

JQA APPLICATION NO.: 400-90816R  
Issue Date : March 30, 2000  
Page 1 of 17

**EMI TEST REPORT**

JQA APPLICATION NO. : 400-90816R

Model No. : KBRGSTU11

Type of Equipment : Keyless Entry System  
(Receiver)

Regulations Applied : CFR 47 FCC Rules and Regulations Part 15

FCC ID : KBRGSTU11

Applicant : Calsonic Kansei Corporation

Address : 5-24-15 Minamidai, Nakano-ku,  
Tokyo 164-8602, Japan

Manufacture : Calsonic Kansei Corporation

Address : 5-24-15 Minamidai, Nakano-ku,  
Tokyo 164-8602, Japan

Received date of EUT : March 7, 2000

**Final Judgment** : **Passed**

**TEST RESULTS IN THIS REPORT** are obtained in use of equipment that is traceable to  
Electrotechnical Lab. of MITI Japan and Communications Research Lab. of MPT Japan.

**The test results** only respond to the tested sample. It is not allowed to copy this  
report even partly without the allowance of the 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, 2000)

#### **1.2.2 Description of the Equipment Under Test (EUT) :**

1) Type of Equipment	: Keyless Entry System(Receiver)
2) Product Type	: Pre-Production
3) Category	: Low Power Communication Device Receiver
4) EUT Authorization	: Certification
5) FCC ID	: KBRGSTU11
6) Trade Name	: NISSAN
7) Model No.	: KBRGSTU11
8) Tuning Frequency Range	: 315 MHz
9) Highest Frequency Used in the EUT	: 304.3
10) Serial No.	: None
11) Date of Manufacture	: -
12) Power Rating	: DC 12V
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.  
 - 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
<input type="checkbox"/> - Test Receiver	ESH-2	Rohde & Schwarz	880370/016	Sep. 1999	1 Year
<input type="checkbox"/> - Test Receiver	ESH-3	Rohde & Schwarz	881460/035	May 1999	1 Year
<input type="checkbox"/> - Test Receiver	ESH-3	Rohde & Schwarz	881460/030	Jun. 1999	1 Year
<input type="checkbox"/> - LISN(for Peripheral)	KNW-407	Kyoritsu Electrical	8-833-6	Apr. 1999	1 Year
<input type="checkbox"/> - LISN(for EUT)	KNW-407	Kyoritsu Electrical	8-855-2	Apr. 1999	1 Year
<input type="checkbox"/> - LISN	KNW-407	Kyoritsu Electrical	8-757-1	Apr. 1999	1 Year
<input type="checkbox"/> - RF Cable	3D-2W	Fujikura	155-21-005	Apr. 1999	1 Year
<input type="checkbox"/> - RF Cable	3D-2W	Fujikura	155-21-006	Apr. 1999	1 Year
<input type="checkbox"/> - 50ohm Termination		SUHNER	154-06-501E0	Jan. 2000	1 Year
<input type="checkbox"/> - 50ohm Termination		SUHNER	154-06-502E0	Jan. 2000	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

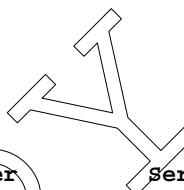
x - Anechoic Chamber No. 2 (3 meters)  
   - Anechoic Chamber No. 3 (3 meters)

**Validation of Site Attenuation :**

1) Last Confirmed Date :March, 1999  
2) Interval :1 year

**Used test instruments :**

Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
<u>  </u> - Test Receiver	ESV	Rohde & Schwarz	872148/039	May 1999	1 Year
<u>  </u> - Test Receiver	ESVS10	Rohde & Schwarz	826148/002	Jun. 1999	1 Year
<u>x</u> - Test Receiver	ESVP	Rohde & Schwarz	881487/004	May 1999	1 Year
<u>  </u> - Test Receiver	ESVP	Rohde & Schwarz	881487/005	Dec. 1999	1 Year
<u>x</u> - Antenna	KBA-511A	Kyoritsu Electrical	0-170-1	Nov. 1999	1 Year
<u>  </u> - Antenna	KBA-511A	Kyoritsu Electrical	0-201-13	Nov. 1999	1 Year
<u>x</u> - Antenna	KBA-611	Kyoritsu Electrical	0-147-14	Nov. 1999	1 Year
<u>  </u> - Antenna	KBA-611	Kyoritsu Electrical	0-210-5	Nov. 1999	1 Year
<u>x</u> - RF Cable	5D-2W	Fujikura	155-21-001E0	Feb. 2000	1 Year
<u>  </u> - RF Cable	5D-2W	Fujikura	155-21-002E0	Feb. 2000	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 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
<u>      </u> - Spectrum Analyzer	8563E	Hewlett Packard	3221A00201	May 1999	1 Year
<u>      </u> - Spectrum Analyzer	8560E	Hewlett Packard	3240A00189	May 1999	1 Year
<u>      </u> - Spectrum Analyzer	8566B	Hewlett Packard	2140A01091	Apr. 1999	1 Year
<u>      </u> - RF Pre-selector	85685A	Hewlett Packard	2648A00522	Apr. 1999	1 Year
<u>      </u> - Spectrum Analyzer	8566B	Hewlett Packard	2747A05855	May 1999	1 Year
<u>      </u> - RF Pre-selector	85685A	Hewlett Packard	2091A00933	May 1999	1 Year
<u>      </u> - Log-Periodic Antenna	HL 025	Rohde & Schwarz	340182/015	Nov. 1999	1 Year
<u>      </u> - RF Amplifier	DBP-0102N5334272B	DBS Microwave Inc.	012	Jun. 1999	1 Year
<u>      </u> - RF Amplifier	WJ-6882-814	Watkins-Johnson	0414	Jun. 1999	1 Year
<u>      </u> - RF Amplifier	WJ-5315-556	Watkins-Johnson	106	Jun. 1999	1 Year
<u>      </u> - RF Amplifier	WJ-5320-307	Watkins-Johnson	645	Jun. 1999	1 Year
<u>      </u> - RF Cable(10m)	S 04272B	Suhner	155-21-011E0	May 1999	1 Year
<u>      </u> - RF Cable(2m)	SUCOFLEX 104	Suhner	155-21-012E0	May 1999	1 Year
<u>      </u> - RF Cable(1m)	SUCOFLEX 104	Suhner	155-21-013E0	May 1999	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 :

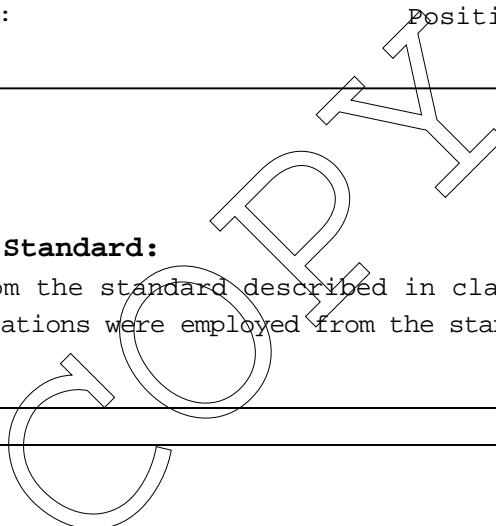
Typed Name :

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  - NOT ApplicableThe requirements are  - PASSED  - NOT PASSED

Min. Limit Margin dB at MHz

Max. Limit Exceeding dB at MHz

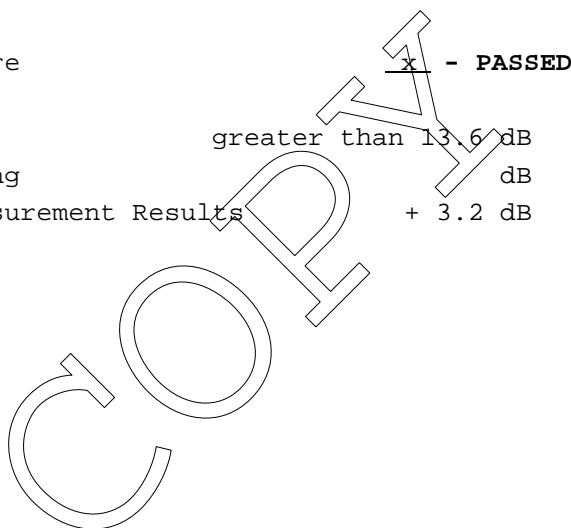
Uncertainty of Measurement Results + 2.3 dB - 2.3 dB

**Remarks :****Radiated Emission [§15.109(a)]**  - Applicable  - NOT ApplicableThe requirements are  - PASSED  - NOT PASSED

Min. Limit Margin greater than 13.6 dB at 912.900 MHz

Max. Limit Exceeding at MHz

Uncertainty of Measurement Results + 3.2 dB - 3.2 dB

**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 1.10.

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;

- 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.

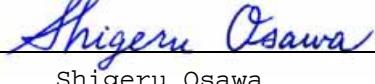
Begin of testing : March 8, 2000

End of testing : March 8, 2000

- JAPAN QUALITY ASSURANCE ORGANIZATION -  
Approved by:

  
\_\_\_\_\_  
Masaaki Takahashi  
Manager  
JQA EMC Engineering Dept.

Signatories:  
Issued by:

  
\_\_\_\_\_  
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 :**

Symbol	Item	Manufacturer	Model No.	FCC ID	Serial No.
A	Keyless Entry System (Receiver)	Calsonic Kansei Corporation	KBRGSTU11	KBRGSTU11	-

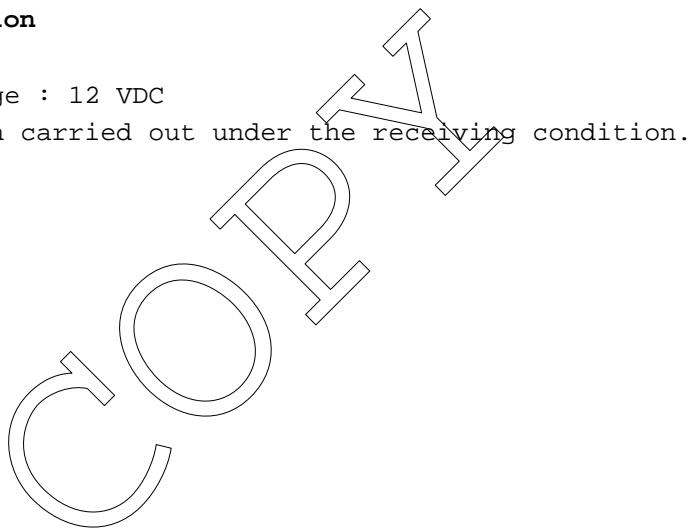
**The measurements was carried out with the following supported connected :**

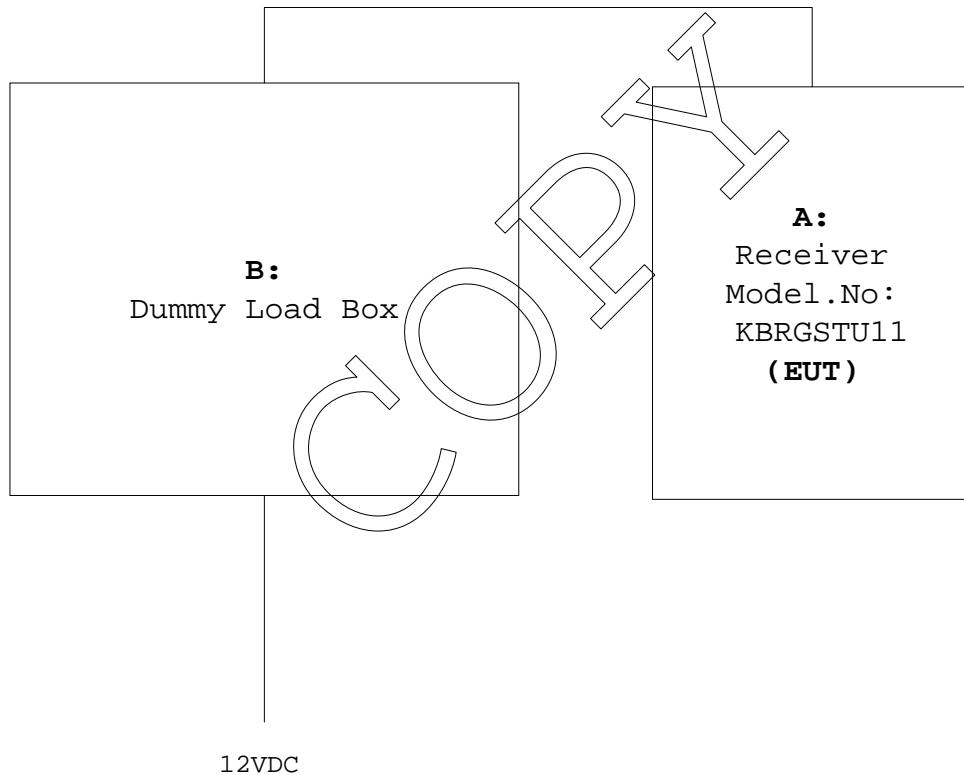
Symbol	Item	Manufacturer	Model No.	Serial No.
B	Dummy Load Box	Calsonic Kansei Corporation	-	-

**1.7.2 Operating condition**

Power supply Voltage : 12 VDC

The tests have been carried out under the receiving condition.



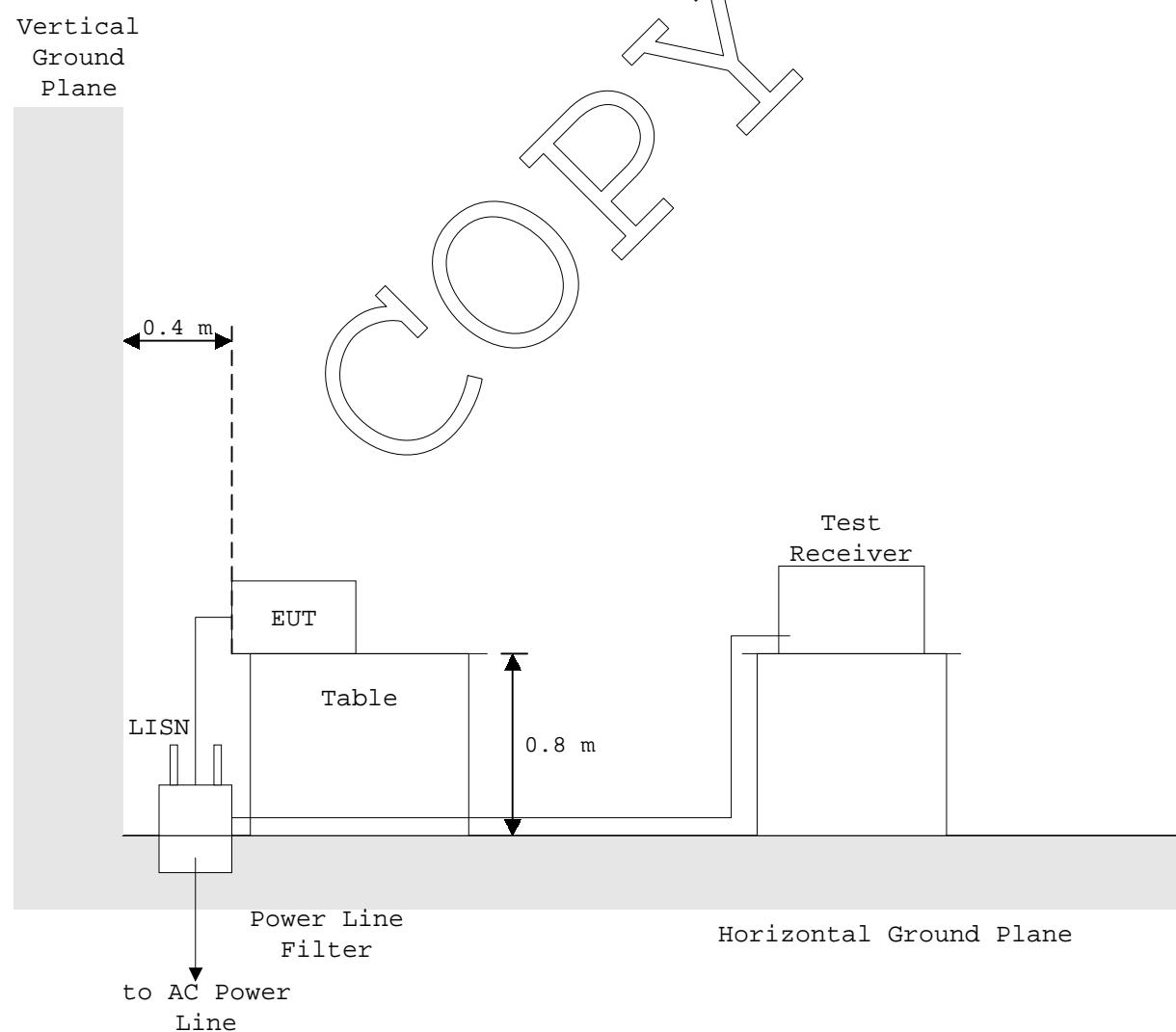
**1.8 EUT ARRANGEMENT (DRAWINGS)**

**1.9 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)****1.9.1 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 measurement were carried out.

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

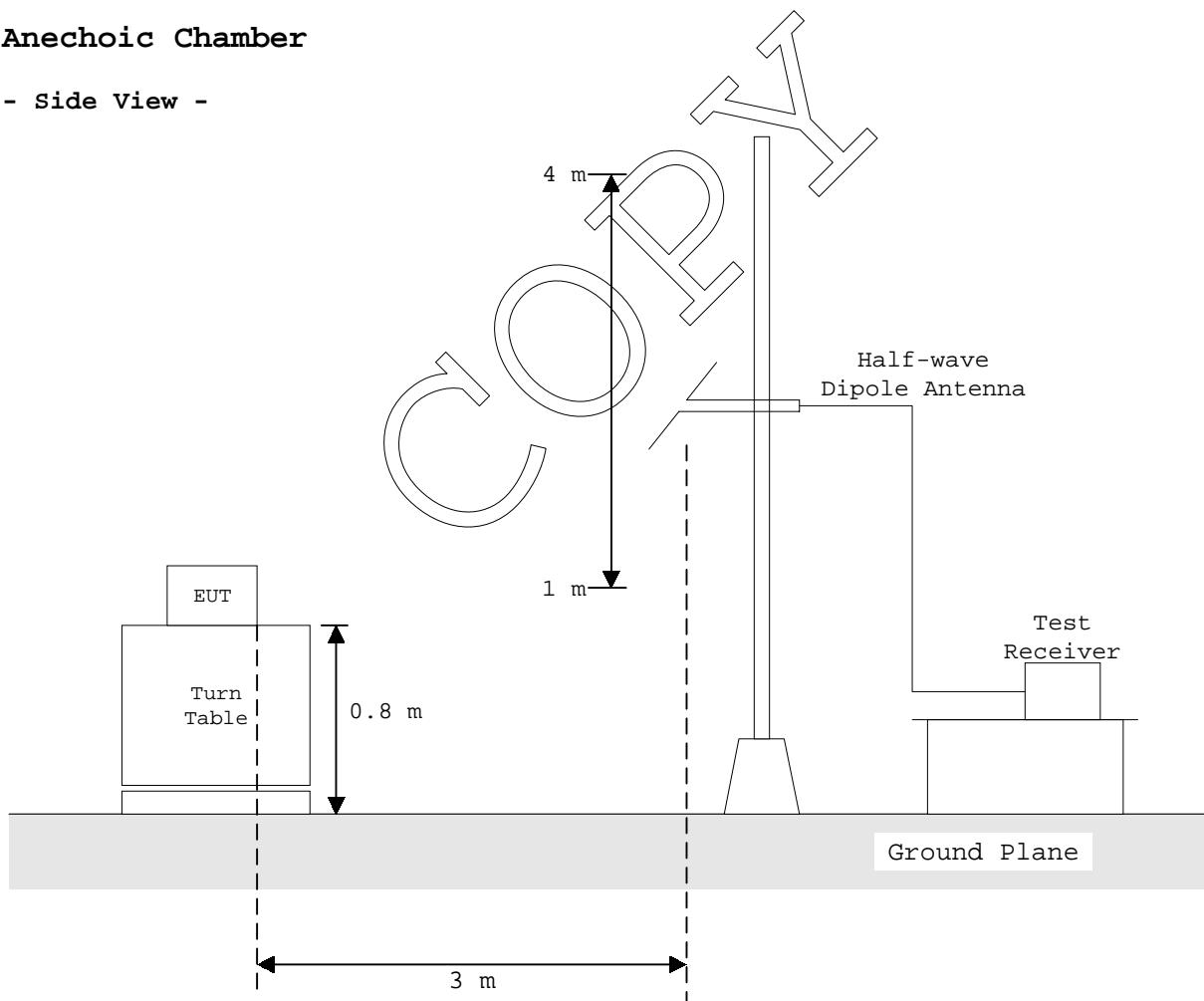
The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for final AC power line conducted emissions measurements.

**Shielded Enclosure****- Side View -**

**1.9.2 Radiated Emission ( 30 MHz - 1000 MHz) :**

According to description of ANSI C63.4-1992 sec.8.3.1.1, the preliminary radiated emissions measurement 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.

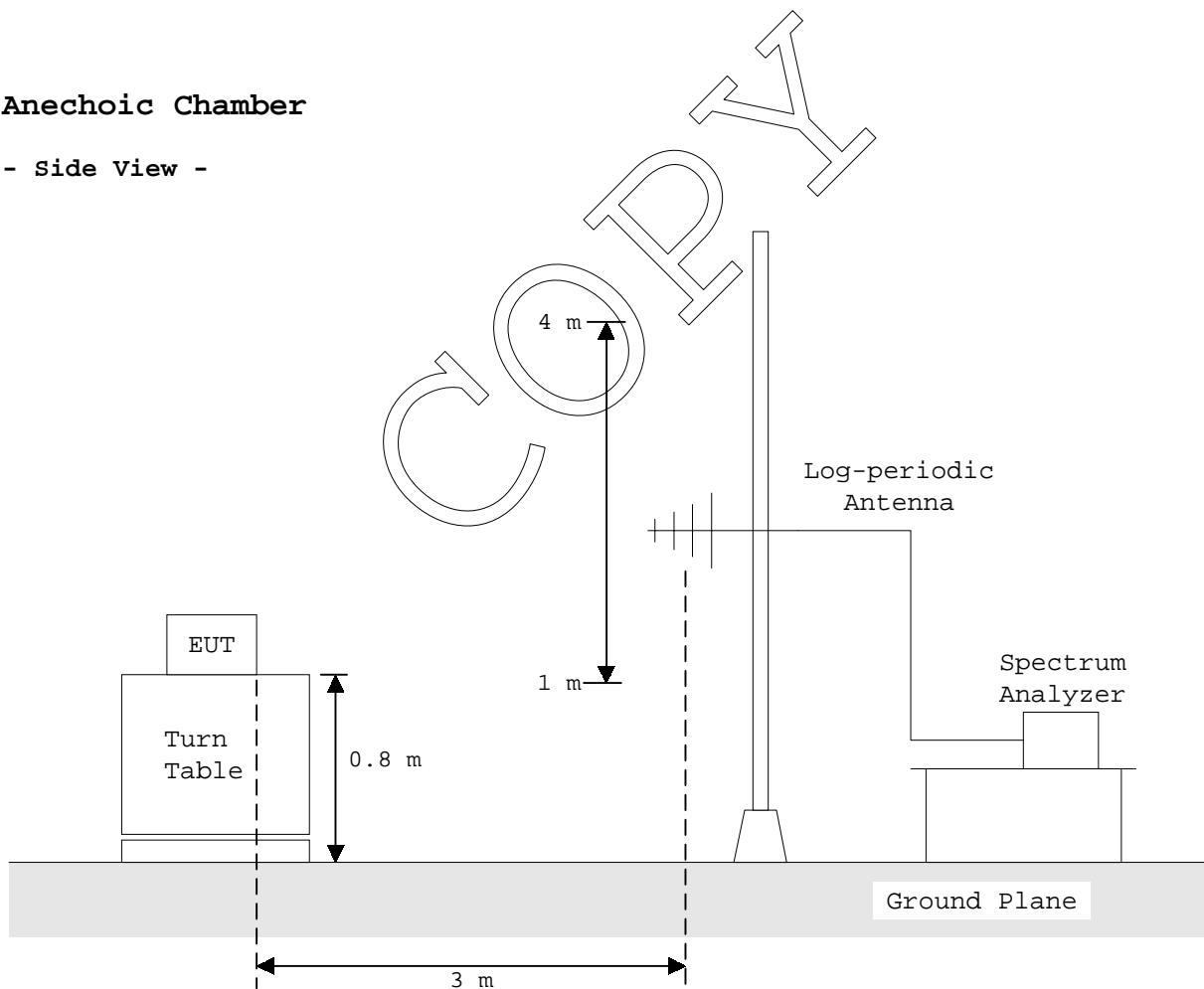
The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

**Anechoic Chamber****- Side View -**

**1.9.3 Radiated Emission (Above 1 GHz) :**

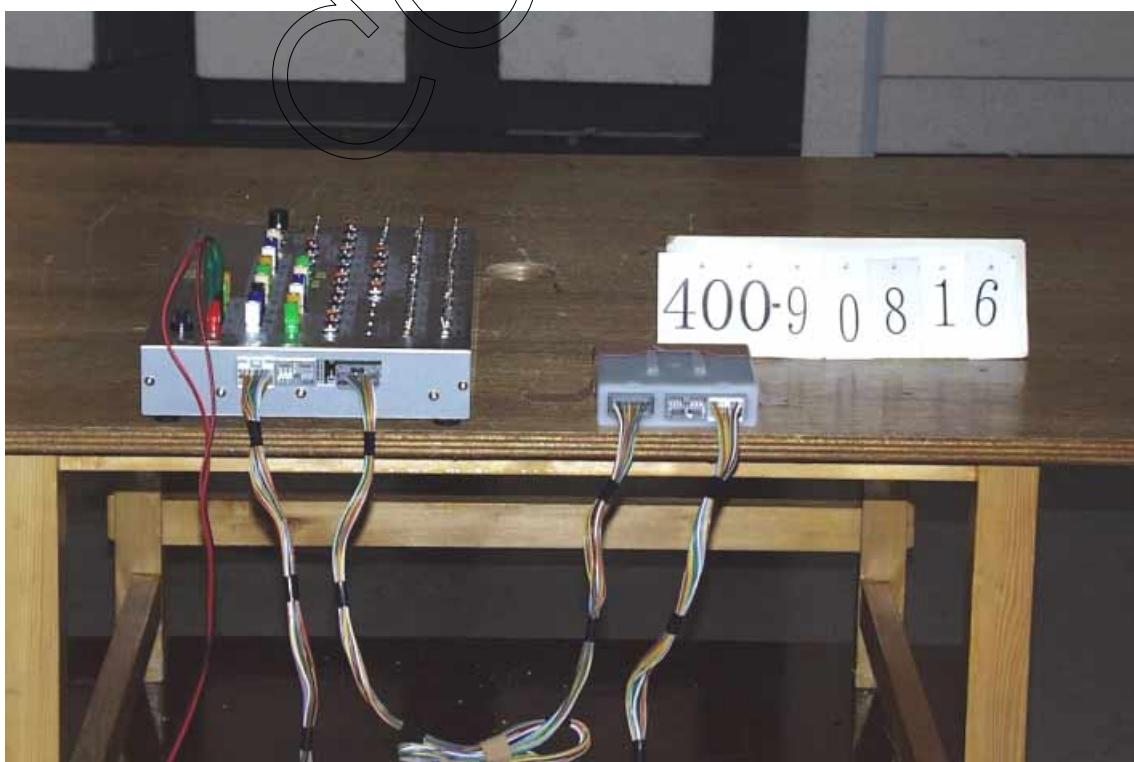
According to description of ANSI C63.4-1992 sec.8.3.1.1, the preliminary radiated emissions measurement were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

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 -**

**1.10 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 : March 8, 2000Temp.: 24 °C Humi.: 43 %

Tuning Frequency : 315 MHz

Distance of Measurement : 3.0 meters

Frequency (MHz)	Antenna Factor (dB/m)	Meter Reading		Field Strength at 3 m		Margins	
		Horiz. (dB $\mu$ V)	Vert. (dB $\mu$ V)	Limits (dB $\mu$ V/m)	Horiz. (dB $\mu$ V/m)	Vert. (dB $\mu$ V/m)	Horiz. (dB)
50.020	3.6	< 0.0	3.1	40.0	< 3.6	6.7	> 36.4
304.300	20.5	< 0.0	< 0.0	46.0	< 20.5	< 20.5	> 25.5
608.600	27.4	< 0.0	< 0.0	46.0	< 27.4	< 27.4	> 18.6
912.900	32.4	< 0.0	< 0.0	46.0	< 32.4	< 32.4	> 13.6

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 "&lt;" means "or less".

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

4. Sample calculation:

at 50.020 MHz

$$Af + Mr = 3.6 + 3.1 = 6.7 \text{ dB}\mu\text{V/m}$$

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*

Shigeru Osawa

Testing Engineer

**Radiated Spurious Emissions**

FCC ID : KBRGSTU11  
Tuning Frequency : 315 MHz  
Test Condition :

