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

EMI TEST REPORT

JQA APPLICATION NO.	: 80-90054
Model No.	: WCS-999T
Type of Equipment	: Transmitter
Regulations Applied	: CFR 47 FCC Rules and Regulations Part 15
FCC ID	: AK8WCS999T
Applicant	: Sony Corporation Shinagawa Technology Center
Address	: Shinagawa INTERCITY C Tower, 2-15-3, Konan, Minato-ku, Tokyo 108-6201, Japan
Manufacturer	: Sony Corporation
Address	: 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo 141-0001, Japan
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.

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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 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)
FCC filing No. : 31040/SIT 1300F2

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, 1999)

1.2.2 Description of the Equipment Under Test (EUT) :

1)	Type of Equipment	: Transmitter
2)	Product Type	: Prototype
3)	Category	: Low Power Communication Device Transmitter
4)	EUT Authorization	: Certification
5)	FCC ID	: AK8WCS999T
6)	Trade Name	: SONY
7)	Model No.	: WCS-999T
8)	Operating Frequency Range	: 912.9 MHz - 914.4 MHz
9)	Highest Frequency Used in the EUT	: 914.4 MHz
10)	Serial No.	: -
11)	Date of Manufacture	: -
12)	Power Rating	: DC 1.5V(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 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
___ - Field Strength Meter	ESH-2	Rohde & Schwarz	872280/011	Sep. 1998	1 Year
___ - Field Strength Meter	ESH-2	Rohde & Schwarz	880370/016	May 1998	1 Year
___ - Field Strength Meter	ESH-3	Rohde & Schwarz	881460/016	May 1998	1 Year
___ - Field Strength Meter	ESH-3	Rohde & Schwarz	881460/030	Nov 1998	1 Year
___ - LISN	KNW-407	Kyoritsu Electrical	8-833-6	Apr. 1999	1 Year
___ - LISN	KNW-407	Kyoritsu Electrical	8-855-2	Apr. 1999	1 Year
___ - LISN	KNW-407	Kyoritsu Electrical	8-757-1	Apr. 1999	1 Year
___ - RF Cable	3D-2W	Fujikura	155-21-005	Apr. 1999	1 Year
___ - RF Cable	3D-2W	Fujikura	155-21-006	Apr. 1999	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
___	Field Strength Meter	ESV	Rohde & Schwarz	872148/039	May 1998	1 Year
___	Field Strength Meter	ESVP	Rohde & Schwarz	879783/030	May 1998	1 Year
_x_	Field Strength Meter	ESVP	Rohde & Schwarz	881478/004	May 1998	1 Year
___	Field Strength Meter	ESVP	Rohde & Schwarz	881478/005	May 1998	1 Year
___	Antenna	KBA-511A	Kyoritsu Electrical	0-201-13	Nov. 1998	1 Year
_x_	Antenna	KBA-511A	Kyoritsu Electrical	0-170-1	Nov. 1998	1 Year
___	Antenna	KBA-611	Kyoritsu Electrical	0-210-5	Nov. 1998	1 Year
_x_	Antenna	KBA-611	Kyoritsu Electrical	0-147-14	Nov. 1998	1 Year
_x_	RF Cable	5D-2W	Fujikura	155-21-001	Feb. 1999	1 Year
___	RF Cable	5D-2W	Fujikura	155-21-002	Feb. 1999	1 Year

1.3.3 The measurement of the Radiated Emission(Above 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_ - No. 2 site (3 meters)
___ - No. 3 site (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
___	Spectrum Analyzer	8560E	Hewlett Packard	3240A00189	May 1998	1 Year
___	Spectrum Analyzer	8563E	Hewlett Packard	3221A00201	May 1998	1 Year
_x_	Spectrum Analyzer	8566B	Hewlett Packard	2140A01091	Apr. 1999	1 Year
___	Spectrum Analyzer	8566B	Hewlett Packard	2747A05855	Jul. 1998	1 Year
_x_	Log-Periodic Antenna	HL 025	Rohde & Schwarz	340182/015	Nov. 1998	1 Year
_x_	RF Cable	S 04272B	Suhner	155-21-011	May 1998	1 Year

1.4 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 :

1.5 TEST RESULTS

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

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

Remarks :

Radiated Emission [§15.249] _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 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 : April 30, 1999

End of testing : April 30, 1999

- JAPAN QUALITY ASSURANCE ORGANIZATION - Signatories:

Masaaki Takahashi
Manager
JQA EMC Engineering Dept.

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	Transmitter	Sony Corporation	WCS-999T	AK8WCS999T	-

The measurements was carried out with the following supported connected :

Symbol	Item	Manufacturer	Model No.	Serial No.
B	Microphone(with 1.0 m cable)	Sony Corporation	-	-

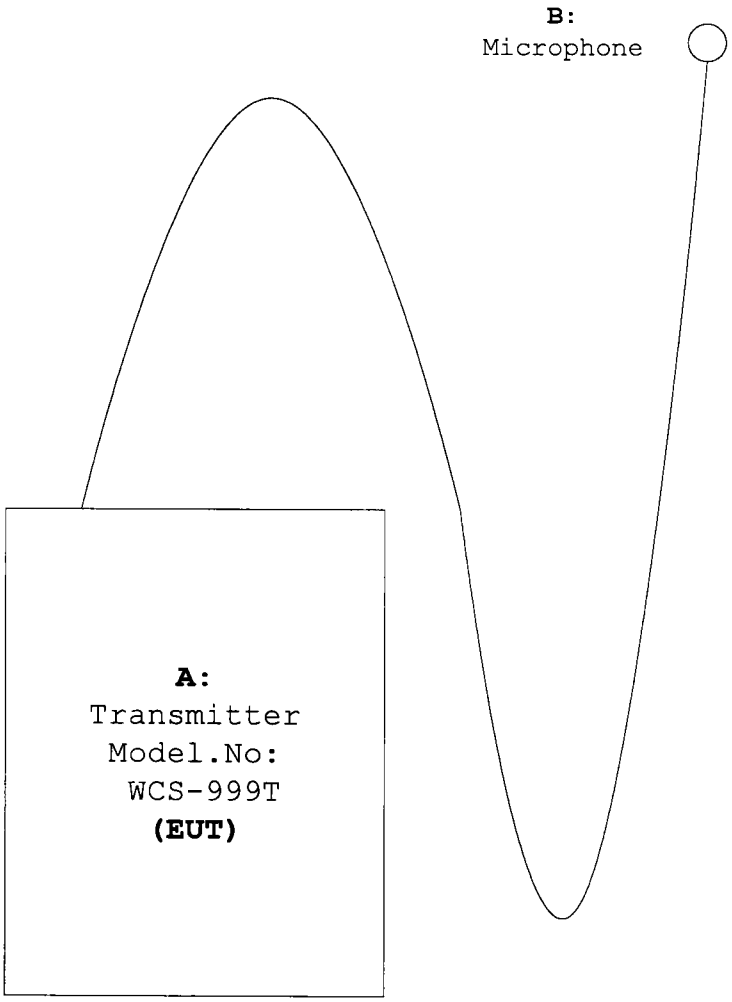
1.7.2 Operating condition

Power supply Voltage : 1.5VDC(Battery)
The tests have been carried out under the transmitting condition.
(Operating Frequency:912.9 MHz and 914.4 MHz)

1.7.3 Generating and Operating frequency of EUT

912.9 MHz and 914.4 MHz

1.8 EUT ARRANGEMENT (DRAWINGS)



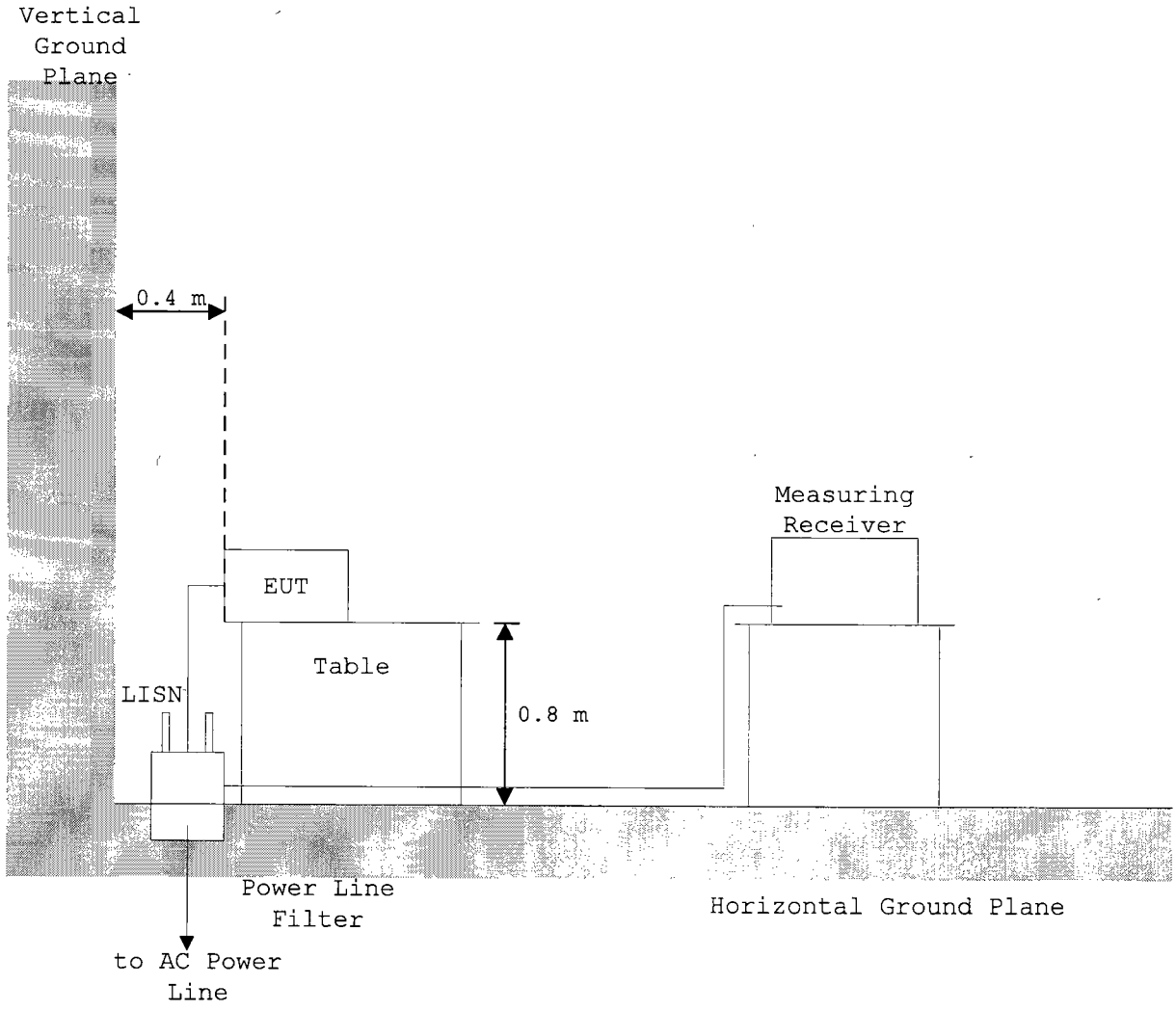
1.9 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)

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 -

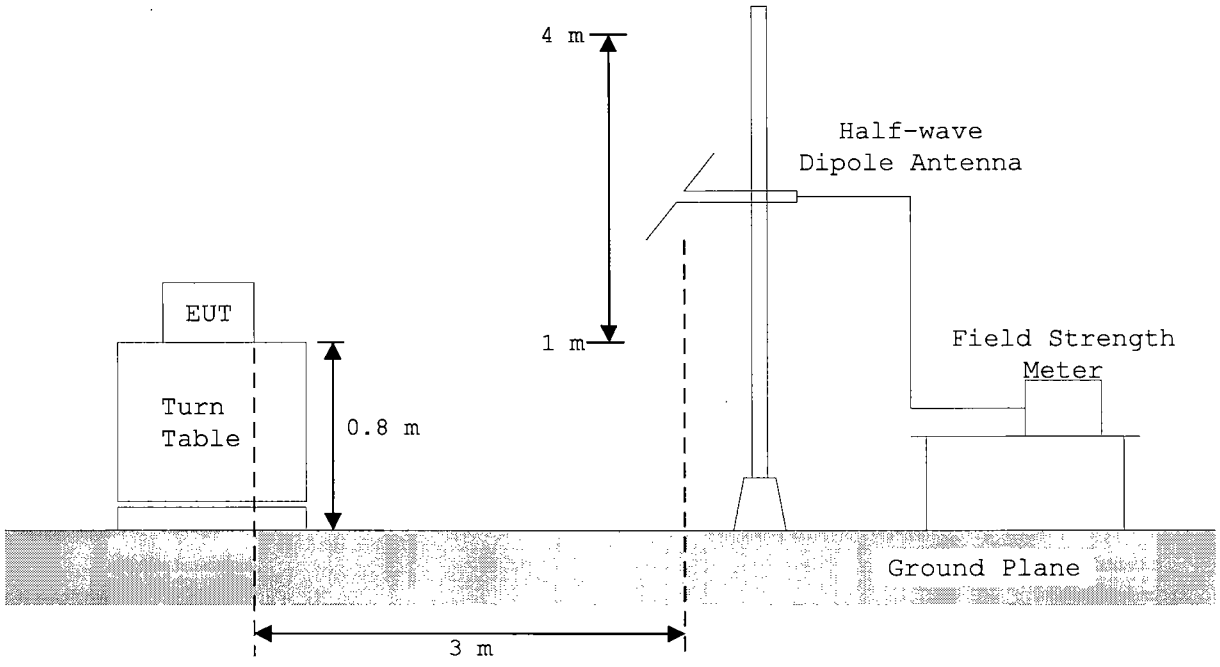


1.9.2 Radiated Emission (30 MHz - 1000 MHz) :

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 -

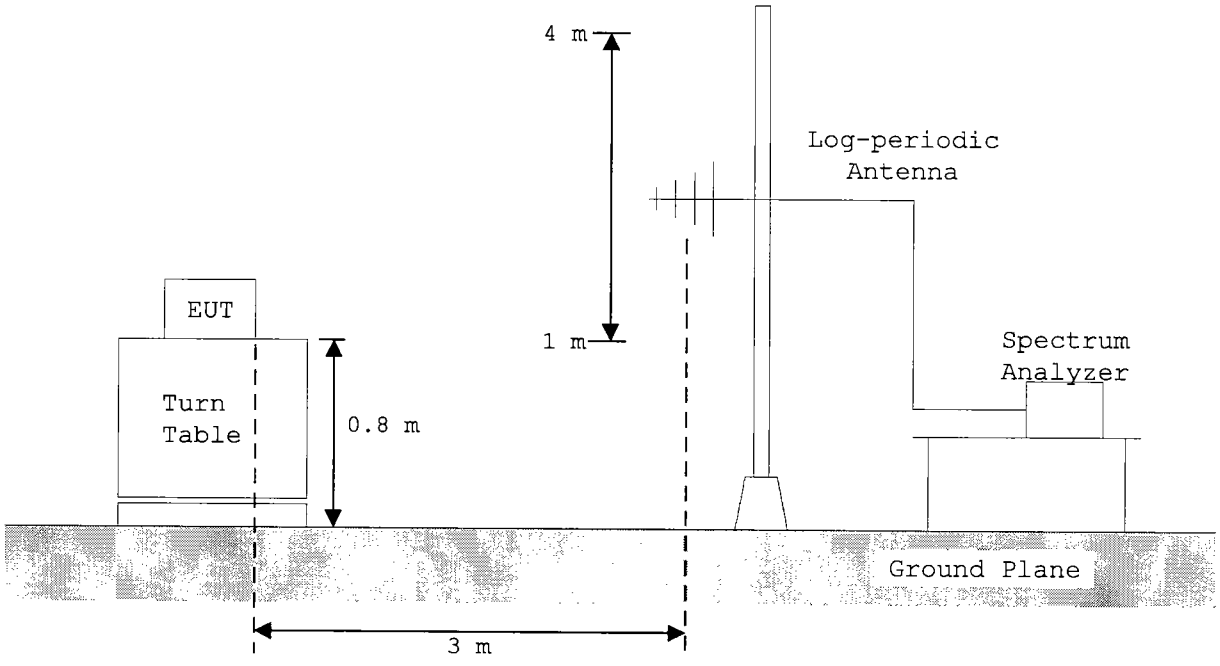


1.9.3 Radiated Emission (Above 1 GHz) :

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

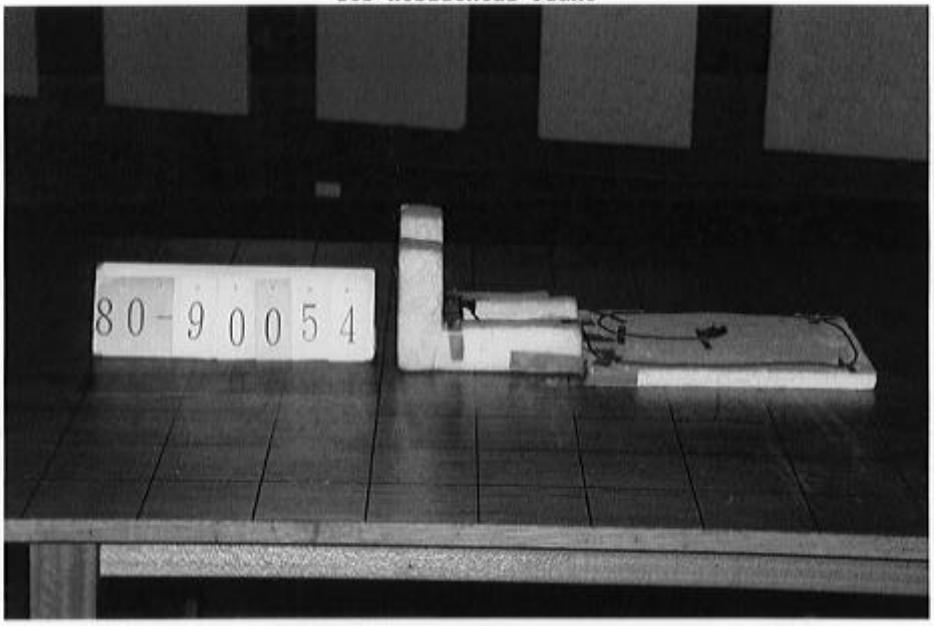
- Side View -



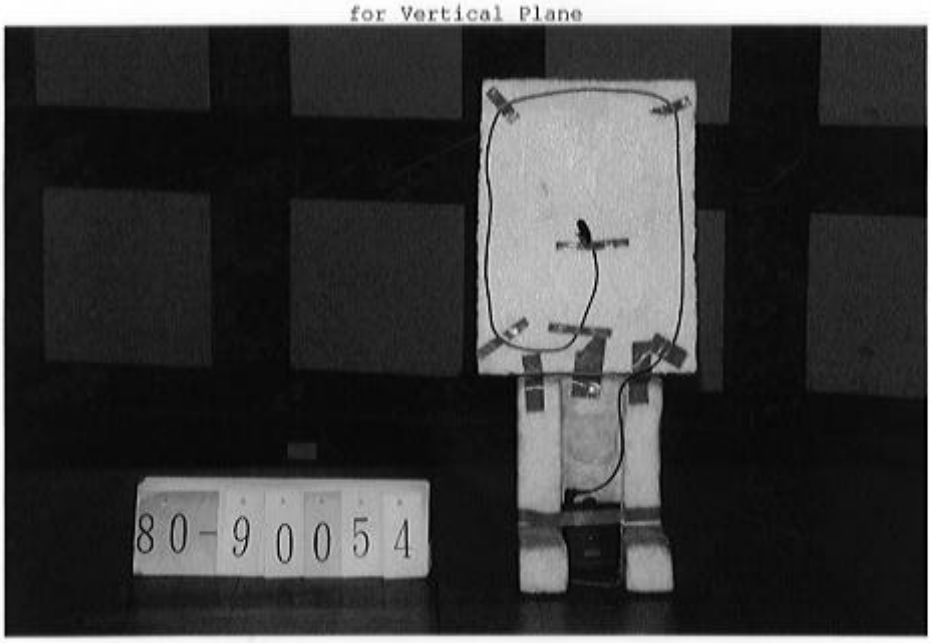
1.10 TEST ARRANGEMENT (PHOTOGRAPHS)

PHOTOGRAPHS OF EUT CONFIGURATION FOR RADIATED EMISSIONS MEASUREMENT

Photograph present configuration with maximum emission
for Horizontal Plane



for Vertical Plane



TEST DATA

2.2 Radiated Emissions Measurement

Date : April 30, 1999
Temp.: 23 °C Humi.: 44 %

Operating Frequency : 912.9 MHz
Distance of Measurement : 3.0 meters

	Correction	Meter Reading			Field Strength at 3 m	
Frequency	Factor	Horiz.	Vert.	Limits	Horiz.	Vert.
(MHz)	(dB/m)	(dBμV)	(dBμV)	(dBμV/m)	(dBμV/m)	(dBμV/m)
Fundamental						
912.900	32.4	56.6	50.9	94.0	89.0	83.3
Harmonics & other Frequency components						
228.224	17.7	4.1	1.4	46.0	21.8	19.1
456.448	24.5	4.1	2.2	46.0	28.6	26.7
855.840	31.5	1.6	< 0.0	46.0	33.1	< 31.5
884.368	32.0	3.6	1.4	46.0	35.6	33.4
941.424	32.8	3.9	2.4	46.0	36.7	35.2
1825.800	30.7	6.1	7.3	54.0	36.8	38.0
2738.700	-10.9	47.1	48.7	54.0	36.2	37.8
3651.600	-7.1	< 30.0	< 30.0	54.0	< 22.9	< 22.9
4564.500	-4.1	< 30.0	< 30.0	54.0	< 25.9	< 25.9
5477.400	-1.7	< 30.0	< 30.0	54.0	< 28.3	< 28.3
6390.300	0.5	< 30.0	< 30.0	54.0	< 30.5	< 30.5
7303.200	2.4	< 30.0	< 30.0	54.0	< 32.4	< 32.4
8216.100	11.1	< 30.0	< 30.0	54.0	< 41.1	< 41.1
9129.000	12.7	< 30.0	< 30.0	54.0	< 42.7	< 42.7

Operating Frequency : 914.4 MHz
Distance of Measurement : 3.0 meters

	Correction	Meter Reading			Field Strength at 3 m	
Frequency	Factor	Horiz.	Vert.	Limits	Horiz.	Vert.
(MHz)	(dB/m)	(dBμV)	(dBμV)	(dBμV/m)	(dBμV/m)	(dBμV/m)
Fundamental						
914.400	32.4	56.7	50.9	94.0	89.1	83.3
Harmonics & other Frequency components						
228.600	17.7	4.9	2.3	46.0	22.6	20.0
457.200	24.5	4.0	2.2	46.0	28.5	26.7
771.525	30.2	1.1	< 0.0	46.0	31.3	< 30.2
800.100	30.6	2.4	< 0.0	46.0	33.0	< 30.6
828.675	31.1	2.3	< 0.0	46.0	33.4	< 31.1
857.250	31.5	5.7	3.1	46.0	37.2	34.6
885.825	32.0	6.4	3.4	46.0	38.4	35.4
942.975	32.8	6.5	5.7	46.0	39.3	38.5
971.550	33.2	1.7	1.3	46.0	34.9	34.5
1828.800	30.8	6.9	6.9	54.0	37.7	37.7
2743.200	-10.8	46.4	47.8	54.0	35.6	37.0
3657.600	-7.1	34.4	< 30.0	54.0	27.3	< 22.9
4572.000	-4.1	< 30.0	< 30.0	54.0	< 25.9	< 25.9
5486.400	-1.7	< 30.0	< 30.0	54.0	< 28.3	< 28.3
6400.800	0.5	< 30.0	31.9	54.0	< 30.5	32.4
7315.200	2.4	< 30.0	< 30.0	54.0	< 32.4	< 32.4
8229.600	11.1	< 30.0	< 30.0	54.0	< 41.1	< 41.1
9144.000	12.8	< 30.0	< 30.0	54.0	< 42.8	< 42.8

Note: 1. The spectrum was checked from 25 MHz to 10h harmonics of the fundamental frequency component. All emissions not listed were found to be more than 20 dB below the limits.

2. The symbol of "<" means "or less".

3. The cable loss, antenna factor and preamplifier gain were included in the correction factor.

4. Sample calculation :
   at 912.900 MHz
   Cf + Mr = 32.4 + 56.6 = 89.0 dBμV/m
   Where,
   Cf = Correction Factor
   Mr = Meter Reading

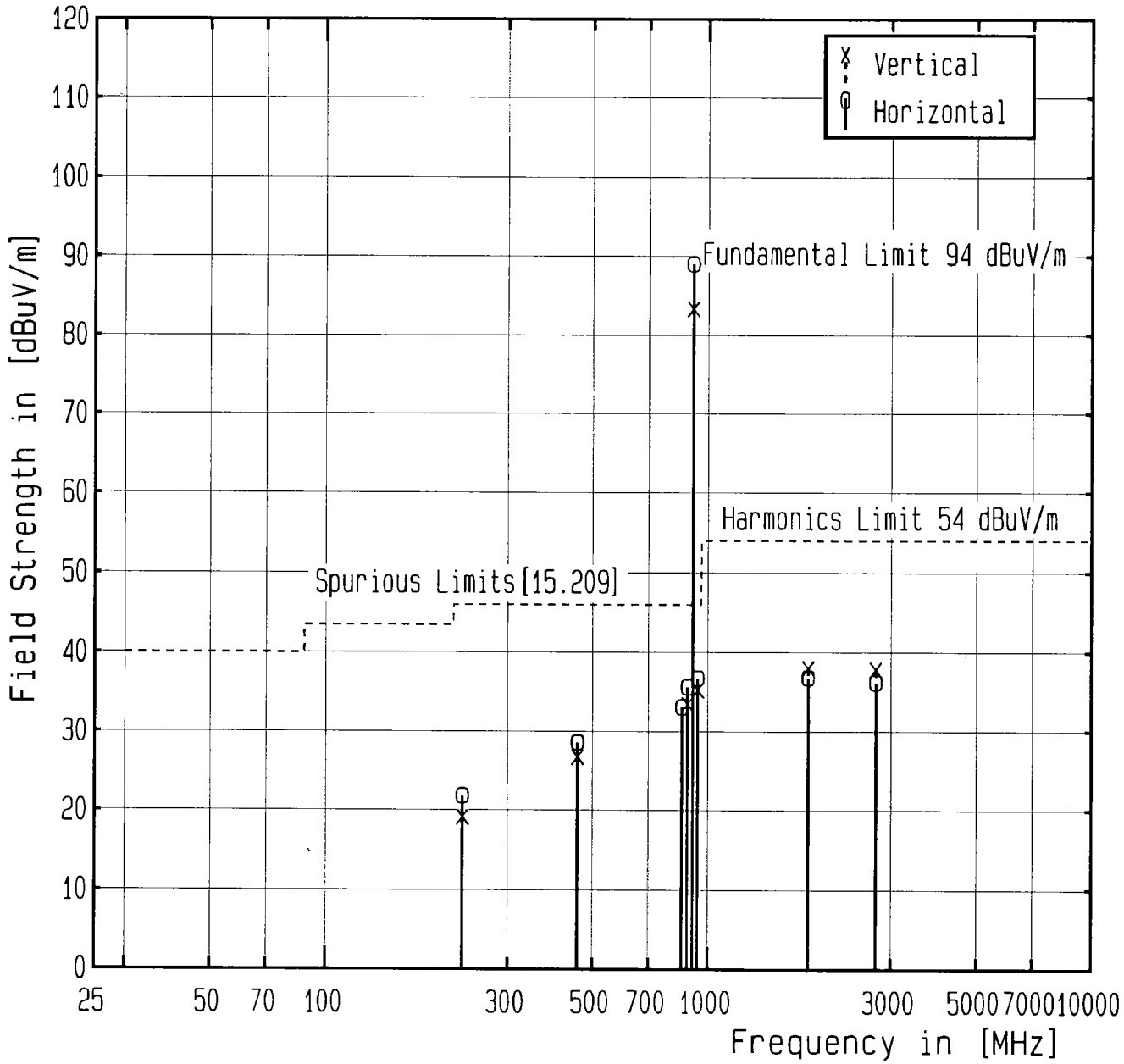
5. Measuring Instrument Setting:
   Below 1000 MHz
   Detector function : CISPR Quasi-peak
   IF Bandwidth : 120 kHz
   Above 1000 MHz
   Detector function : Peak
   IF Bandwidth : 1 MHz
   Video Bandwidth : 10 Hz

6. Specified Limits[§15.249];
   Fundamental emission
   20log(50000[μV/m])=94.0 dBμV/m
   Harmonics emissions
   20log(500[μV/m])=54.0 dBμV/m

Tested by : Shigeru Osawa
Shigeru Osawa
Testing Engineer

Transmitter Fundamental and Spurious Emissions

Model No. : WCS-999T
Operating Frequency : 912.9 MHz
Test Condition :



Transmitter Fundamental and Spurious Emissions

Model No. : WCS-999T
Operating Frequency : 914.4 MHz
Test Condition :