JAPAN QUALITY ASSURANCE ORGANIZATION
21-25, KINUTA 1-CHOME, SETAGAYA-KU, TOKYO 157-8573 JAPAN
PHONE (03) 3416-0111, TELEX 242-2561 JQA J FAX (03) 3416-9691

EMI TEST REPORT

JQA APPLICATTON NO.	: 400-30060
Model No.	: G8D-522M-A
Type of Equipment	: Keyless Entry System (Transmitter)
Regulations Applied	: CFR 47 FCC Rules and Regulations Part 15
FCC ID	: E4EG8D-522M-A
Applicant	: OMRON Corporation
Address	: 6368 Nenjo-zaka, Okusa Komaki-city, Aichi 485-0802, Japan
Manufacture	: OMRON Corporation
Address	: 6368 Nenjo-zaka, Okusa Komaki-city, Aichi 485-0802, Japan
Received date of EUT	: April 17, 2003
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.

TABLE OF CONTENTS

1 DOCUMENTATION

1.1 TEST REGULATION

FCC Rules and Regulations Part 15 Subpart A and C (June 23, 1989) Intentional Radiators

Test procedure :
AC power line conducted emission, radiated emission, frequency stability and occupied bandwidth 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 : May 27, 2005

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, 2003)

1.2.2 Description of the Equipment Under Test (EUT) :

1)	Type of Equipment	: Keyless Entry System (Transmitter)
2)	Product Type	: Pre-production
3)	Category	: Security/Remote Control Transmitter
4)	EUT Authorization	: Certification
5)	FCC ID	: E4EG8D-522M-A
6)	Trade Name	: OMRON
7)	Model No.	: G8D-522M-A
8)	Operating Frequency Range	: 315 MHz
9)	Highest Frequency Used in the EUT	: 315 MHz
10)	Serial No.	: None
11)	Date of Manufacture	: None
12)	Power Rating	: DC 3.0V(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	Number of test instruments (Refer to Appendix)
Test Receiver	
Spectrum Analyzer	
Cable	
AMN(for EUT)	
AMN(for Peripheral)	
Termination	

1.3.2 The measurement of the Radiated Emission(9 kHz - 30 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

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

Validation of Site Attenuation :

1) Last Confirmed Date : N/A
2) Interval : N/A

Used test instruments :

Type	**Number of test instruments (Refer to Appendix)**
Test Receiver	TR07
Antenna	AN01
Cable	CA06

1.3.3 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

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

Validation of Site Attenuation :

1) Last Confirmed Date :March, 2003
2) Interval :1 year

Used test instruments :

Type	**Number of test instruments (Refer to Appendix)**
Test Receiver	TR05
Antenna	AN06, AN08
Cable	CA01
RF Amplifier	N/A

1.3.4 The measurement of the Radiated Emission(Above 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

_x_ - 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	Number of test instruments (Refer to Appendix)
Test Receiver	TR07
Spectrum Analyzer	N/A
Cable	CA11,CA13
Antenna	AN10
RF Amplifier	AM09
Band Reject Filter	N/A
High Pass Filter	N/A

1.3.5 The measurement of the Frequency Stability

___ - was performed.
_x_ - was not applicable.

Used test instruments :

Type	**Number of test instruments (Refer to Appendix)**
Frequency Counter	
Oven	
DC Power Supply	

1.3.6 The measurement of the Occupied Bandwidth

_x_ - was performed.
___ - was not applicable.

Used test instruments :

Type	**Number of test instruments (Refer to Appendix)**
Test Receiver	N/A
Spectrum Analyzer	SA04
Cable	CA10
Antenna	AN02

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

AC Power Line Conducted Emission ___ - Applicable x - NOT Applicable

The requirements are ___ - PASSED ___ - NOT PASSED

Remarks :

Radiated Emission [§15.231(b)] x - Applicable ___ - NOT Applicable

The requirements are x - PASSED ___ - NOT PASSED

Remarks:

Frequency Stability ___ - Applicable x - NOT Applicable

The requirements are ___ - PASSED ___ - NOT PASSED

Remarks:

Occupied Bandwidth [§15.231(c)] x - Applicable ___ - NOT Applicable

The requirements are x - PASSED ___ - NOT PASSED

Remarks:

1.6 SUMMARY

General Remarks :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A and C (June 23, 1989) under the test configuration, as shown in clause 1.7 to 1.10.
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 : April 17, 2003

End of testing : April 21, 2003

- JAPAN QUALITY ASSURANCE ORGANIZATION -

Approved by:

Masaaki Takahashi
Senior 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 :

Item	Manufacturer	Model No.	FCC ID	Serial No.
Keyless Entry System (Transmitter)	OMRON Corporation	G8D-522M-A	E4EG8D-522M-A	None

1.7.2 Operating condition

Power supply Voltage : 3.0 VDC(Battery)
The tests have been carried out the following mode.
1) TX mode (315 MHz)

1.7.3 Generating and Operating frequency of EUT

5 MHz, 9.846875 MHz and 315 MHz

1.8 EUT ARRANGEMENT (DRAWINGS)

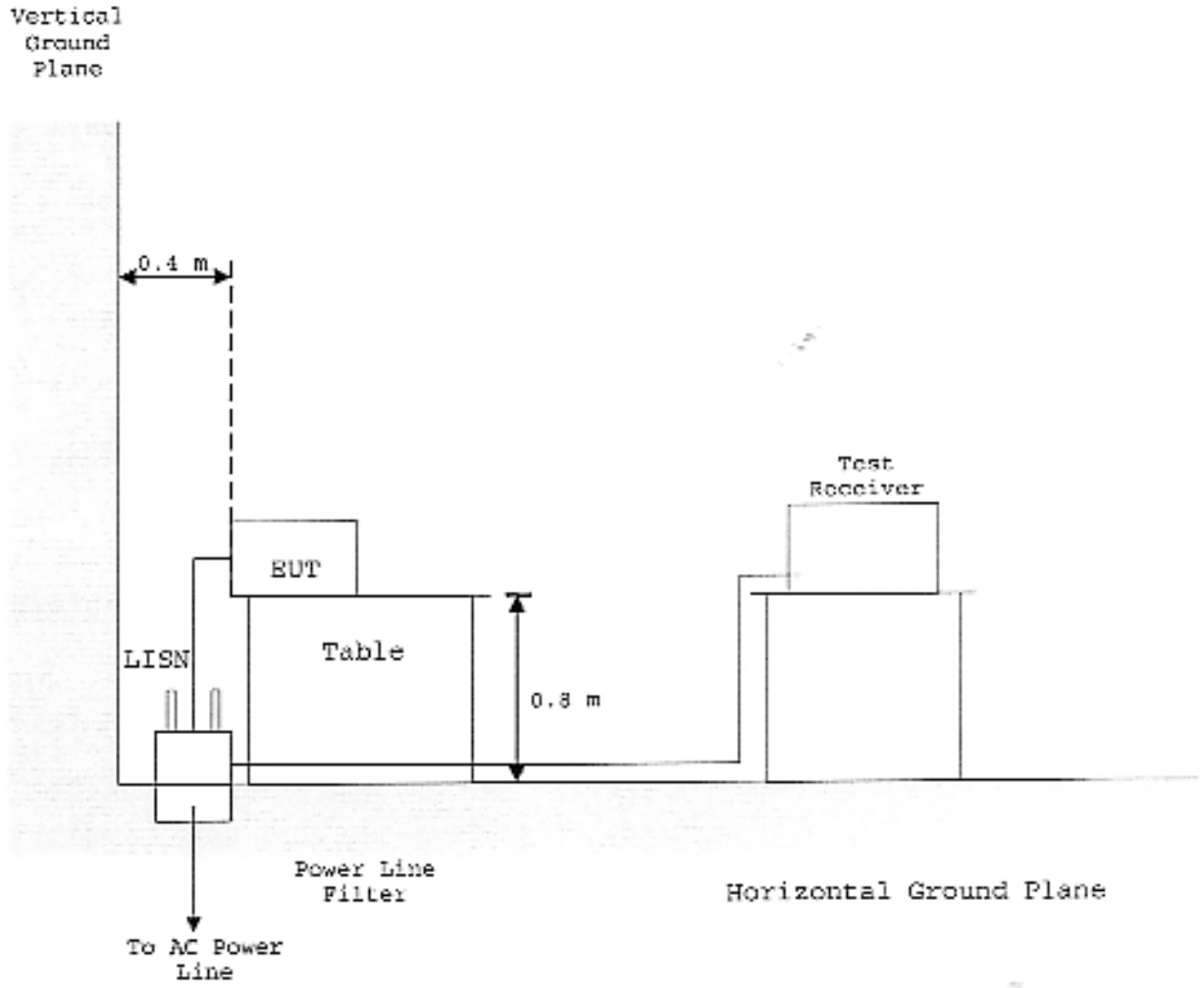
1.9 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)

1.9.1 AC Power Line Conducted Emission (150 kHz - 30 MHz) :

According to description of ANSI C63.4-1992 sec.13.1.3.1, 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

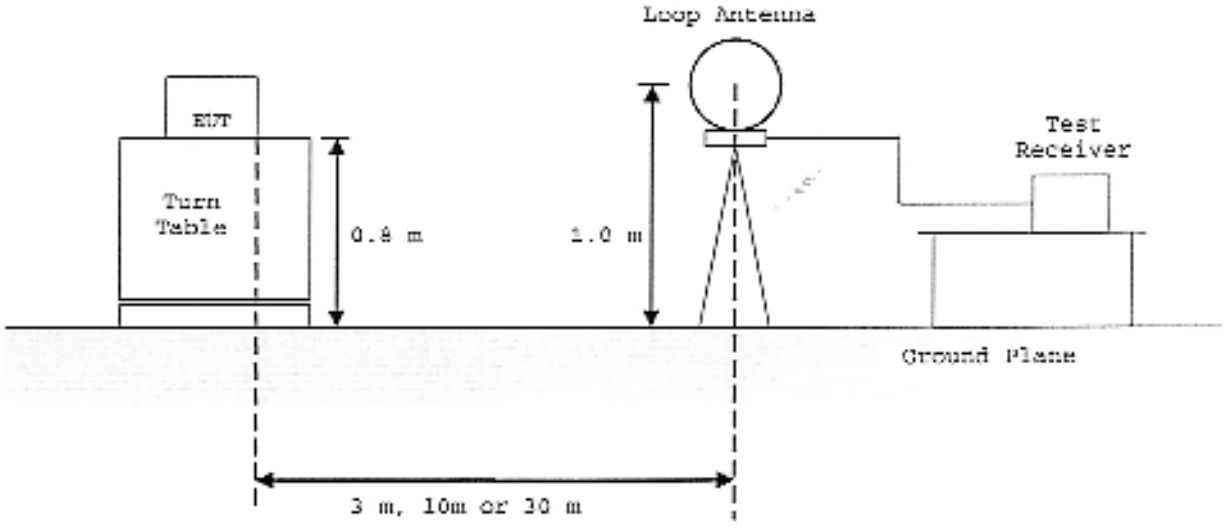
- Side View -



1.9.2 Radiated Emission (9 kHz - 30 MHz) :

According to description of ANSI C63.4-1992 sec.13.1.4.1, 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.

- Side View -

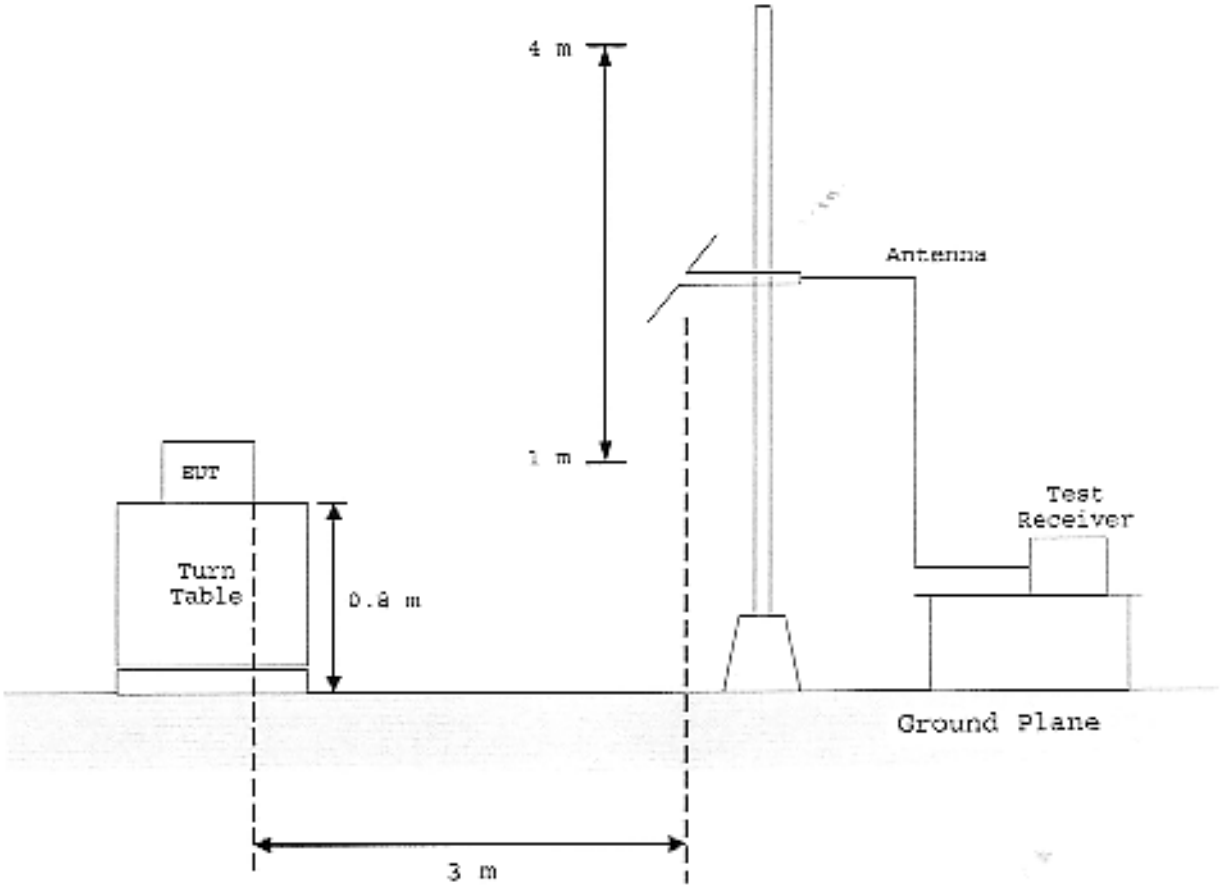


1.9.3 Radiated Emission (30 MHz - 1000 MHz) :

According to description of ANSI C63.4-1992 sec.13.1.4.1, 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 -

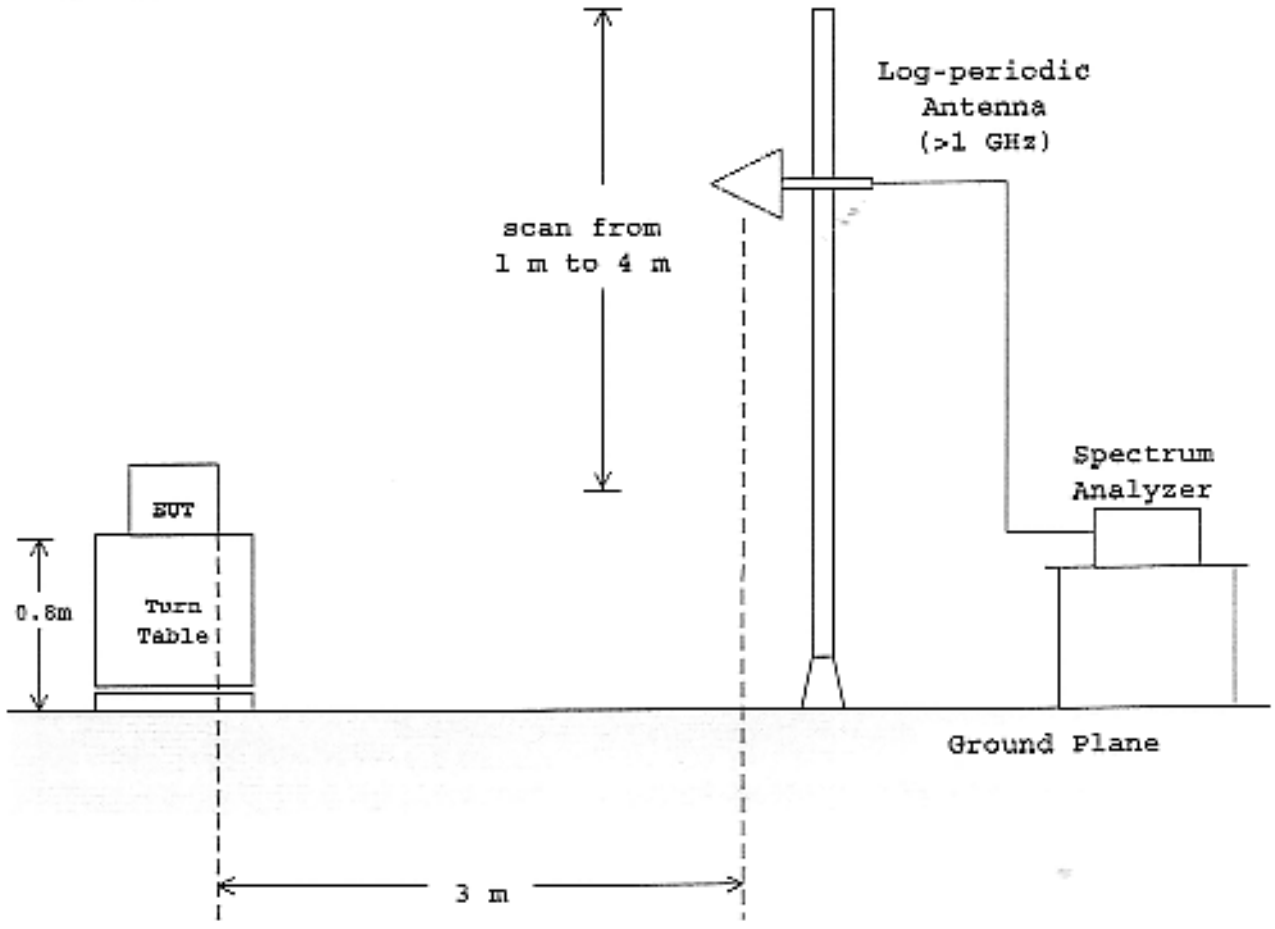


1.9.4 Radiated Emission (Above 1 GHz) :

According to description of ANSI C63.4-1992 sec.13.1.4.1, 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.

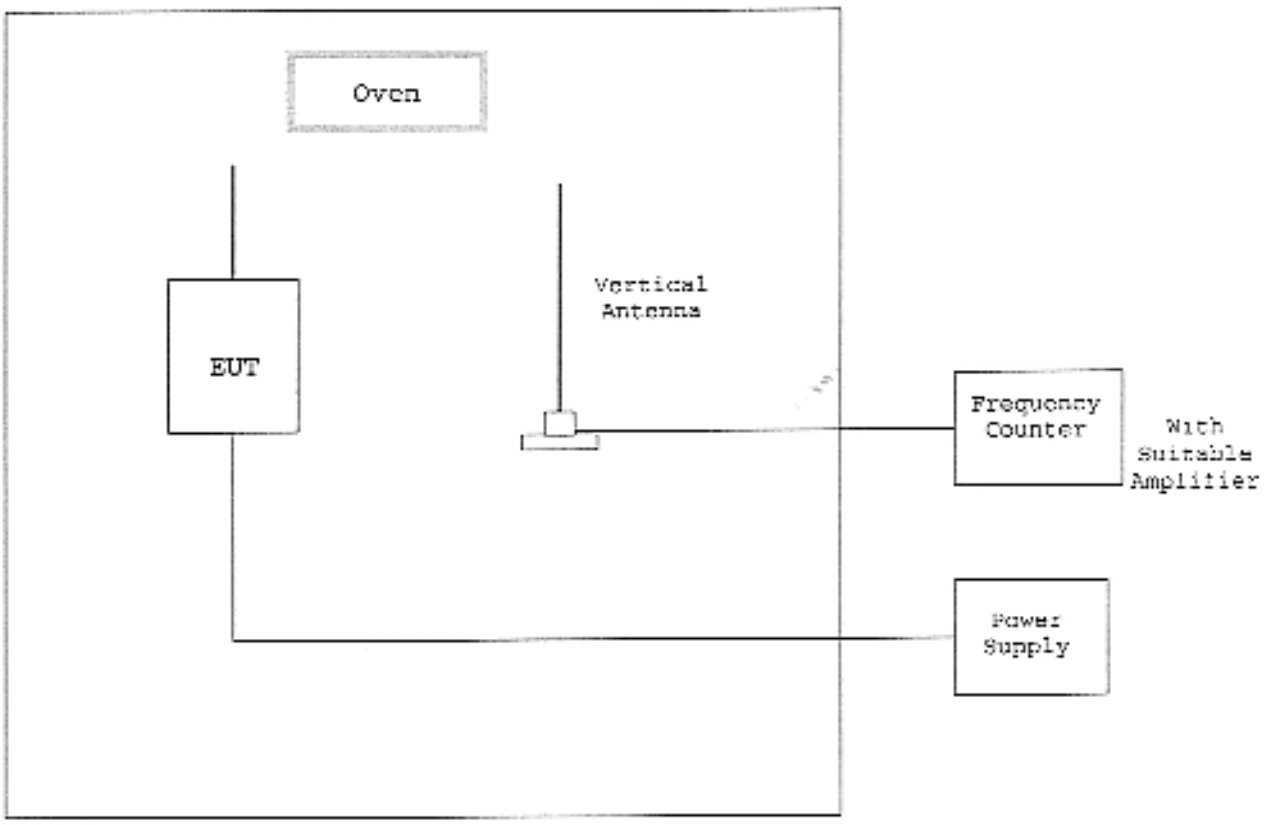
Anechoic Chamber

- Side View -



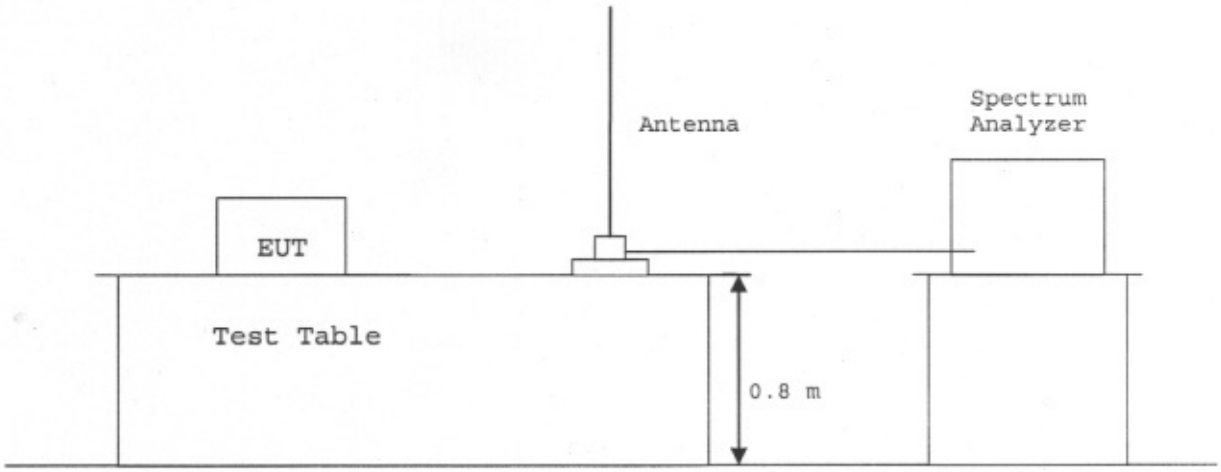
1.9.5 Frequency Stability :

According to description of ANSI C63.4-1992 sec.13.1.5 and sec.13.1.6, the frequency stability measurements were carried out. By using frequency counter with suitable RF amplifier, the carrier frequency of the transmitter under test was measured with a temperature variation of -20°C to +50°C at the normal supply voltage, and if required, with a variation in the primary voltage from 85 % to 115 % the rated supply voltage at the temperature of +20°C.
These measurements were carried out after allow sufficient time (approximately 1 hour) for the temperature of the chamber to stabilize.



1.9.6 Occupied Bandwidth :

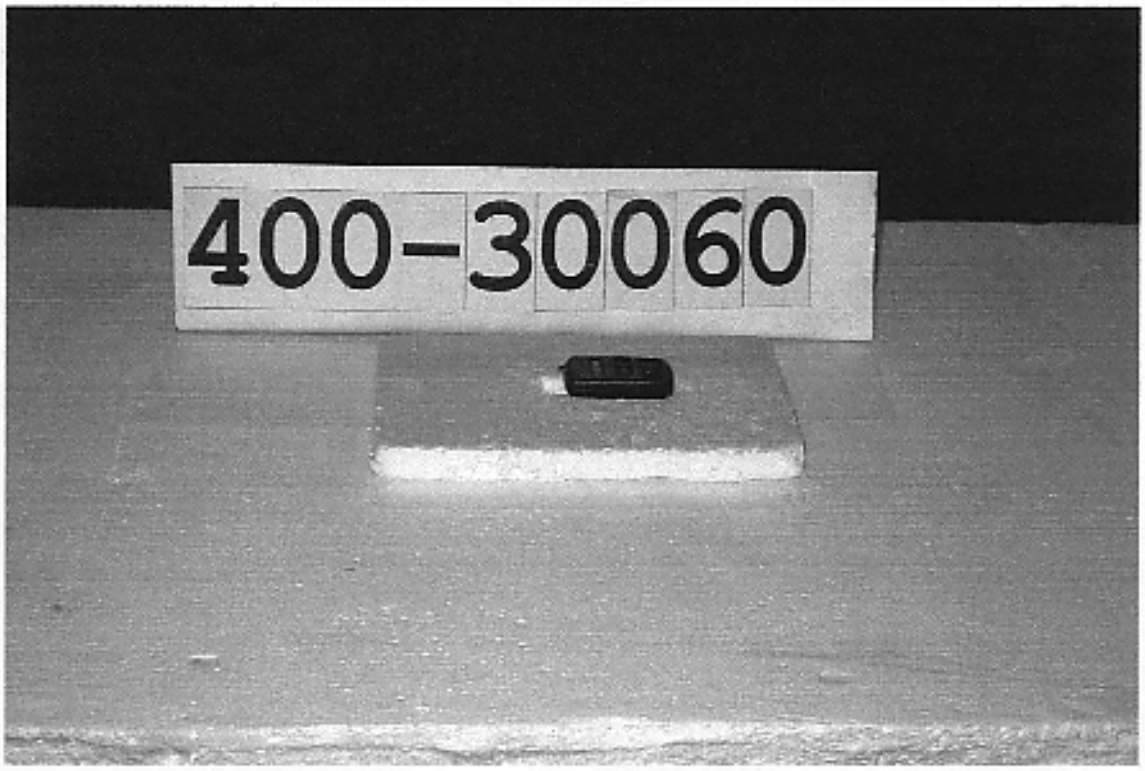
According to description of ANSI C63.4-1992 sec.13.1.7, the occupied bandwidth measurements were carried out. By using a spectrum analyzer with a vertical antenna for picking up the signal, the measurements of the emission were made under the transmitting modes of the EUT.
The resolution bandwidth of spectrum analyzer was set to the value specified in sec.13.1.7.



1.10 TEST ARRANGEMENT (PHOTOGRAPHS)

PHOTOGRAPHS OF EUT CONFIGURATION FOR RADIATED EMISSIONS MEASUREMENT

Photograph present configuration with maximum emission


400-30060

TEST DATA

2.1 AC Power Line Conducted Emissions

Note : This test was not applicable.

2.2 Radiated Emissions Measurement

Operating Frequency : 315 MHz
Distance of Measurement : 3.0 meters

Date : April 17, 2003
Temp. : 22 °C Humi. : 50 %

Frequency (MHz)	P-A Factor (dB)	Correction Factor (dB)	Polarization	Meter Reading (dBuV) QP	AV	Peak	Limits (dBuV/m) QP/AV	Peak	Emission Levels (dBuV/m) QP/AV	Peak	Margins (dB) QP/AV	Peak
315.0	-5.0	18.1	H	-	-	60.5	75.6	95.6	73.6	78.6	2.0	17.0
630.0	-5.0	23.7	H	-	-	16.3	55.6	75.6	35.0	40.0	20.6	35.6
945.0	-5.0	27.4	V	-	-	10.7	55.6	75.6	33.1	38.1	22.5	37.5

Notes :
1) The spectrum was checked from 9 MHz to 1000 MHz.
2) The cable loss, amp. gain and antenna factor are included in the correction factor.
3) The symbol of "<"means "or less".
4) The symbol of ">"means "or greater".
5) A sample calculation(QP/AV) was made at 315 (MHz).
PA + Af + Mr = -5 + 18.1 + 60.5(Peak) = 73.6 (dBuV/m)
PA = Peak to Average Factor(P-A Factor)
Af = Antenna Factor
Mr = Meter Reading
6) Measuring Instrument Setting :

Detector function	Resolution Bandwidth	Video Bandwidth
Quasi-peak(QP)	120 kHz	-
Average(AV)	1 MHz	10 Hz
Peak	1 MHz	1 MHz

Frequency (GHz)	P-A Factor (dB)	Correction Factor (dB)	Polarization	Meter Reading (dBuV) AV	Meter Reading (dBuV) Peak	Limits (dBuV/m) AV	Limits (dBuV/m) Peak	Emission Levels (dBuV/m) AV	Emission Levels (dBuV/m) Peak	Margine (dB) AV	Margine (dB) Peak
1.2600	-5.0	-4.3	H	-	< 41.0	55.6	75.6	< 31.7	< 36.7	> 23.9	> 38.9
1.5750	-5.0	-1.5	H	-	42.4	54.0	74.0	35.9	40.9	18.1	33.1
1.8900	-5.0	-0.3	V	-	52.5	55.6	75.6	47.2	52.2	8.4	23.4
2.2050	-5.0	1.9	H	-	49.7	54.0	74.0	46.6	51.6	7.4	22.4
2.5200	-5.0	2.4	H	-	42.0	55.6	75.6	39.4	44.4	16.2	31.2
2.8350	-5.0	3.6	H	-	51.6	54.0	74.0	50.2	55.2	3.8	18.8
3.1500	-5.0	4.9	H	-	45.8	55.6	75.6	45.7	50.7	9.9	24.9

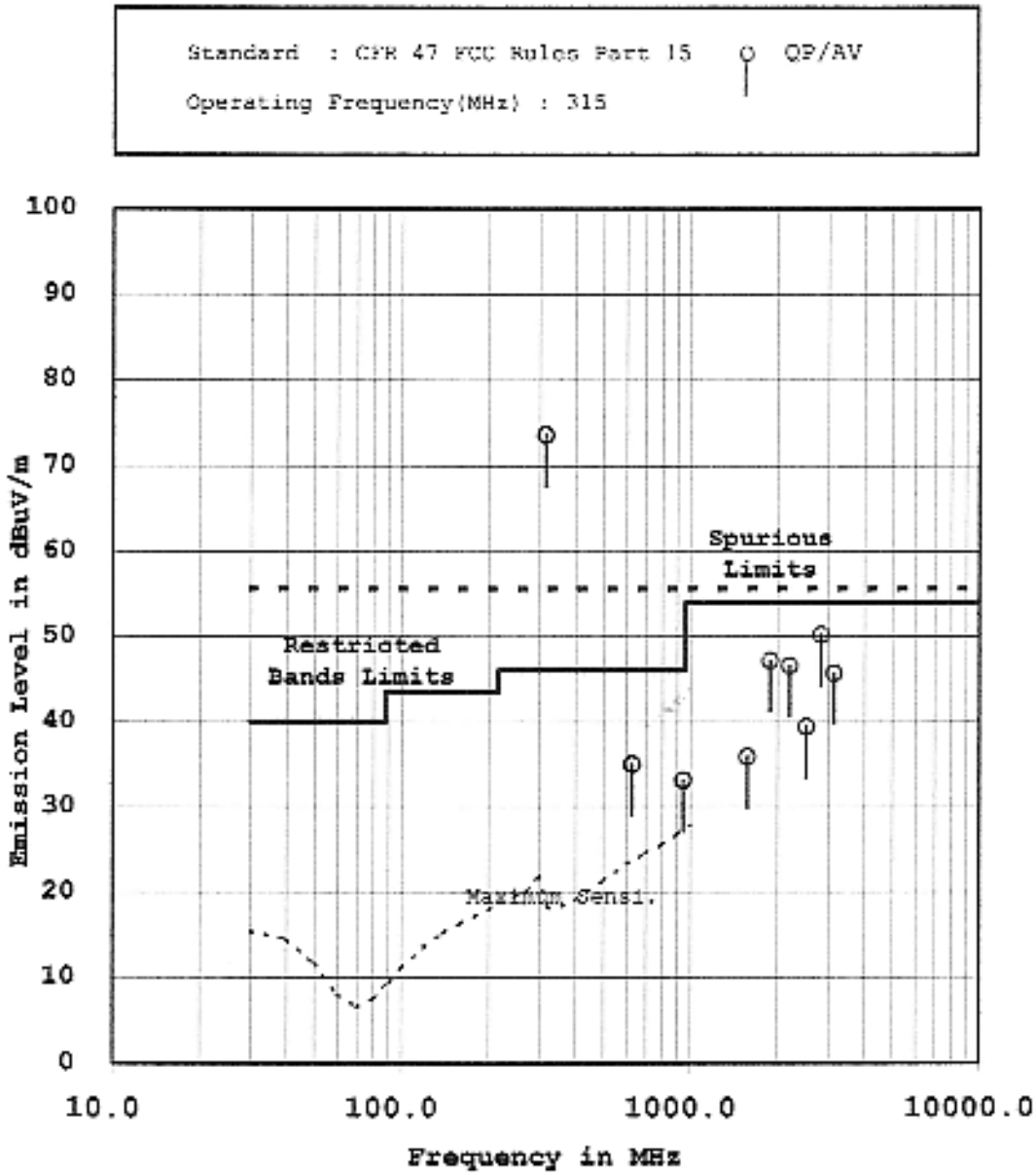
Notes : 1) The spectrum was checked from 1.0 GHz to tenth harmonics.
2) The cable loss, amp. gain and antenna factor are included in the correction factor.
3) The symbol of "<"means "or less".
4) The symbol of ">"means "or greater".
5) A sample calculation(AV) was made at 1.26 (GHz).
PA + Cf + Mr = -5 + -4.3 + 41(Peak) = 31.7 (dBuV/m)
PA = Peak to Average Factor(P-A Factor)
Cf = Correction Factor
Mr = Meter Reading
6) Measuring Instrument Setting :

Detector function	Resolution Bandwidth	Video Bandwidth
Average(AV)	1 MHz	10 Hz
Peak	1 MHz	1 MHz

Tested by : Y. Nakajima
Yoichi Nakajima
Testing Engineer

RADIATED EMISSION MEASUREMENT

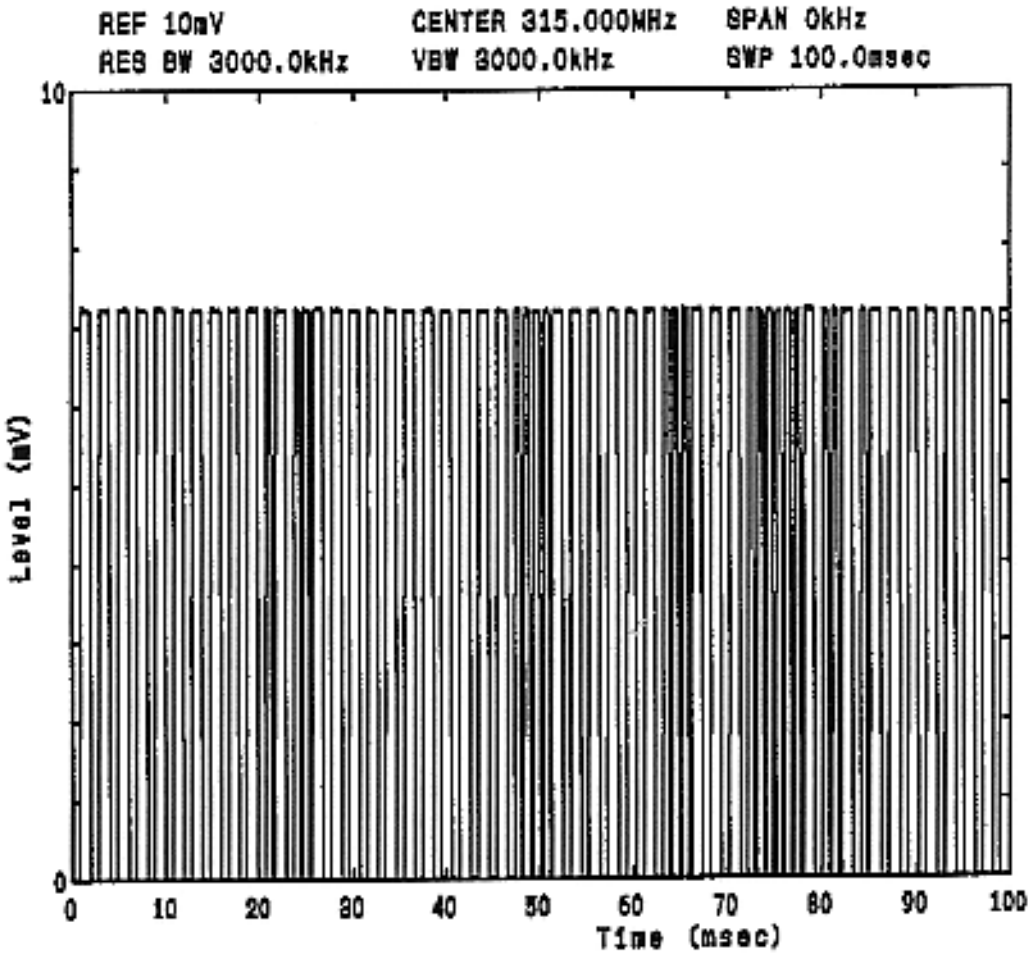
Model No. : G8D-522M-A



The encoded waveform in the time domain

FCC ID : E4EG8D-522M-A
Model : G8D-522M-A

Mode of EUT : Transmit



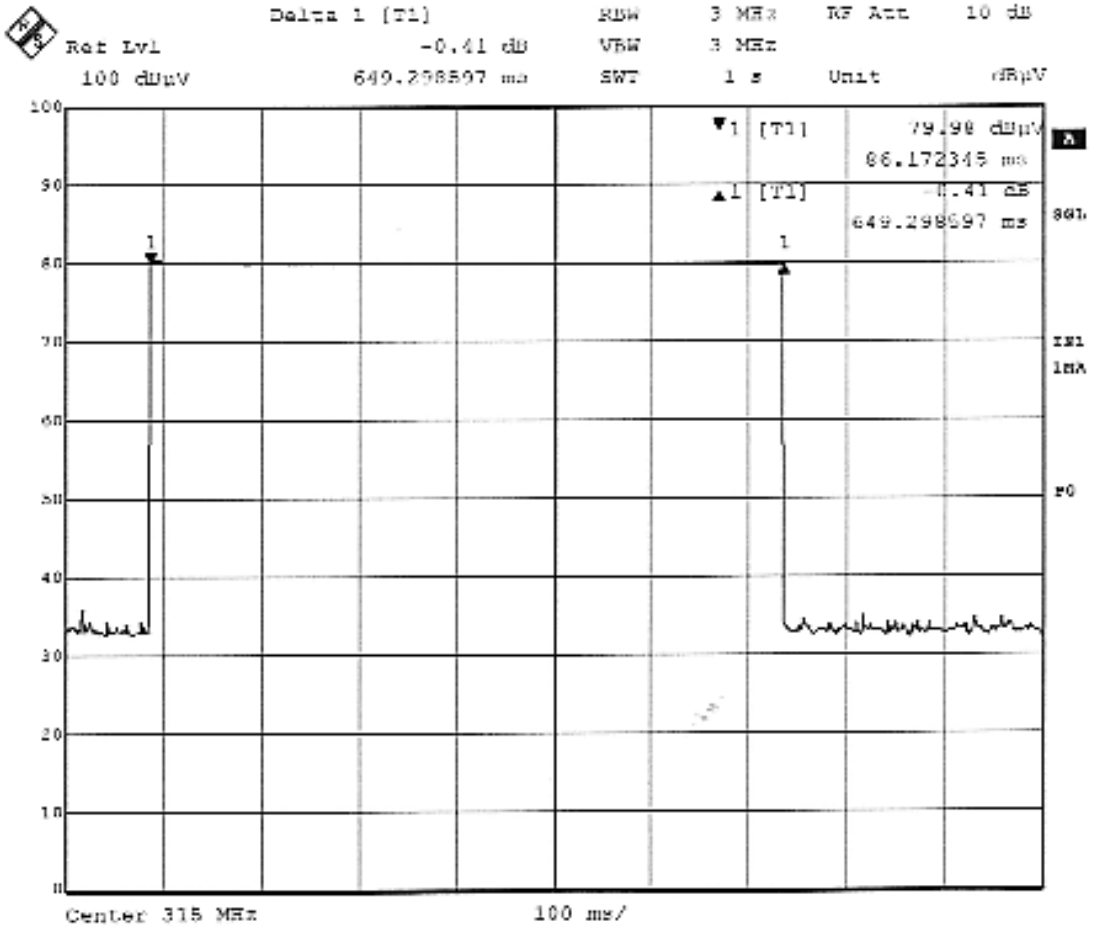
The above waveform indicates the case when field stength averaged over 100 milliseconds was maximum value.
In order to obtain the peak to average factor, calculation of the period of total on-time was computed by personal computer. Results was obtaind by following.

Duty cycle = (Maximum total on-time / 100 msec) x 100
= (56.3 msec / 100 msec) x 100 = 56.3 %

Therefore
Factor is 20log(0.5630) = -5.0 dB

Holdover time after manual release[§15.231(a)(1)] 600 ms(Typical)
(Manufacturer designed)

The typical waveform in the time domain is indicated as follows:



2.3 Frequency Stability

Note : This test was not applicable.

2.4 Occupied Bandwidth Measurement

Date : April 21, 2003
Temp.: 22 °C Humi.: 53 %

Measurements Results :
Specified Limits : 0.25 % of the fundamental frequency
315 MHz x 0.0025 = 787.5 kHz

Refer to the attached graphs.

Tested by : Shigeru Osawa
Shigeru Osawa
Testing Engineer

Emission Limitation

FCC ID : E4EG8D-522M-A
Model : G8D-522M-A

Mode of EUT : Transmit