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.	: 400-20281
Model No.	: D02TB
Type of Equipment	: Remote Keyless Entry System (Transmitter)
Regulations Applied	: CFR 47 FCC Rules and Regulations Part 15
FCC ID	: MOZD02TB
Applicant	: Tokai Rika Co., Ltd.
Address	: 260, Toyota 3-chome, Oguchi-cho, Niwa-gun, Aichi-ken 480-0195, Japan
Manufacture	: Tokai Rika Co., Ltd.
Address	: 260, Toyota 3-chome, Oguchi-cho, Niwa-gun, Aichi-ken 480-0195, Japan
Received date of EUT	: July 5, 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 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	: Remote Keyless Entry System (Transmitter)
2)	Product Type	: Production
3)	Category	: Security/Remote Control Transmitter
4)	EUT Authorization	: Certification
5)	FCC ID	: MOZD02TB
6)	Trade Name	: TOKAI RIKA
7)	Model No.	: D02TB
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	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(9 kHz – 30 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

___ - 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	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
___	Test Receiver	ESVS10	Rohde & Schwarz	826148/002	May 2002	1 Year
___	Antenna	HFH2-Z2	Rohde & Schwarz	881058/62	Nov 2001	1 Year
___	RF Cable	RG-213/U	F & G	155-21-010E0	Apr. 2002	1 Year

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, 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
_x_	Test Receiver	ESVS10	Rohde & Schwarz	826148/002	May 2002	1 Year
___	Test Receiver	ESVS10	Rohde & Schwarz	832699/001	May 2002	1 Year
_x_	Antenna	KBA-511	Kyoritsu Electrical	0-170-1	Nov. 2001	1 Year
___	Antenna	KBA-511A	Kyoritsu Electrical	0-201-13	Nov. 2001	1 Year
_x_	Antenna	KBA-611	Kyoritsu Electrical	0-147-14	Nov. 2001	1 Year
___	Antenna	KBA-611	Kyoritsu Electrical	0-210-5	Nov. 2001	1 Year
___	Biconical Antenna	BBA9106	Schwarzbeck	VHA91031150	Nov. 2001	1 Year
___	Biconical Antenna	BBA9106	Schwarzbeck	11905078E0	Nov. 2001	1 Year
___	Log-Periodic Antenna	UHALP9107	Schwarzbeck	11905079E0	Nov. 2001	1 Year
___	Log-Periodic Antenna	UHALP9107	Schwarzbeck	11905110	Nov. 2001	1 Year
_x_	RF Cable	5D-2W	Fujikura	155-21-001E0	Feb. 2002	1 Year
___	RF Cable	5D-2W	Fujikura	155-21-002E0	Feb. 2002	1 Year

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

1.3.5 The measurement of the Frequency Stability

___ - was performed.
_x_ - was not applicable.

Used test instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
___	Frequency Counter	53131A	Hewlett Packard	3546A11807	May 2002	1 Year
___	Oven	-	Ohnishi Co. Ltd.	-	May 2002	1 Year
___	DC Power Supply	6628A	Hewlett Packard	3224A00284	June 2002	1 Year

1.3.6 The measurement of the Occupied Bandwidth

_x_ - was performed.
___ - was not applicable.

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
x	Spectrum Analyzer	8566B	Hewlett Packard	2747A05855	Apr. 2002	1 Year
___	Function Generator	3325B	Hewlett Packard	2847A03284	July 2001	1 Year
___	FM Linear Detector	MS61A	Anritsu Corp.	M77486	Sep. 2001	1 Year
___	Level Meter	ML422C	Anritsu Corp.	M87571	June 2001	1 Year
___	Measuring Amplifier	2636	B & K	1614851	June 2001	1 Year
___	AF Amplifier	P-500L	Accuphase	BOY806	June 2001	1 Year
___	Microphone	4134	B & K	1269477	May 2002	1 Year
___	Preamplifier	2639	B & K	1268763	May 2002	1 Year
___	Pistonphone	4220	B & K	1165008	Mar. 2002	1 Year
___	Artificial Mouth	4227	B & K	1274869	N/A	N/A

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 : July 10, 2002

End of testing : July 18, 2002

- 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

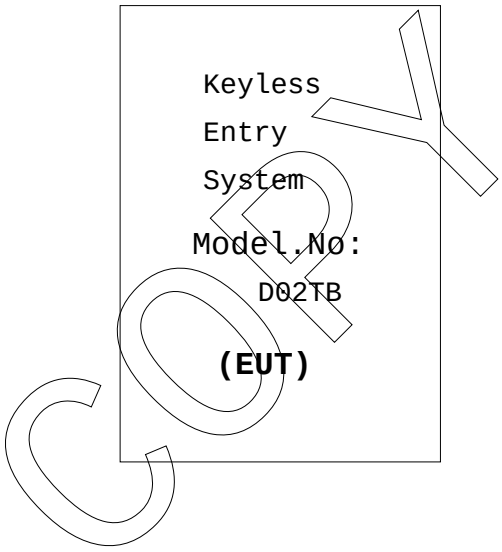
The equipment under test (EUT) consists of :

Item	Manufacturer	Model No.	FCC ID	Serial No.
Remote Keyless Entry System (Transmitter)	Tokai Rika Co., Ltd.	D02TB	MOZD02TB	None

1.7.2 Operating condition

Power supply Voltage : 3.0 VDC(Battery)
The tests have been carried out under the transmitting condition.

1.8 EUT ARRANGEMENT (DRAWINGS)



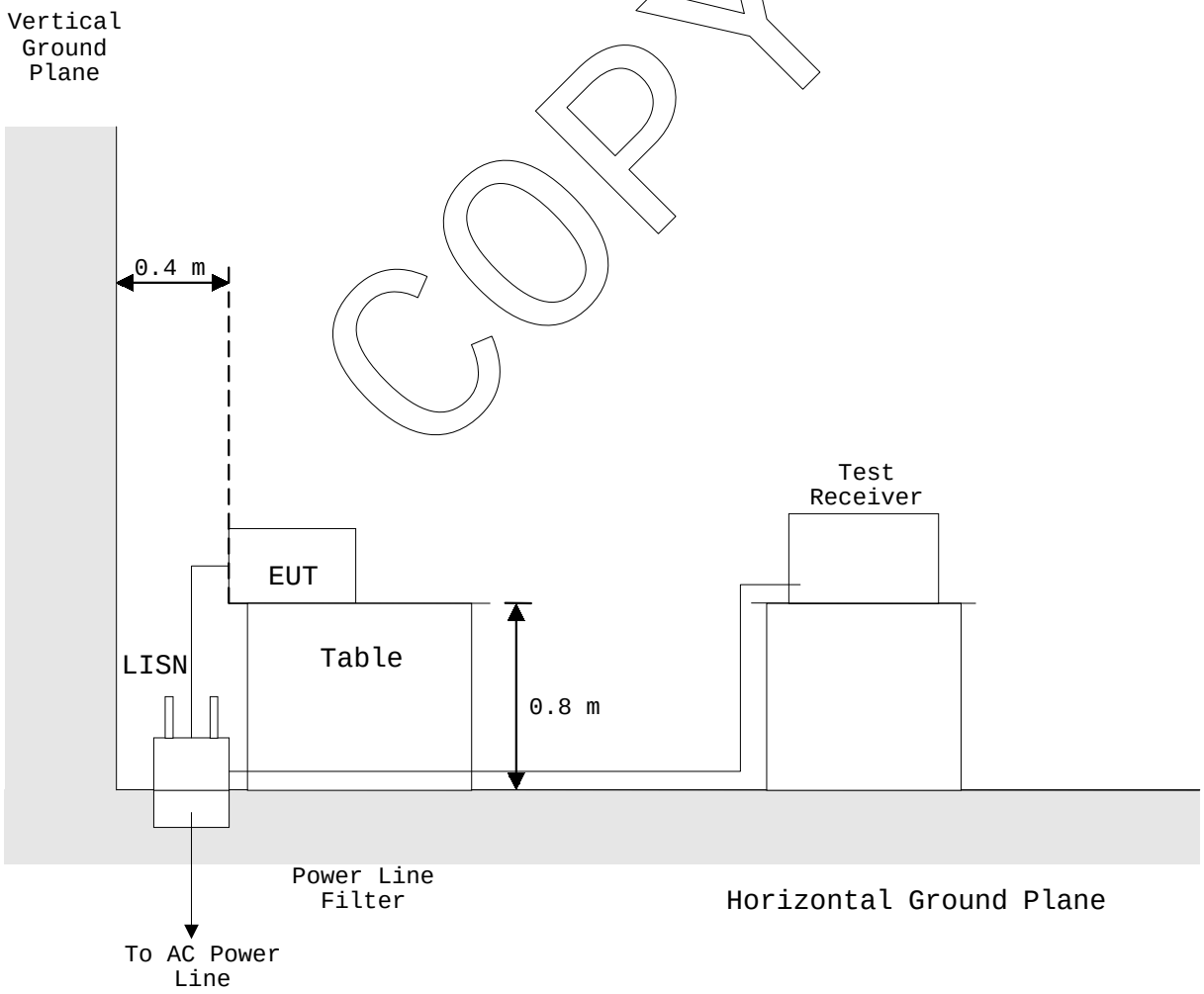
1.9 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)

1.9.1 AC Power Line Conducted Emission (450 kHz – 30 MHz) :

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

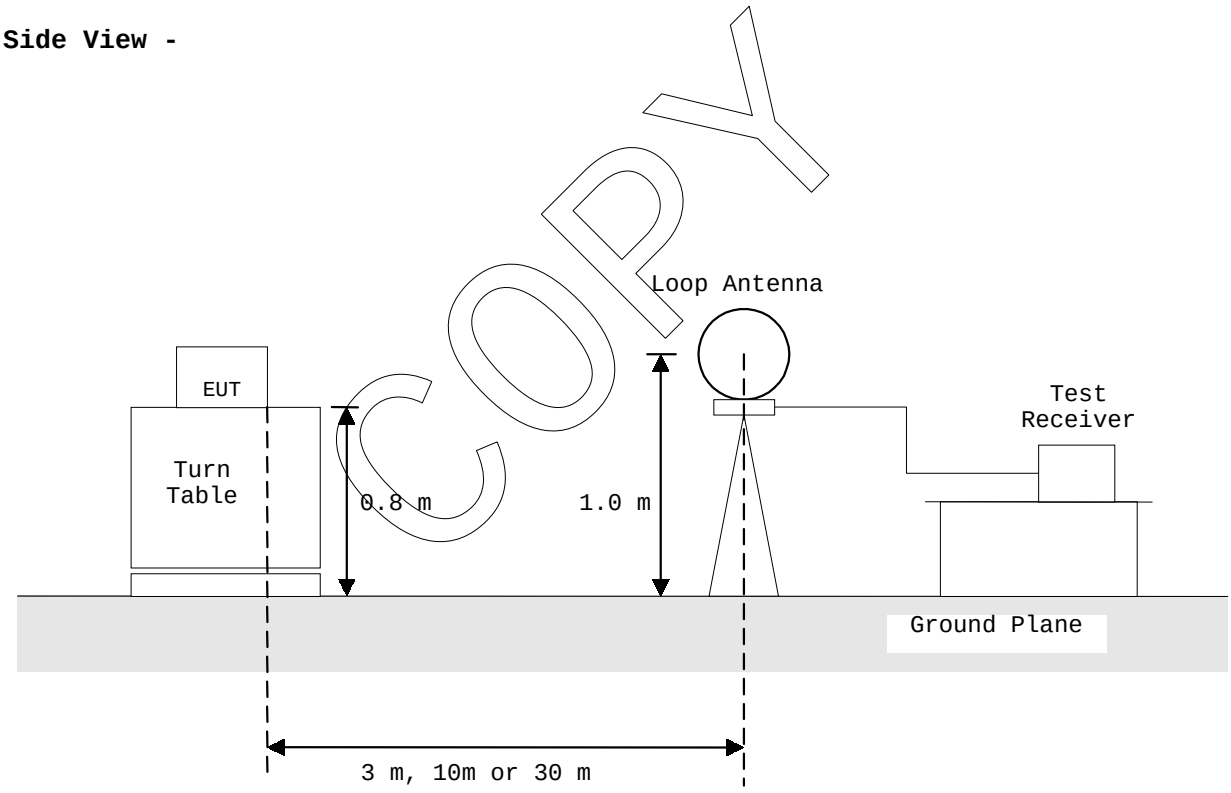
- Side View -



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 -

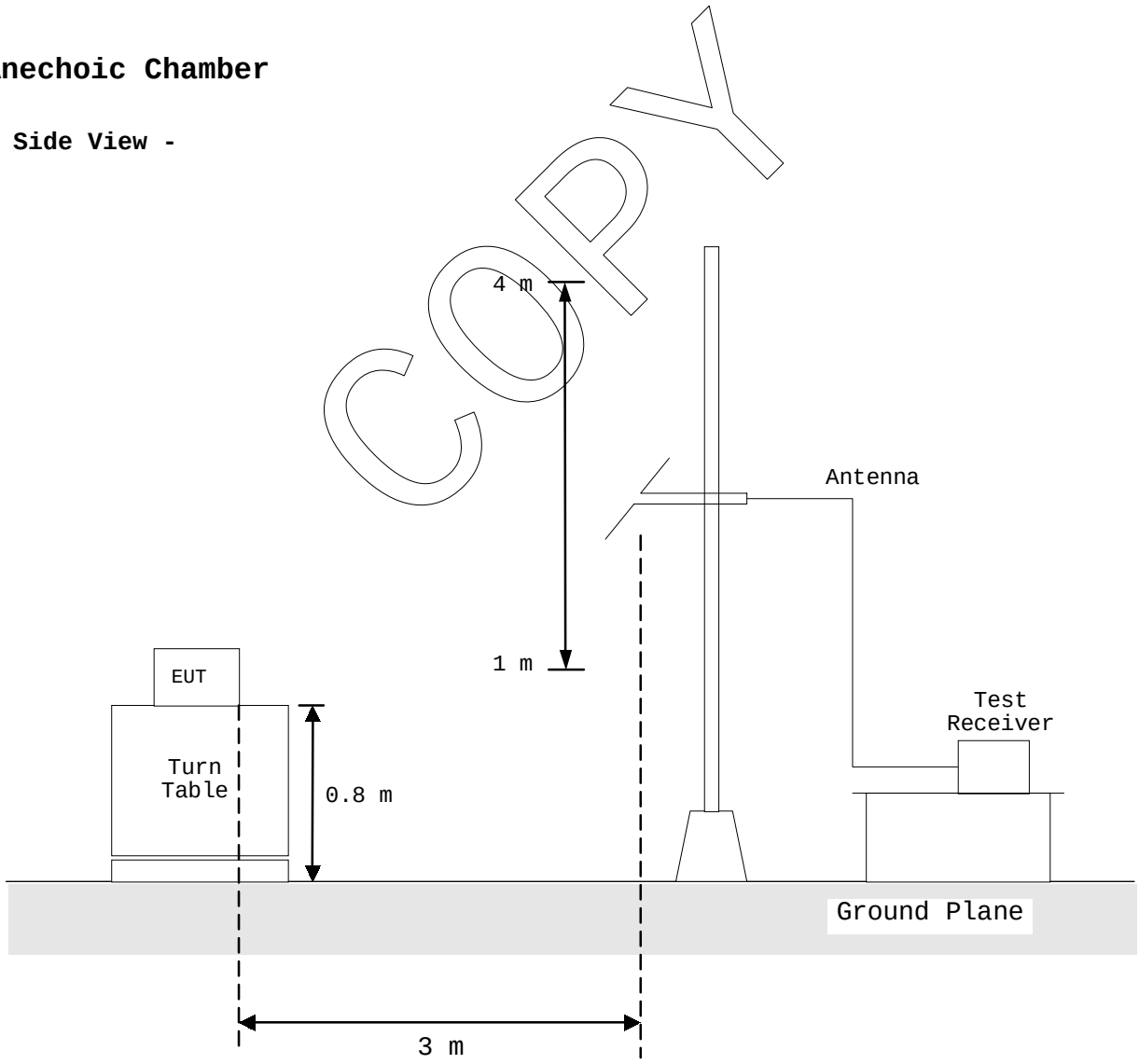


1.9.3 Radiated Emission (30 MHz – 1000 MHz) :

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 -

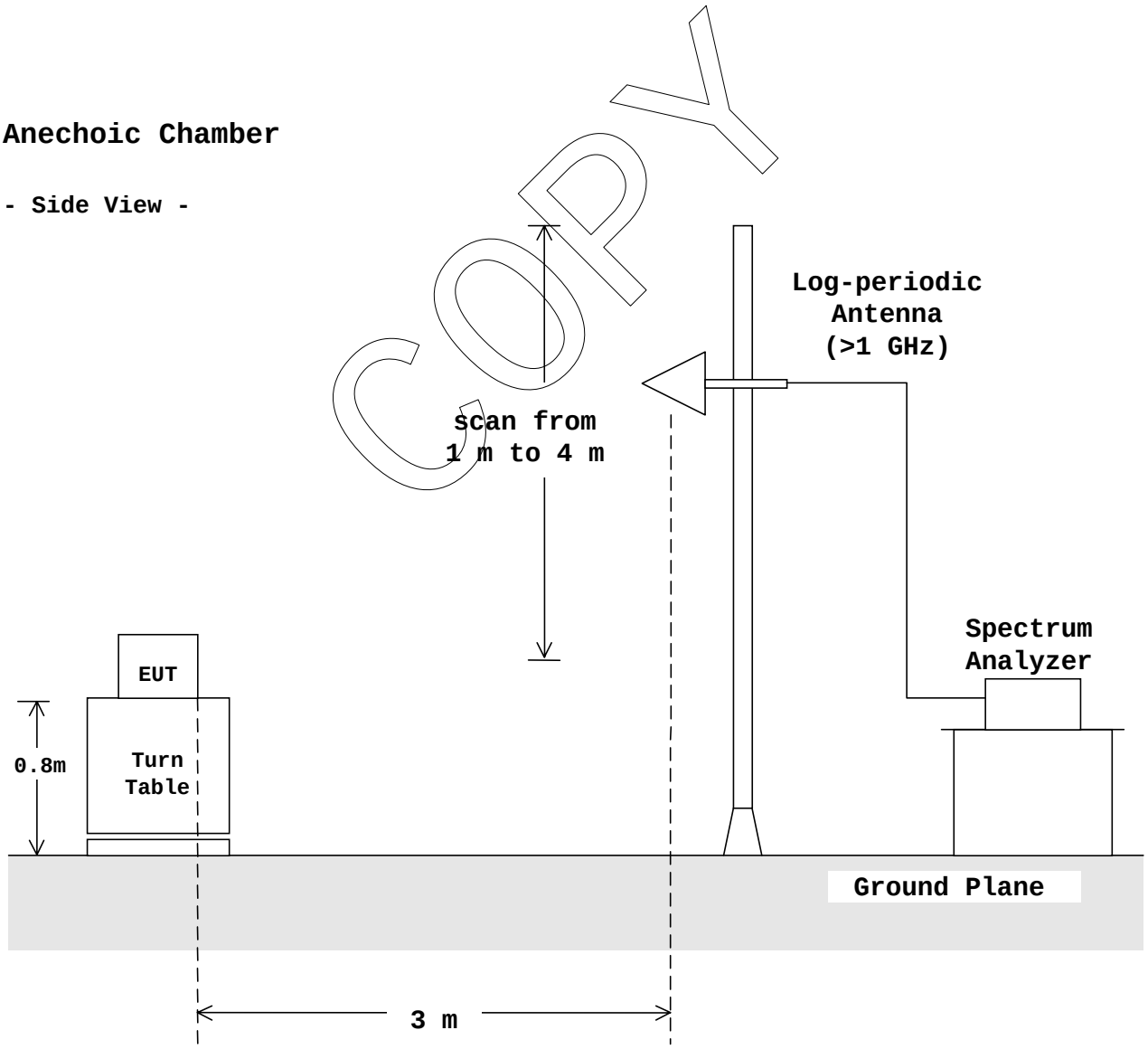


1.9.4 Radiated Emission (Above 1 GHz) :

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.

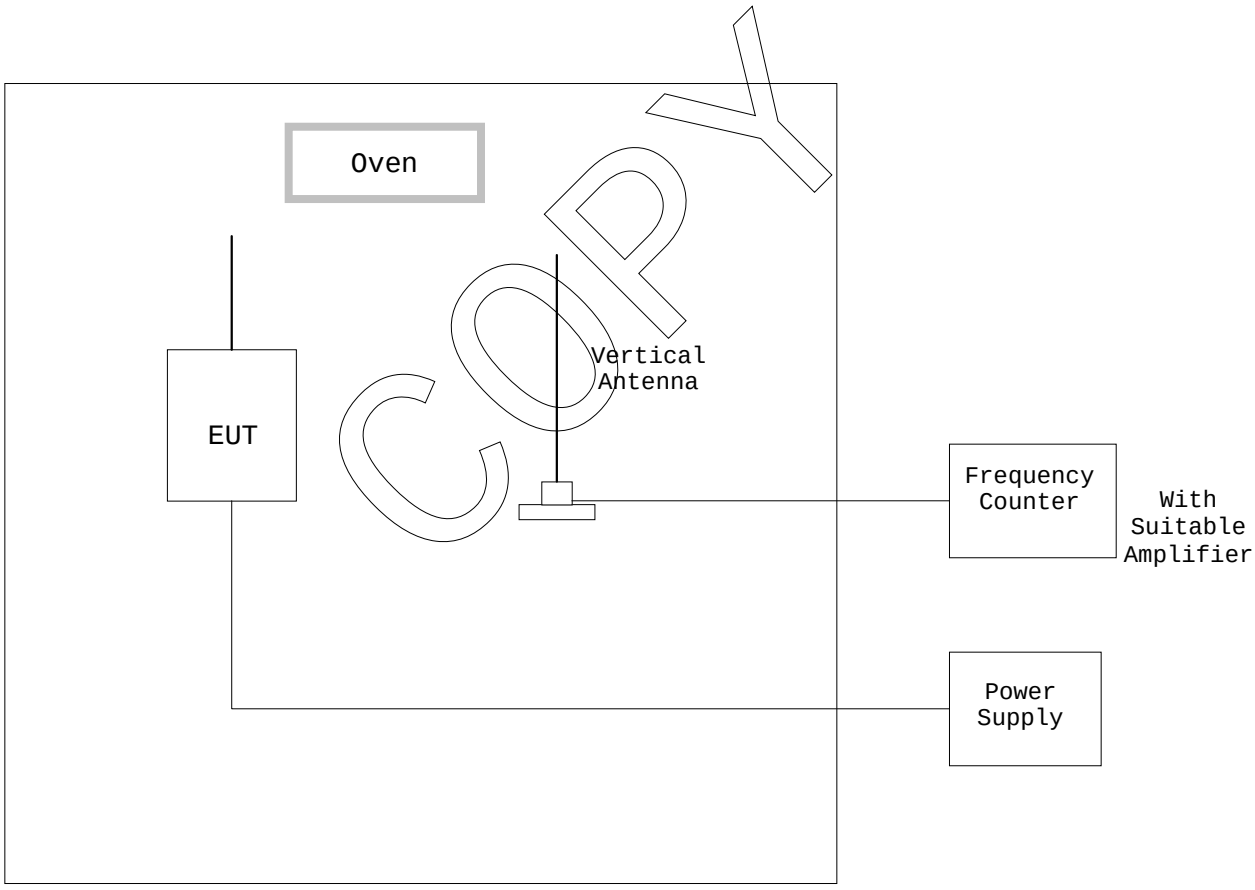
Anechoic Chamber

- Side View -



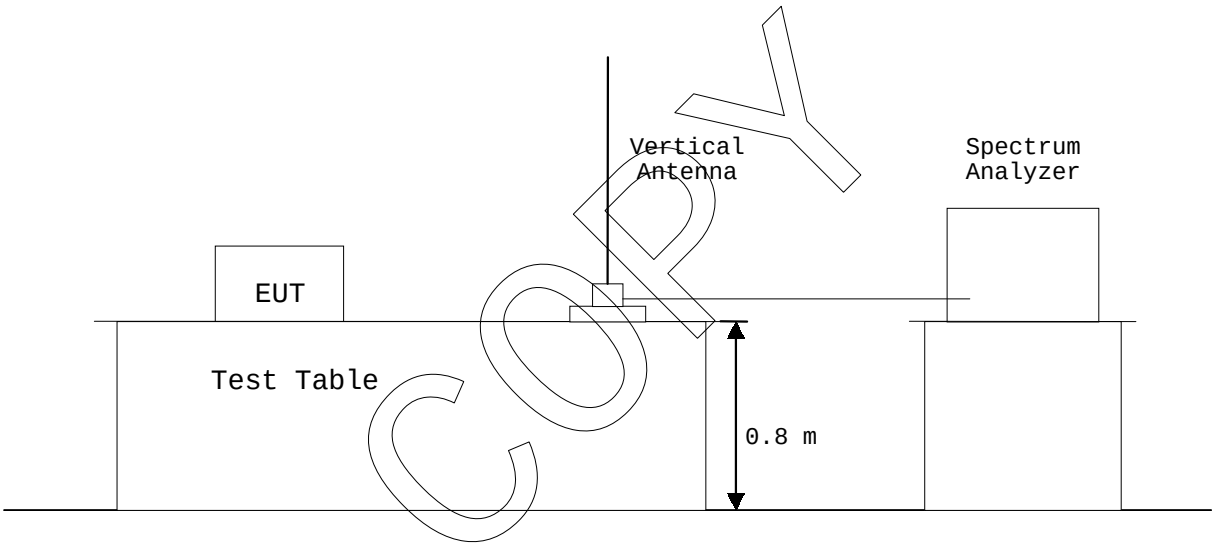
1.9.5 Frequency Stability :

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

TEST DATA

2.2 Radiated Emissions Measurement

Operating Frequency : 315 MHz
Distance of Measurement : 3.0 meters

Date : July 10, 2002
Temp. : 24 °C Humi. : 50 %

Frequency (MHz)	P-A Factor (dB)	Antenna 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	-5.6	20.8	H	-	-	48.2	75.6	95.6	63.4	69.0	12.2	26.6
630.0	-5.6	27.8	V	-	-	17.7	55.6	75.6	39.9	45.5	15.7	30.1
945.0	-5.6	32.9	H	-	-	15.1	55.6	75.6	42.4	48.0	13.2	27.6

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(QP/AV) was made at 315 (MHz).
PA + Af + Mr = -5.6 + 20.8 + 48.2(Peak) = 63.4 (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	Margins (dB) AV	Margins (dB) Peak
1.2600	-5.6	26.6	H	-	15.8	55.6	75.6	36.8	42.4	18.8	33.2
1.5750	-5.6	29.5	H	-	16.0	54.0	74.0	39.9	45.5	14.1	28.5
1.8900	-5.6	30.8	V	-	14.5	55.6	75.6	39.7	45.3	15.9	30.3
2.2040	-5.6	-13.0	V	-	64.9	54.0	74.0	46.3	51.9	7.7	22.1
2.5200	-5.6	-12.2	V	-	62.9	55.6	75.6	45.1	50.7	10.5	24.9
2.8350	-5.6	-10.1	V	-	55.9	54.0	74.0	40.2	45.8	13.8	28.2
3.1500	-5.6	-8.6	H	-	56.2	55.6	75.6	42.0	47.6	13.6	28.0

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 = -5.6 + 26.6 + 15.8(Peak) = 36.8 (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

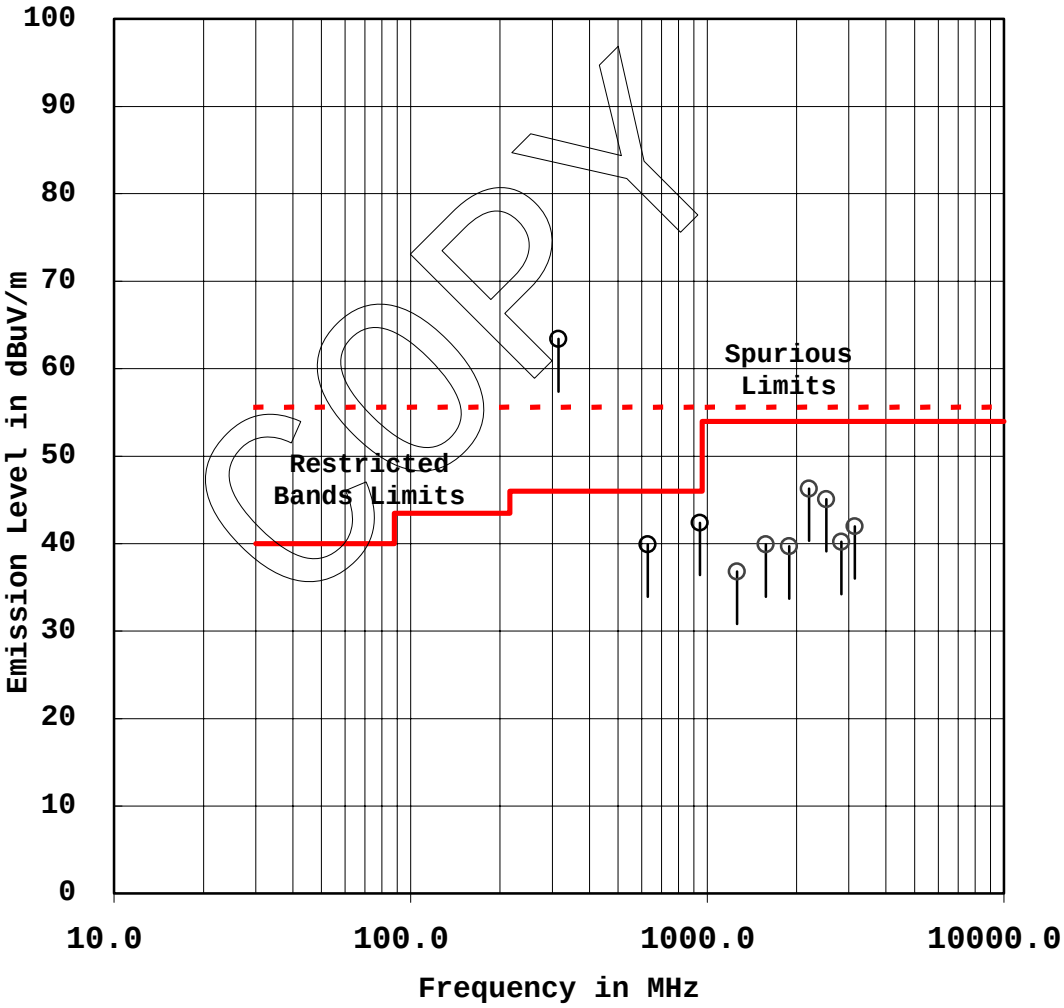
Tested by : Y. Nakajima
Yoichi Nakajima
Testing Engineer

RADIATED EMISSION MEASUREMENT

Model No. : D02TB

Standard : CFR 47 FCC Rules Part 15 O QP/AV

Operating Frequency(MHz) : 315

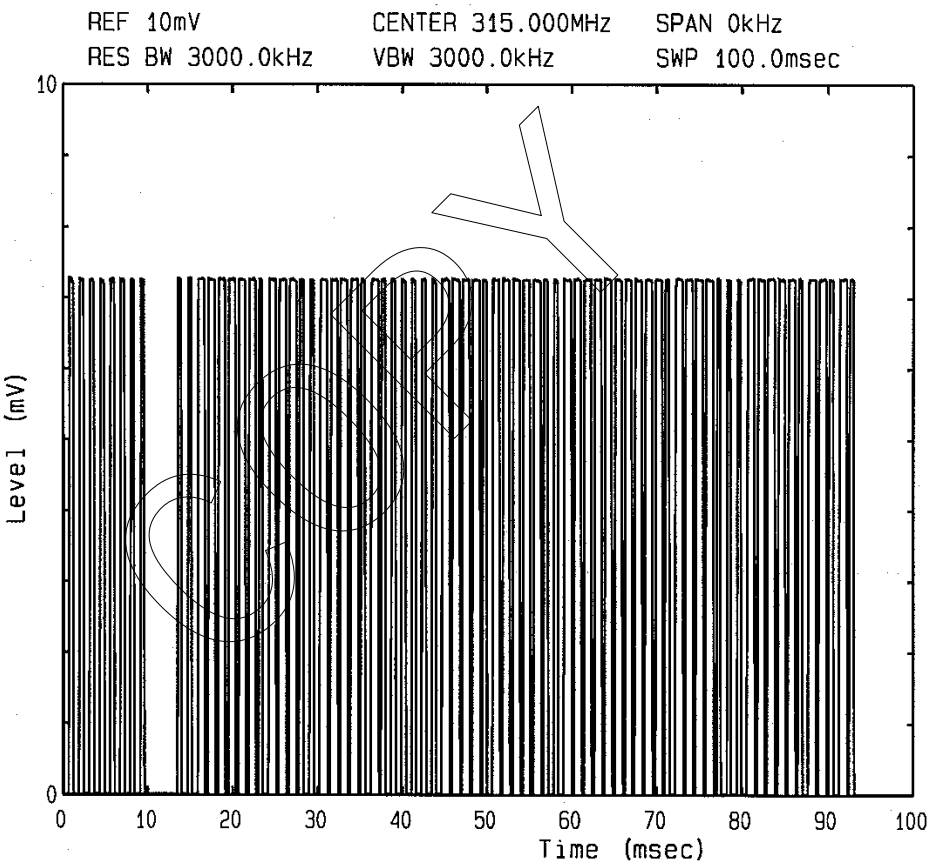


Holdover time after manual release[§15.231(a)(1)] 200 ms
(Manufacturer designed)

The encoded waveform in the time domain

FCC ID : MOZD02TB
Model : D02TB

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
= (52.4 msec / 100 msec) x 100 = 52.4 %

Therefore
Factor is 20log(0.5240) = -5.6 dB

2.4 Occupied Bandwidth Measurement

Date : July 18, 2002
Temp.: 25 °C Humi.: 73 %

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 : Y. Nakajima
Yoichi Nakajima
Testing Engineer

Emission Limitation

FCC ID : MOZD02TB
Model : D02TB

Mode of EUT : Transmit