



JAPAN QUALITY ASSURANCE ORGANIZATION
2096, OHATA, TSURU-SHI, YAMANASHI 402, JAPAN
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JQA File No.: 441-50764

Issue date : November 10, 2005

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EMI TEST REPORT

JQA File No. : 441-50764

Model No. : 045-50025

Type of Equipment : RF-Module (RFID Tag Reader/Writer)

Regulations Applied : CFR 47 FCC Rules and Regulations Part 15

FCC ID : RPARFA3A

Applicant : RISO KAGAKU CORPORATION

Address : 127-7, Taninosawa, Fukuda, Ami-machi, Inashiki-gun,
Ibaraki-ken 300-1156, Japan

Manufacture : RISO KAGAKU CORPORATION

Address : 127-7, Taninosawa, Fukuda, Ami-machi, Inashiki-gun,
Ibaraki-ken 300-1156, Japan

Received date of EUT : October 26, 2005

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 National Institute of Information and Communications Technology (NICT) of Japan.

The test results only responds to the tested sample.

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note : refer to pages 10 page

1 DOCUMENTATION

1.1 TEST REGULATION

FCC Rules and Regulations Part 15 Subpart A and C (January 8, 2004) 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 C63.4-2003.

1.2 GENERAL INFORMATION

1.2.1 Test facility :

- 1) Test Facility located at JQA Safety & EMC Center EMC Engineering Department TSURU EMC Branch:
Open Site No.1, No.2, An Anechoic Chamber (3 m and 10 m, on common plane) and a Shielded Room
FCC Registration Number: 342182 (Date of Listing : March 30, 2005)

- 2) JQA Safety & EMC Center EMC Engineering Department TSURU EMC Branch 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 : 200192-0 (Effective through : June 30, 2006)

1.2.2 Description of the Equipment Under Test (EUT) :

- | | |
|--------------------------------------|--------------------------------------|
| 1) Type of Equipment | : RF-Module (RFID Tag Reader/Writer) |
| 2) Product Type | : Prototype |
| 3) Category | : Low Power Communication Device |
| 4) EUT Authorization | : Certification |
| 5) FCC ID | : RPARFA3A |
| 6) Trade Name | : RISO |
| 7) Model No. | : 045-50025 |
| 8) Operating Frequency Range | : 13.56 MHz |
| 9) Highest Frequency Used in the EUT | : 13.56 MHz |
| 10) Serial No. | : - |
| 11) Date of Manufacture | : - |
| 12) Power Rating | : 5.0VDC(*) |
| 13) EUT Grounding | : None |

*The EUT was operated with the host printer.(Input: 120Vac 60Hz, Output: 5.0Vdc)

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 :

JQA Safety & EMC Center EMC Engineering Department TSURU EMC Branch
 2096 Ohata, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

- ☐ - Shielded Room A
☐ - Shielded Room B
☒ - Anechoic Chamber
☐ - Open Site No.1
☐ - Open Site No.2

Used test instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
☒	Test Receiver (R-3)	ESI7	Rohde & Schwarz	100059	2004/11	1 Year
☐	Test Receiver (R-4)	ESHS30	Rohde & Schwarz	842053/001	2005/2	1 Year
☐	Test Receiver (R-5)	ESCS30	Rohde & Schwarz	100203	2005/2	1 Year
☐	AMN (L-1)	KNW-407	Kyoritsu Electrical	8-833-5	2005/9	1 Year
☐	AMN (L-2)	KNW-407	Kyoritsu Electrical	8-680-14	2005/9	1 Year
☒	AMN (L-3)	KNW-407	Kyoritsu Electrical	8-757-1	2005/6	1 Year
☐	AMN (L-4)	KNW-242	Kyoritsu Electrical	8-755-1	2005/6	1 Year
☐	AMN (L-5)	KNW-242C	Kyoritsu Electrical	8-837-14	2005/6	1 Year
☐	AMN (L-6)	KNW-243C	Kyoritsu Electrical	8-692-5	2005/9	1 Year
☐	AMN (L-7)	KNW-243C	Kyoritsu Electrical	8-831-3	2005/6	1 Year
☐	AMN (L-8)	KNW-243C	Kyoritsu Electrical	8-831-4	2005/6	1 Year
☐	AMN (L-9)	KNW-243C	Kyoritsu Electrical	8-831-2	2005/9	1 Year
☐	ISN (L-10)	ENY41	Rohde & Schwarz	0830663/046	2005/2	1 Year
☐	ISN (L-11)	ENY22	Rohde & Schwarz	0830661/029	2005/2	1 Year
☒	RF Cable (CB-3)	3D-2W	Fujikura	-	2005/5	1 Year
☐	RF Cable (CB-4)	3D-2W	Fujikura	-	2005/5	1 Year
☐	RF Cable (CB-5)	3D-2W	Fujikura	-	2005/5	1 Year
☒	Pulse Limiter (PL-3)	ESH3-Z2	Rohde & Schwarz	-	2004/11	1 Year
☐	Pulse Limiter (PL-4)	ESH3-Z2	Rohde & Schwarz	-	2005/2	1 Year
☐	Pulse Limiter (PL-5)	ESH3-Z2	Rohde & Schwarz	-	2005/2	1 Year
☐	50ohm Termination(TM-1)	BNC-P-1.5	TDC	-	2005/3	1 Year
☐	50ohm Termination(TM-2)	-	Y&R	-	2005/3	1 Year

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

- ☒ - was performed in the following test site.
☐ - was not applicable.

Test location :

JQA Safety & EMC Center EMC Engineering Department TSURU EMC Branch
 2096 Ohata, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

- ☐ - Open Site No. 1 (3, 10 or 30 meters)
☐ - Open Site No. 2 (3 or 10 meters)
☒ - Anechoic Chamber(3 or 10 meters)

Validation of Site Attenuation :

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

Used test instruments :

	<u>Type</u>	<u>Model No.</u>	<u>Manufacturer</u>	<u>Serial No.</u>	<u>Last Cal.</u>	<u>Interval</u>
☒ -	Test Receiver (R-3)	ESI7	Rohde & Schwarz	100059	2004/11	1 Year
☐ -	Test Receiver (R-4)	ESHS30	Rohde & Schwarz	842053/001	2005/2	1 Year
☐ -	Test Receiver (R-5)	ESCS30	Rohde & Schwarz	100203	2005/2	1 Year
☒ -	Loop Antenna (AL-0)	HFH2-Z2	Rohde & Schwarz	879284/14	2005/8	1 Year

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

- ☒ - was performed in the following test site.
☐ - was not applicable.

Test location :

JQA Safety & EMC Center EMC Engineering Department TSURU EMC Branch
 2096 Ohata, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

- ☐ - Open Site No. 1 (3, 10 or 30 meters)
☐ - Open Site No. 2 (3 or 10 meters)
☒ - Anechoic Chamber(3 or 10 meters)

Validation of Site Attenuation :

- 1) Last Confirmed Date : 2005/5
 2) Interval : 1 year

Used test instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
☐	Test Receiver(R-1)	ESVS10	Rohde & Schwarz	84231/004	2005/3	1 Year
☐	Test Receiver(R-2)	ESVS10	Rohde & Schwarz	843744/018	2005/7	1 Year
☒	Test Receiver(R-3)	ESI7	Rohde & Schwarz	100059	2004/11	1 Year
☐	Test Receiver(R-5)	ESCS30	Rohde & Schwarz	100203	2005/2	1 Year
☐	Biconical Antenna(AB-1)	BBA9106	Schwarzbeck	VHA91031741	2005/5	1 Year
☐	Biconical Antenna(AB-2)	BBA9106	Schwarzbeck	VHA91032349	2005/5	1 Year
☒	Biconical Antenna(AB-3)	BBA9106	Schwarzbeck	VHA11905516	2005/5	1 Year
☐	Log-Periodic Antenna(AL-1)	UHALP9108A	Schwarzbeck	0678	2005/5	1 Year
☐	Log-Periodic Antenna(AL-2)	UHALP9108A	Schwarzbeck	0679	2005/5	1 Year
☒	Log-Periodic Antenna(AL-3)	UHALP9108	Schwarzbeck	0278	2005/5	1 Year
☐	Log-Periodic Antenna(AL-4)	USLP9143	Schwarzbeck	140	2005/6	1 Year
☐	Dipole Antenna(AD-1)	KBA-511A	Kyoritsu Electrical	0-195-5	2005/8	1 Year
☐	Dipole Antenna(AD-2)	KBA-511A	Kyoritsu Electrical	0-228-13	2005/8	1 Year
☐	Dipole Antenna(AD-3)	KBA-611	Kyoritsu Electrical	0-196-8	2005/8	1 Year
☐	Dipole Antenna(AD-4)	KBA-611	Kyoritsu Electrical	0-230-6	2005/8	1 Year
☐	RF Cable(CN-1)	20D/5D-2W	Fujikura	-	2005/5	1 Year
☐	RF Cable(CN-2)	20D/5D-2W	Fujikura	-	2005/5	1 Year
☒	RF Cable(CN-3)	20D/5D-2W	Fujikura	-	2005/5	1 Year

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

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

Test location :

JQA Safety & EMC Center EMC Engineering Department TSURU EMC Branch
 2096 Ohata, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

- ___ - Open Site No. 1 (3, 10 or 30 meters)
 ___ - Open Site No. 2 (3 or 10 meters)
 ___ - Anechoic Chamber (3 or 10 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 (R-3)	ESI7	Rohde & Schwarz	100059	2004/11	1 Year
Test Receiver (R-5)	ESCS30	Rohde & Schwarz	100203	2005/2	1 Year
Spectrum Analyzer (S-1)	R3361C	Advantest	71720774	2005/4	1 Year
Spectrum Analyzer (S-4)	8563E	Hewlett Packard	3221A0020	2005/4	1 Year
Log-Periodic Antenna (AL-4)	USLP9143	Schwarzbeck	140	2005/6	1 Year
Log-Periodic Antenna (AL-5)	94612-1	Eaton	97062301	2005/4	1 Year
Horn Antenna (AH-5)	12-12	ScientificAtlanta	770	2005/5	1 Year
RF Cable (CS-1)	SUCOFLEX 104	Suhner	121947/4	2005/5	1 Year
RF Cable (CS-2)	SUCOFLEX 104	Suhner	35687/4	2005/5	1 Year
RF Cable (CS-3)	SUCOFLEX 104	Suhner	39934/4	2005/5	1 Year
RF Cable (CS-4)	SUCOFLEX 104	Suhner	52053/4	2005/5	1 Year
RF Cable (CS-5)	SUCOFLEX 104	Suhner	52146/4	2005/5	1 Year
Pre-Amplifier; (PA-1)	WJ-6811-513	Watkins Johnson	0288	2005/5	1 Year
Pre-Amplifier; (PA-2)	WJ-6682-824	Watkins Johnson	0052	2005/5	1 Year
Pre-Amplifier; (PA-3)	WJ-6870-506	Watkins Johnson	0018	2005/5	1 Year

1.3.5 The measurement of the Frequency Stability

- ☐ - was performed.
☐ - was not applicable.
☒ - was not tested.

Test location :

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

Used test instruments :

Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
☐ - Frequency Counter	53131A	Hewlett Packard	3546A11807	2005/05	1 Year
☐ - Oven	-	Ohnishi Co. Ltd.	-	2005/08	1 Year
☐ - DC Power Supply	6628A	Hewlett Packard	3224A00284	2005/07	1 Year
☐ - Test Receiver	ESI26	Rohde & Schwarz	100043	2005/08	1 Year

1.3.6 The measurement of the Occupied Bandwidth

- ☒ - was performed.
☐ - was not applicable.

Test location :

JQA Safety & EMC Center EMC Engineering Department TSURU EMC Branch
 2096 Ohata, Tsuru-shi Yamanashi-ken 402-0045, JAPAN

Used test instruments :

Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
☒ - Spectrum Analyzer	R3132	Advantest	12050072	2005/9	1 Year

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:

1.5 TEST RESULTS

AC Power Line Conducted Emission X - Applicable - NOT Applicable
 [\$15.207(a)]

The requirements are X - PASSED - NOT PASSED

Remarks: _____

Radiated Emission X - Applicable - NOT Applicable
 [\$15.225(a)(b)]

The requirements are X - PASSED - NOT PASSED

Remarks: _____

Frequency Stability - Applicable X - NOT Tested
 [\$15.225(e)]

The requirements are - PASSED - NOT PASSED

Remarks: This requirement is covered with the JQA report (File No. 441-50438)

Occupied Bandwidth X - Applicable - NOT Applicable
 [\$15.225(d)]

The requirements are X - PASSED - NOT PASSED

Remarks: Reference data for RSS210 requirement.

AC Power Line Conducted Emission - Applicable X - NOT Applicable
 for Receiver [\$15.107(a)]

The requirements are - PASSED - NOT PASSED

Remarks: The transceiver is used in combination with permanently co-located transmitter continuously transmitting, and it start to TX/RX at the time of the power is on simultaneously. Therefore this requirement could not be measured under RX or Standby mode.

Radiated Emission for Receiver - Applicable X - NOT Applicable
 [\$15.109(a)]

The requirements are - PASSED - NOT PASSED

Remarks: The transceiver is used in combination with permanently co-located transmitter continuously transmitting, and it start to TX/RX at the time of the power is on simultaneously. Therefore this requirement could not be measured under RX or Standby mode.

1.6 SUMMARY

General Remarks :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A and C 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;

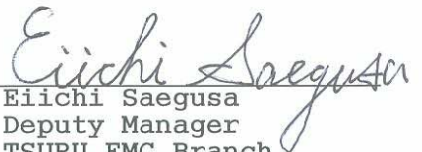
- X - fulfill the test requirements of the regulation mentioned on clause 1.1.
- fulfill the test requirements of the regulation mentioned on clause 1.1, but with certain qualifications.
- doesn't fulfill the test regulation mentioned on clause 1.1.

Begin of testing : October 26, 2005

End of testing : October 26, 2005

- JAPAN QUALITY ASSURANCE ORGANIZATION -

Tested by:


Eiichi Saegusa
Deputy Manager
TSURU EMC Branch
JQA EMC Engineering Dept.

Approved by:


Takaharu Hada
Director
TSURU EMC Branch
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.	Serial No.
A	RF-Module (RFID Tag Reader/Writer)	RISO KAGAKU CORPORATION	045-50025	-
B	O-Shape Antenna	RISO KAGAKU CORPORATION	444-59006	-
C	RF-Module (RFID Tag Reader/Writer)	RISO KAGAKU CORPORATION	045-50025	-
D	Interconnecting PCB	RISO KAGAKU CORPORATION	024-17178	-
E	Interconnecting PCB	RISO KAGAKU CORPORATION	024-17178	-
F	D-Shape Antenna	RISO KAGAKU CORPORATION	444-59002	-
G	D-Shape Antenna	RISO KAGAKU CORPORATION	444-59002	-

The measurement was carried out with the following support equipment connected :

Symbol	Item	Manufacturer	Model No.	Serial No.
H	Duplicator	RISO KAGAKU CORPORATION	MZ790U	-
I	Exclusive Table	RISO KAGAKU CORPORATION	RISO STAND N TYPE(II)	-

Type of Cable :

Symbol	Description	Identification (Manufacturer etc.)	Shielded YES / NO	Ferrite Core	Connector type Shielded YES / NO	Length (m)
1	AC Cable	-	NO	NO	NO	3.0
2	GND Cable	-	NO	NO	NO	0.8
3	Signal Cable	-	NO	NO	NO	1.0
4	Antenna Cable(Coaxial)	-	YES	NO	YES	1.5
5	GND Cable	-	NO	NO	NO	0.8
6	GND Cable	-	NO	NO	NO	0.8
7	Antenna Cable(Coaxial)	-	YES	NO	YES	0.7
8	Antenna Cable(Twisted Wire)	-	NO	NO	No	0.1
9	Antenna Cable(Coaxial)	-	YES	NO	YES	0.7
10	Signal Cable	-	NO	NO	NO	1.0
11	GND Cable	-	NO	NO	NO	0.8
12	Antenna Cable(Coaxial)	-	YES	NO	YES	0.7
13	Antenna Cable(Twisted Wire)	-	NO	NO	No	0.1
14	Antenna Cable(Coaxial)	-	YES	NO	YES	0.7

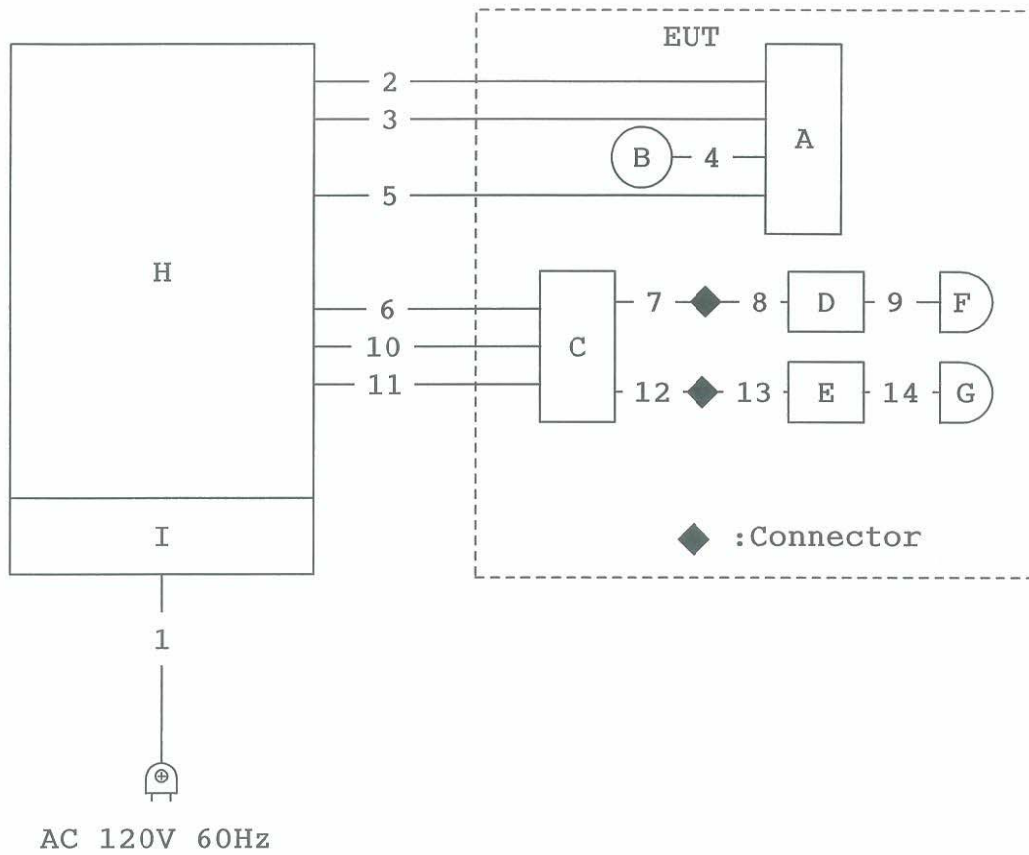
1.7.2 Operating condition

Power Supply Voltage : 5.0VDC*

* The EUT was operated with the printer.(Input: 120Vac 60Hz, Output: 5.0Vdc)

The tests have been carried out under continuous transmission/ Reception Mode.

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) :

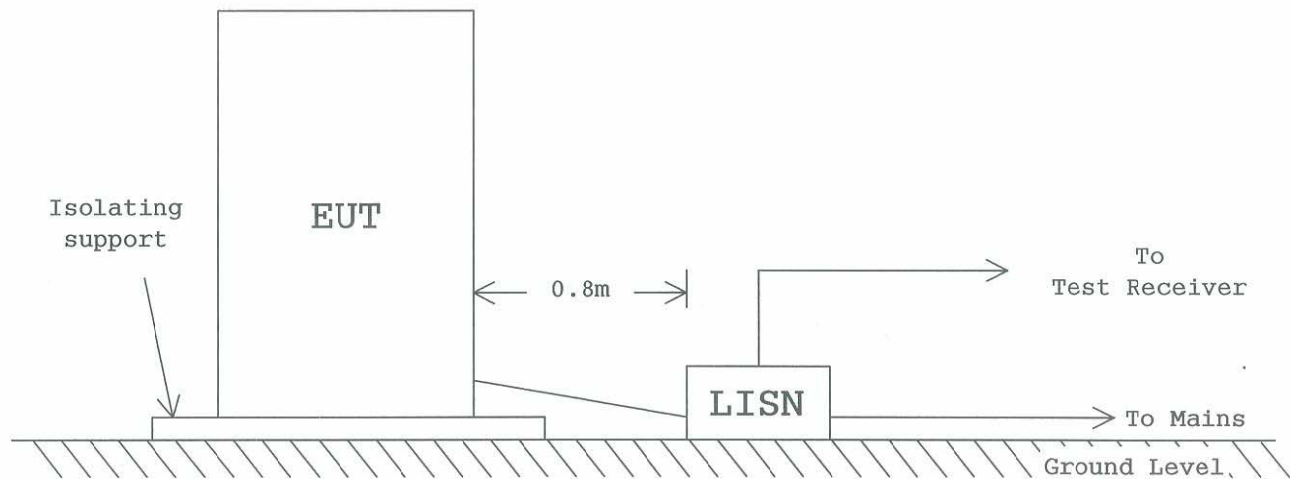
According to description of ANSI C63.4-2003 sec.13.1.3, the AC power line preliminary conducted emissions measurements were carried out.

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 -



1.9.2 Radiated Emission (9 kHz - 30 MHz) :

According to description of ANSI C63.4-2003 sec.13.1.4, 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 -

