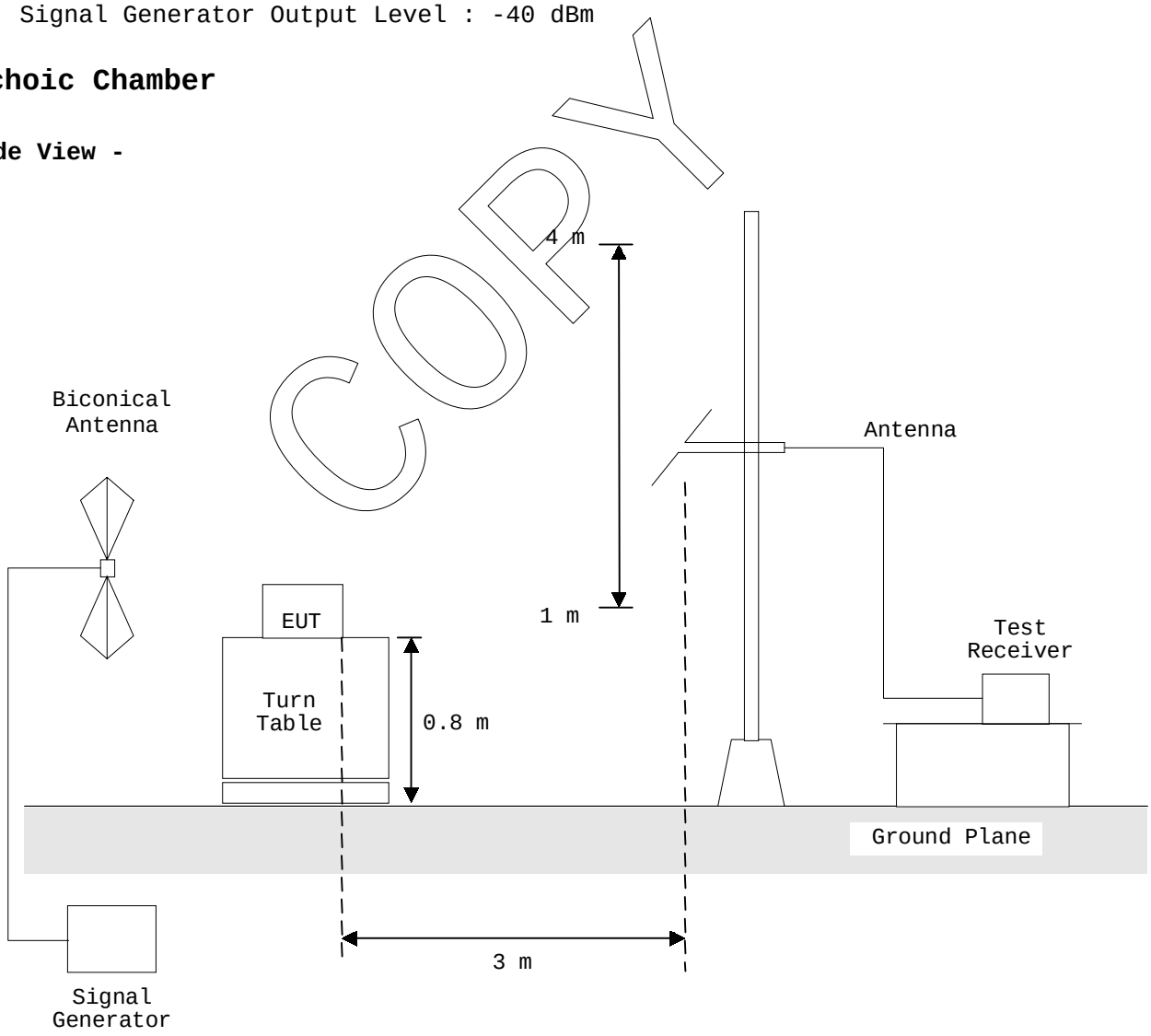


1.8.2 Radiated Emission (30 MHz – 1000 MHz) :

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 -

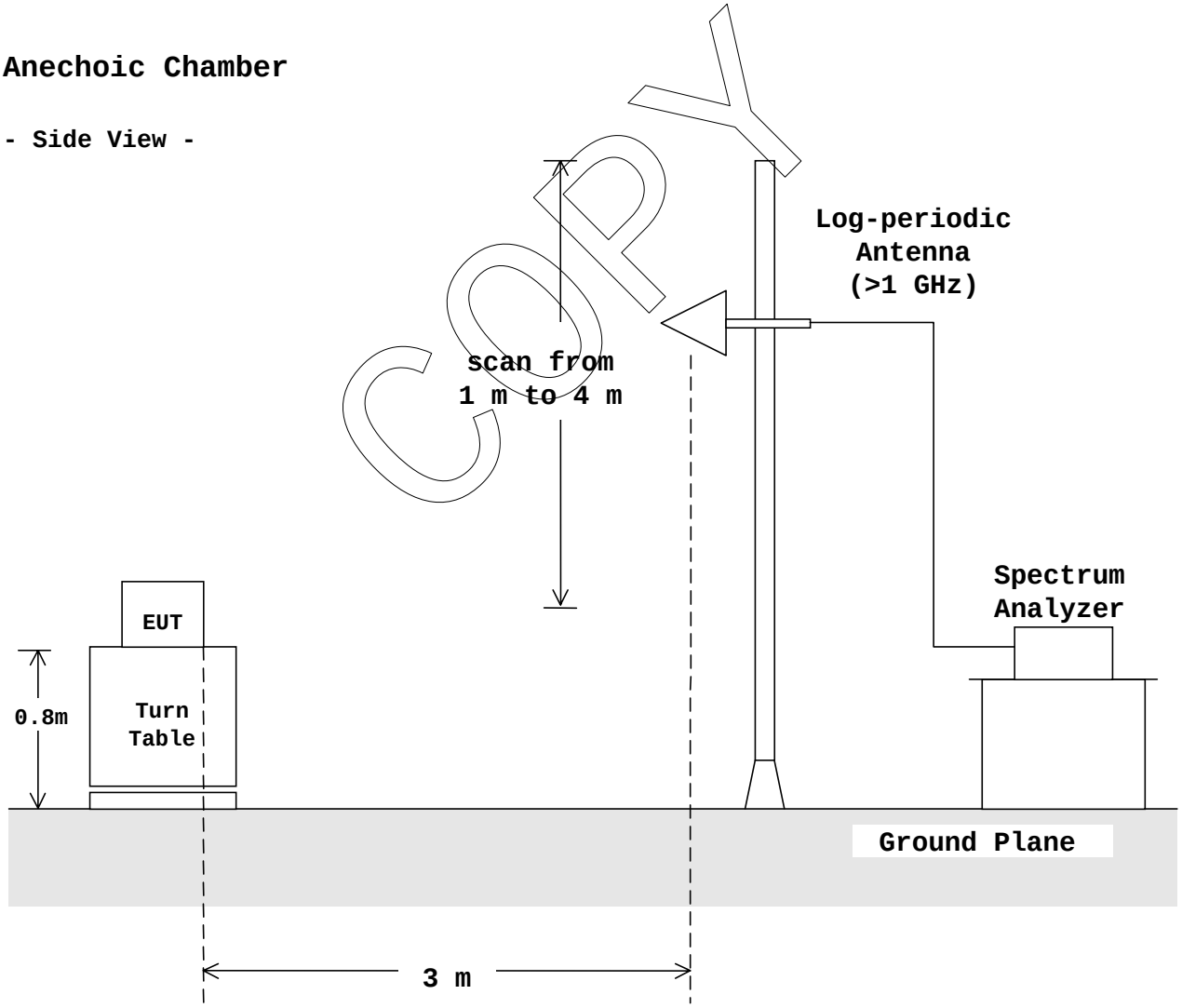


1.8.3 Radiated Emission (Above 1 GHz) :

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 22, 2002
Temp.: 23 °C Humi.: 63 %

Tuning Frequency : 49.860 MHz
Distance of Measurement : 3.0 meters

Frequency (MHz)	Antenna Factor (dB)	Meter Reading (dBuV) Horiz.	Meter Reading (dBuV) Vert.	Limits (dBuV/m)	Emission Levels (dBuV/m) Horiz.	Emission Levels (dBuV/m) Vert.	Margins (dB) Horiz.	Margins (dB) Vert.
44.29	13.5	3.4	10.1	40.0	16.9	23.6	23.1	16.4
49.95	11.5	7.5	10.0	40.0	19.0	21.5	21.0	18.5
56.05	9.3	13.6	15.2	40.0	22.9	24.5	17.1	15.5
86.15	8.8	15.0	16.8	40.0	23.8	25.6	16.2	14.4
92.70	9.9	11.3	13.1	43.5	21.2	23.0	22.3	20.5
168.39	16.7	8.0	4.4	43.5	24.7	21.1	18.8	22.4
210.18	18.3	17.6	12.4	43.5	35.9	30.7	7.6	12.8
219.03	18.6	16.6	10.0	46.0	35.2	28.6	10.8	17.4
251.13	19.6	10.3	4.8	46.0	29.9	24.4	16.1	21.6
327.46	18.1	8.5	11.6	46.0	26.6	29.7	19.4	16.3

Notes :
1) The spectrum was checked from 30 MHz to 1000 MHz.
2) The cable loss is included in the antenna factor.
3) The symbol of "<"means "or less".
4) The symbol of ">"means "or greater".
5) A sample calculation was made at 44.29 (MHz).
Af + Mr =13.5 + 10.1 = 23.6 (dBuV/m)
Af = Antenna Factor
Mr = Meter Reading
6) Measuring Instrument Setting:
Detector function : CISPR quasi-peak
IF Bandwidth : 120 kHz

Tested by : Shigeru Osawa
Shigeru Osawa
Testing Engineer

RADIATED EMISSION MEASUREMENT

Model No. : AAO6004322R1

Standard : CFR 47 FCC Rules Part 15 o Horizontal
Tuning Frequency (MHz) : 49.86 x Vertical