

EMI TEST REPORT

Test Report No. : 22CE0008-YW-1

Applicant: Sony Corporation

Type of Equipment: Transmitter
(Wireless Speaker System)

Model No.: TMR-RF90

Test standard: FCC Part 15 Subpart C §15.207, §15.249

Test Result: Complied

1. This test report shall not be reproduced in full or partial, without the written approval of A-Pex International Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contains a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.
5. This test report does not constitute an endorsement by NIST/NVLAP or U.S. Government.

Date of test: October 18, 2001 **Issued date:** November 5, 2001

Revised date: November 16, 2001

Tested by: 

Naoki Sakamoto
Group Leader of EMC section

Approved by: 

Kazutoyo Nakanishi
Site Operation Manager of EMC section

A-pex International Co., Ltd.

YOKOWA LAB.

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MF060b(22.05.01)

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SECTION 1: Client information

Company name : Sony Corporation

Address : Sinagawa INTERCITY C Tower 2-15-3 konan Minato-ku,
Tokyo, 108-6201, Japan

Telephone Number : +81-3-5769-5640

Facsimile Number : +81-3-5769-5962

Contact Person : Kikuo Murata

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Transmitter / AC Adaptor (Wireless Speaker System)

Model No. : TMR-RF90 / AC-S901 (SRS-RF90RK)

FCC ID : AK8TMRRF90

Serial No. : 2 / 0027

Condition of EUT : Engineering prototype

Rating : TMR-RF90 : DC IN 9.0V
AC-S901 : Input:AC120V / 60Hz, 4W Output:DC9V, 100mA

Country of Manufacture : Korea

Receipt Date of Sample : October 12, 2001

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2.2 Product Description

Sony Corporation Model: TMR-RF90 / AC-S901 (referred to as the EUT in this report) is

Transmitter / AC Adaptor of Wireless Speaker System.

The specification is as follows;

Carrier frequency:	CH1:913.5MHz / CH2 :914.0MHz / CH3 :914.5MHz
Modulation:	FM
Information on antenna:	Integral Antenna

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SECTION 3: Test specification, methods & procedures

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C Section 15.207 and Section 15.249
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators

§ 15.207 Conducted emission limits; general requirements

§ 15.249 Operation in the band 902-928MHz, 2400-2483.5MHz,
5725-5875MHz and 24.0-24.25GHz

3.2 Methods & Procedures

No.	Item	Test Procedure	Specification	Remarks
1	Conducted emission	ANSI C63.4:1992	§ 15.207(a)	-
2	Radiated emission	ANSI C63.4:1992	§ 15.249	3m

3.3 Additions or deviations to standards

No addition, deviation or exclusion has been made from standards.

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SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

The operating mode/system were as follows:

Operation: Transmitting

CH1: 913.5MHz

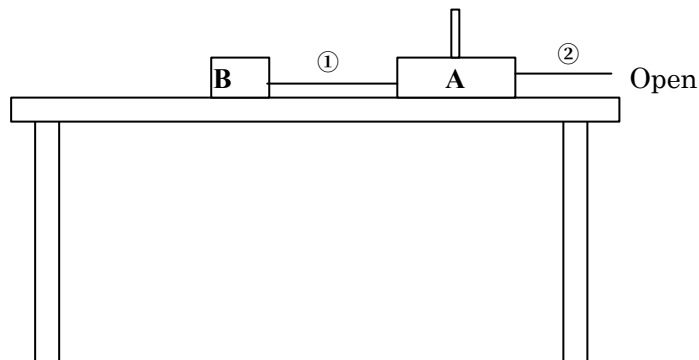
CH2: 914.0MHz

CH3: 914.5MHz

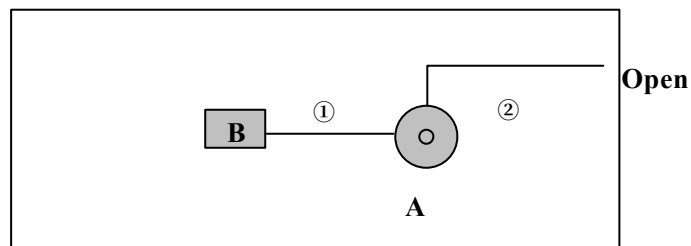
Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2 Configuration and peripherals

Front View



Top View



*Cabling was taken into consideration and test data was taken under worse case conditions.

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Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID
A	Transmitter	TMR-RF90	2	Sony Corporation	AK8TMRRF90 (EUT)
B	AC Adaptor	AC-S901	0027	Sony Corporation	AK8TMRRF90 (EUT)

List of cables used

No.	Name	Length (m)	Shield	Backshell Material	Remark
①	DC Power Cable	2.1	N	Polyvinyl chloride	
②	AV Cable	1.5	Y	Polyvinyl chloride	-

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SECTION 5: Summary of test results

5.1 Test results

No.	Item	Test Procedure	Specification	Worst margin	Result
1	Conducted emission	ANSI C63.4:1992	§ 15.207(a)	12.9dB (0.4500MHz: L1) : CH1	Complied
2	Radiated emission	ANSI C63.4:1992	§ 15.249	Fundamental 7.4dB (913.5MHz: Vertical) : CH1 7.4dB (914.0MHz: Vertical) : CH2 7.2dB (914.5MHz: Vertical) : CH3 Spurious 3.4dB (2.7404GHz: Vertical) : CH1 2.7dB (2.7419GHz: Vertical) : CH2 4.1dB (2.7434GHz: Vertical) : CH3	Complied

A-PEX INTERNATIONAL hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 15 Subpart C.

<-20dB Bandwidth>

Refer to Appendix 3.

5.2 Uncertainty

Conducted Emission Test

The measurement uncertainty (with a 95% confidence level) for this test was ± 2.0 dB.

☐ The data listed in this test report may exceed the test limit because it does not have enough margin.

☒ The data listed in this test report has enough margin, more than site margin.

Radiated Emission Test

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.4 dB.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 3.2 dB.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 5.8 dB.

☒ The data listed in this test report may exceed the test limit because it does not have enough margin.

☐ The data listed in this test report has enough margin, more than site margin.

5.3 Test Location

A-PEX International Co.,Ltd. Yokowa No.2 test site

108 Yokowa-cho, Ise-shi, Mie-ken 516-1106 Japan

Telephone number : +81-596-39-1485

Facsimile number : +81-596-39-0232

This site has been fully described in a report submitted to FCC office, and listed on October 26, 2000

(Registration number: 90411).

*NVLAP Lab. code : 200109-0

5.4 Photographs of test setup

Refer to Appendix 1.

5.5 Test instruments

Refer to Appendix 2.

5.6 Data of EMI Test

Refer to Appendix 3.

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SECTION 6: Conducted emission

6.1 Operating environment

The test was carried out in a shielded room 4.5 x 3.6 x 2.7m.

Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flush with rear of tabletop. All other surfaces of tabletop was at least 80cm from any other grounded conducting surface. I/O cables and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, were individually connected through a LISN to the input power source. All unused 50 Ω connectors of the LISN were resistively terminated in 50 Ω when not connected to the measuring equipment.

A drawing of the set up is shown in the photos of Appendix 1.

6.3 Test conditions

Frequency range : 0.45MHz-30MHz
EUT position : Table top

6.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a shielded room.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a quasi-peak detector and if required, with an average detector.

The EUT was put into operation at Transmitting mode.

The conducted emission measurements were made with the following detector function of the test receiver.

Detector Type : QP
IF Bandwidth : 10kHz

6.5 Results

Summary of the test results: Pass

Date: 2001-10-18

Tested by: N. Sakamoto

SECTION 7: Radiated emission

7.1 Operating environment

The test was carried out in an open site.

Temperature : See data
Humidity : See data

7.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

The rear of EUT, including peripherals was aligned and flush with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged 40cm height to the ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

A drawing of the set up is shown in the photos of Appendix 1.

7.3 Test conditions

Frequency range : 30MHz - 300MHz(Biconical Antenna) / 300MHz - 1000MHz (Logperiodic antenna) /
1GHz - 10GHz (Horn antenna)
Test distance : 3m
EUT position : Table top

7.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on an open test site with a ground plane and at a distance of 3m.

Pre check measurements were performed at high-level of 80-90MHz, 270-290MHz and 500-700MHz in a screened room.

Otherwise the noise from EUT might have been concealed by the ambient noise.

Measurements were performed with quasi-peak and peak detector.

The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

The EUT was put into operation at Transmitting mode.

The radiated emission measurements were made with the following detector function of the test receiver and spectrum analyzer.

Frequency : 30MHz- 1000MHz
Detector Type : QP (Test Receiver)
IF Bandwidth : 120kHz

Frequency : 1GHz- 10GHz
Detector Type : PK (Spectrum Analyzer)
IF Bandwidth : RBW: 1MHz, VBW: 10Hz (AV Limit) / RBW: 1MHz, VBW: 1MHz (PK Limit)

7.5 Results

Summary of the test results: Pass

Date: 2001-10-18 Tested by: N. Sakamoto

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APPENDIX 1: Photographs of test setup

Page 12: Conducted emission

Page 13: Radiated emission

APPENDIX 2: Test instruments

Page 14: Test instruments

APPENDIX 3: Data of EMI test

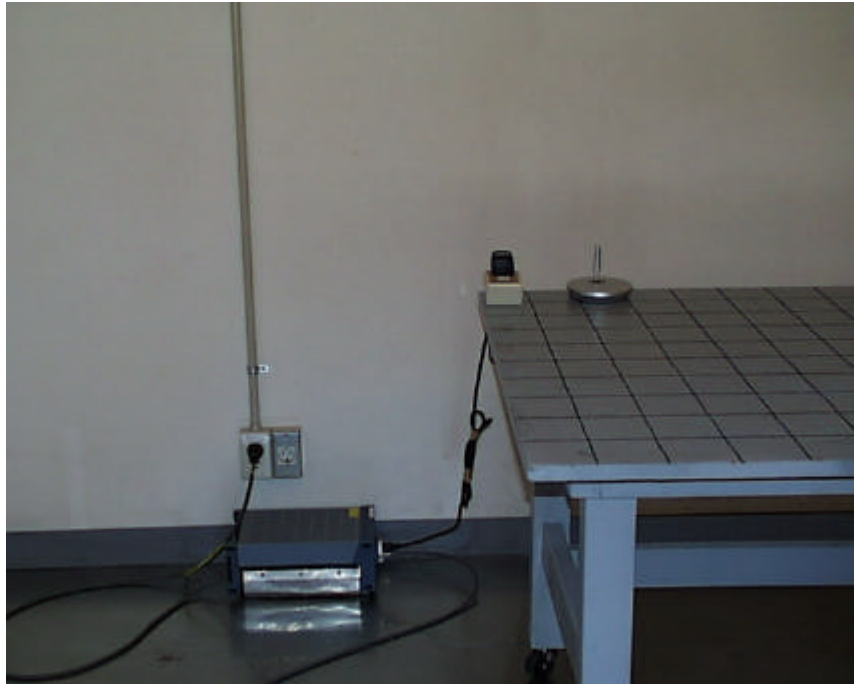
Page 15-19: Conducted emission

Page 20: Radiated Fundamental emission

Page 21-26: -20dB Bandwidth

Page 27-29: Radiated Spurious emission

Conducted emission



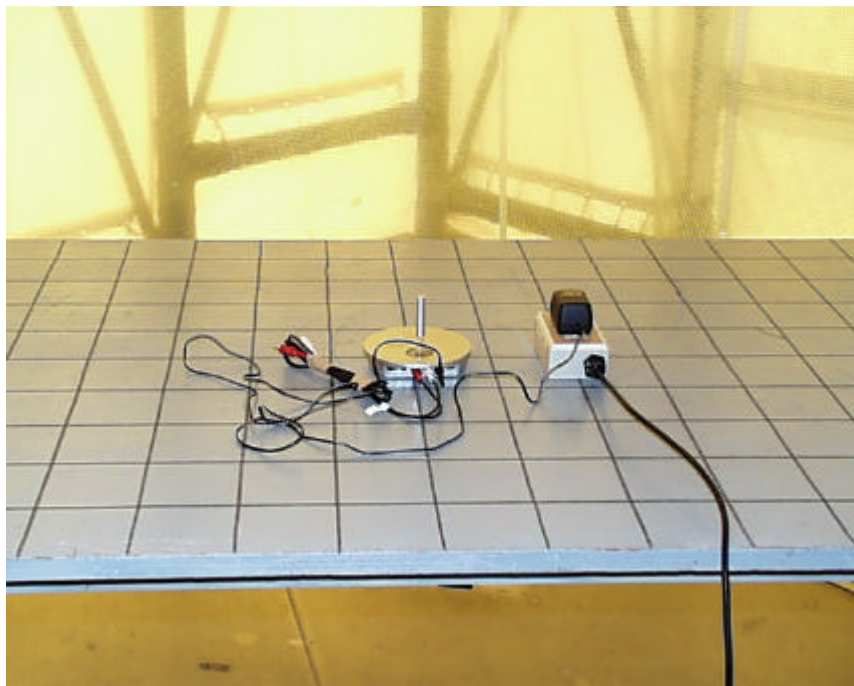
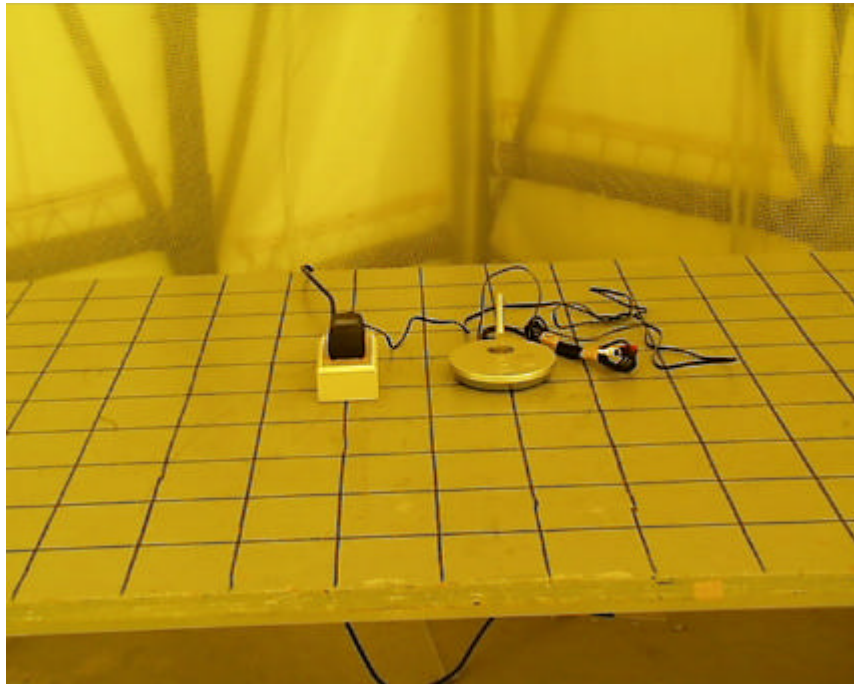
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Radiated emission



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Test Report No : 22CE0008-YW-1

APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No.	Test Item	Calibration Date * Interval(month)
AF-03	Pre Amplifier	Anritsu	MH648A	RE	2001/03/31 * 12
AT-04	Attenuator	Anritsu	MP721B	RE	2001/03/31 * 12
BA-05	Biconical Antenna	Schwarzbeck	BBA9106	RE	2001/05/01 * 12
LA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	RE	2001/05/01 * 12
SA-03	Spectrum Analyzer	Hewlett Packard	8567A	RE / CE	2001/03/31 * 12
TR-03	Test Receiver	Rohde & Schwarz	ESHS30	CE	2001/04/24 * 12
TR-04	Test Receiver	Rohde & Schwarz	ESVS10	RE	2001/04/24 * 12
LS-02	LISN	Rohde & Schwarz	ESH3-Z5	CE	2000/10/31 * 12
CC-20RC	Yokowa No.2 open coaxial(0.01-1000MHz)	A-PEX	CC-21,CC-22,C C-23,CC-24,CC -25,CC-26,CC-2 7,SW-21,SW-22	RE	2001/03/31 * 12
CC-25C	Yokowa No.2 shield coaxial(0.01MHz-30MHz)	A-PEX	CC-25,CC-26,C C-27,CC-28,CC -29,SW-21,SW-2 2	CE	2001/03/31 * 12
YOATS-02	Open Test Site	JSE	10m	RE	2001/05/04 * 12
AF-04	Pre Amplifier	Hewlett Packard	8449B	RE	2000/11/05 * 12
HA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2001/05/20 * 12
SA-05	Spectrum Analyzer	Advantest	R3271	RE	2001/02/01 * 12
CC-C28G	Microwave Cable	Suhner	CC-C2,CC-C8	RE	2001/09/14 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

CE: Conducted emission,

RE: Radiated emission,

DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.2 OPEN TEST SITE
Report No. : 22CE0008-YW-1

Applicant : Sony Corporation
Kind of Equipment : Wireless Speaker System
Model No. : TMR-RF90
Serial No. :
Power : DC9V
Mode : Transmitting (CH1:913.5MHz)
Remarks : FCC ID:AK8TMRRF90
Date : 10/18/2001
Phase : Single Phase
Temperature : 20 °C
Humidity : 69 %
Regulation : FCC Part15.207


Engineer : Naoki Sakamoto

No.	FREQ. [MHz]	READING (N)		READING (L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP	AV	QP	AV				QP	AV	QP	AV	QP	AV
		[dBuV]		[dBuV]					[dBuV]		[dBuV]		[dB]	
1.	0.4500	34.2	-	34.8	-	0.1	0.2	0.0	35.1	-	48.0	0.0	12.9	-
2.	0.5022	31.6	-	32.6	-	0.1	0.2	0.0	32.9	-	48.0	0.0	15.1	-
3.	0.6991	23.0	-	23.6	-	0.1	0.2	0.0	23.9	-	48.0	0.0	24.1	-
4.	0.7921	25.3	-	26.2	-	0.1	0.2	0.0	26.5	-	48.0	0.0	21.5	-
5.	0.8109	25.0	-	26.0	-	0.1	0.2	0.0	26.3	-	48.0	0.0	21.7	-
6.	0.9903	15.0	-	17.0	-	0.2	0.2	0.0	17.4	-	48.0	0.0	30.6	-

CALCULATION: READING + LISN FACTOR + CABLE LOSS + ATTEN.

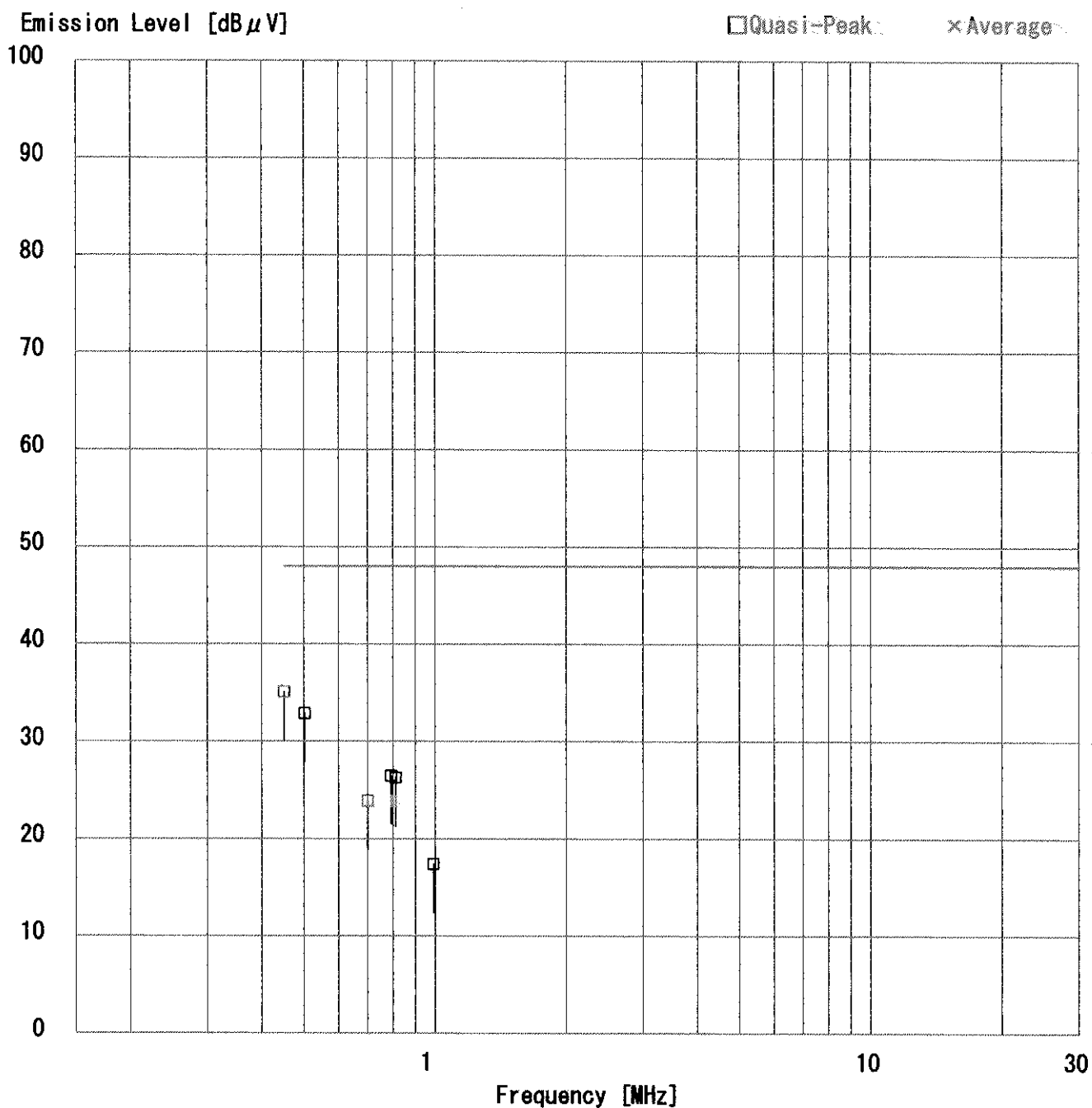
All other emissions are more than 20dB below the limits.

DATA OF CONDUCTION TEST

A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.2 OPEN TEST SITE
Report No. : 22CE0008-YW-1

Applicant : Sony Corporation
Kind of Equipment : Wireless Speaker System
Model No. : TMR-RF90
Serial No. :
Power : DC9V
Mode : Transmitting (CH1:913.5MHz)
Remarks : FCC ID:AK8TMRRF90
Date : 10/18/2001
Phase : Single Phase
Temperature : 20 °C
Humidity : 69 %
Regulation : FCC Part15. 207


Engineer : Naoki Sakamoto



DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.2 OPEN TEST SITE

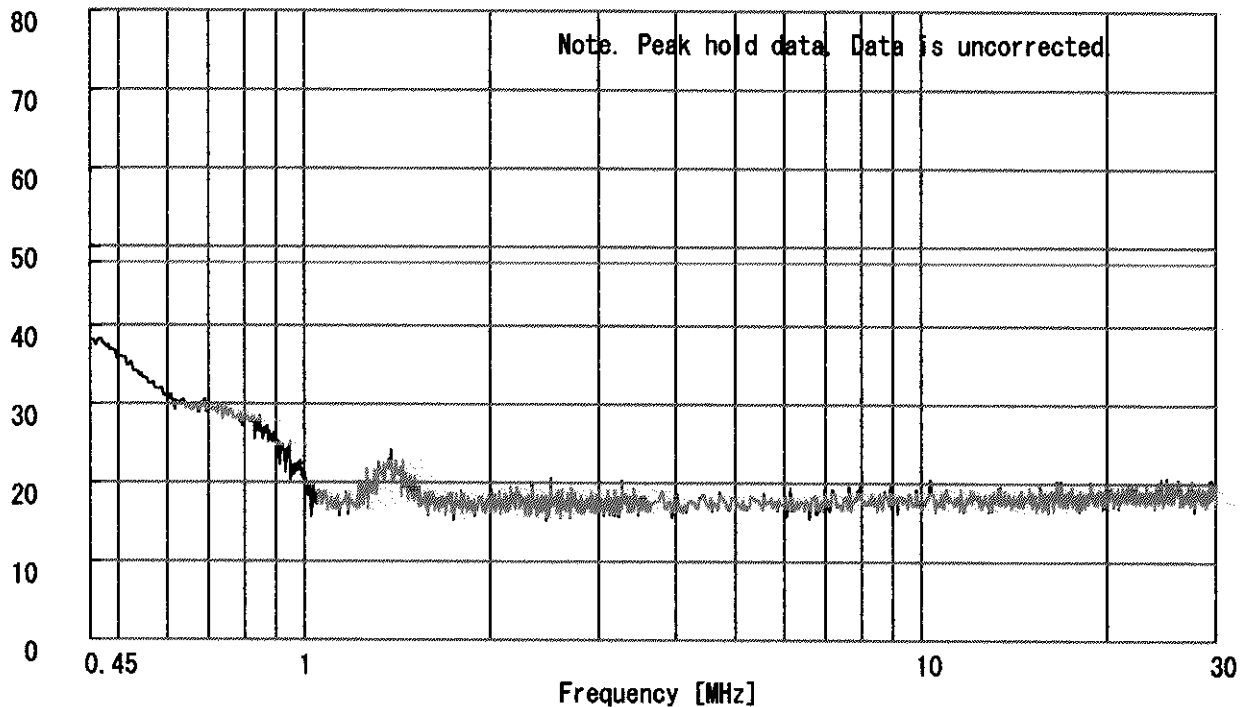
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Applicant : Sony Corporation
Kind of Equipment : Wireless Speaker System
Model No. : TMR-RF90
Serial No. :
Power : DC9V
Mode : Transmitting (CH1:913.5MHz)
Remarks : FCC ID:AK8TMRRF90
Date : 10/18/2001
Phase : Single Phase
Temperature : 20 °C
Humidity : 69 %
Regulation 1 : FCC Part15.207
Regulation 2 : None

Engineer : Naoki Sakamoto

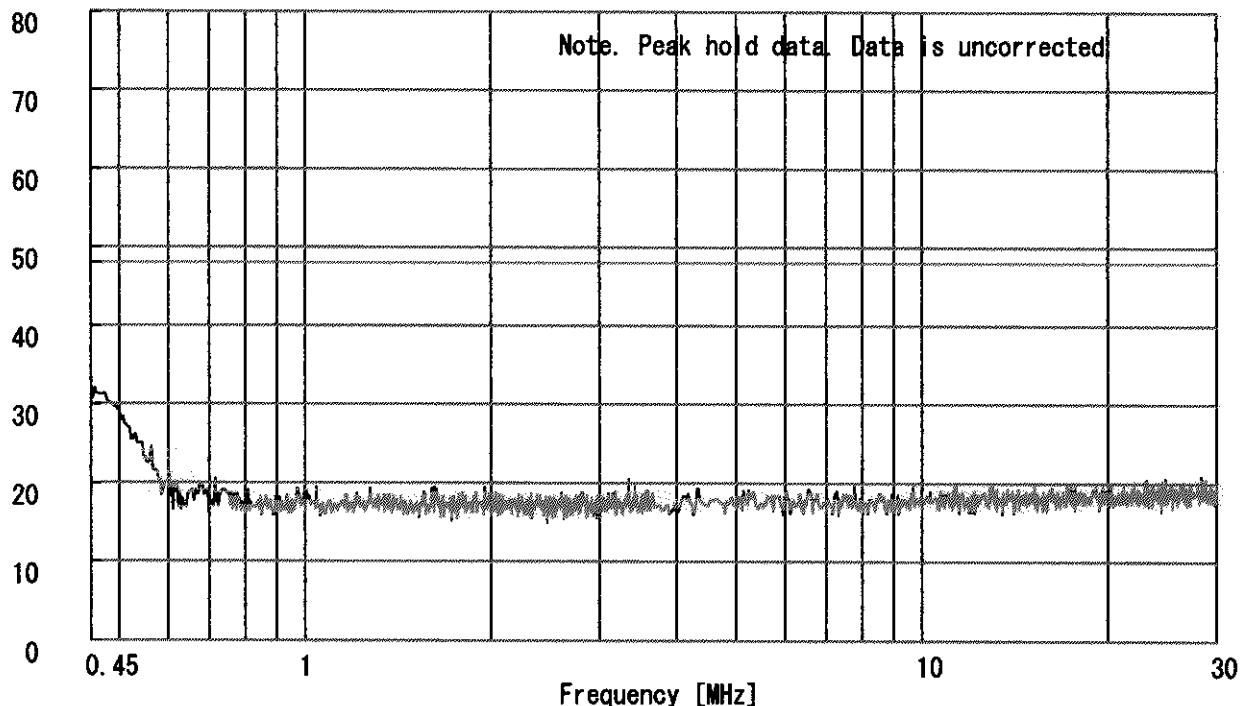
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

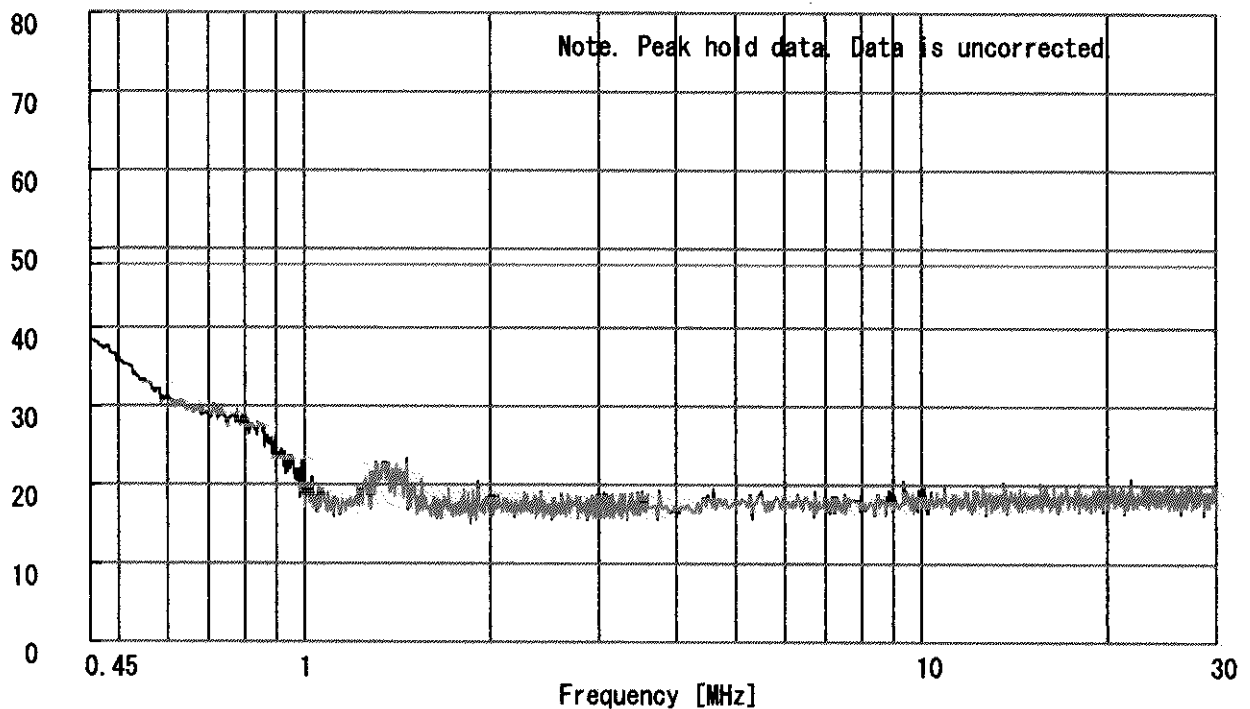
A-PEX INTERNATIONAL CO., LTD.
YOKOWA No.2 OPEN TEST SITE
Report No. : 22CE0008-YW-1

Applicant : Sony Corporation
Kind of Equipment : Wireless Speaker System
Model No. : TMR-RF90
Serial No. :
Power : DC9V
Mode : Transmitting (CH2:914MHz)
Remarks : FCC ID:AK8TMRRF90
Date : 10/18/2001
Phase : Single Phase
Temperature : 20 °C
Humidity : 69 %
Regulation 1 : FCC Part15.207
Regulation 2 : None

Engineer : Naoki Sakamoto

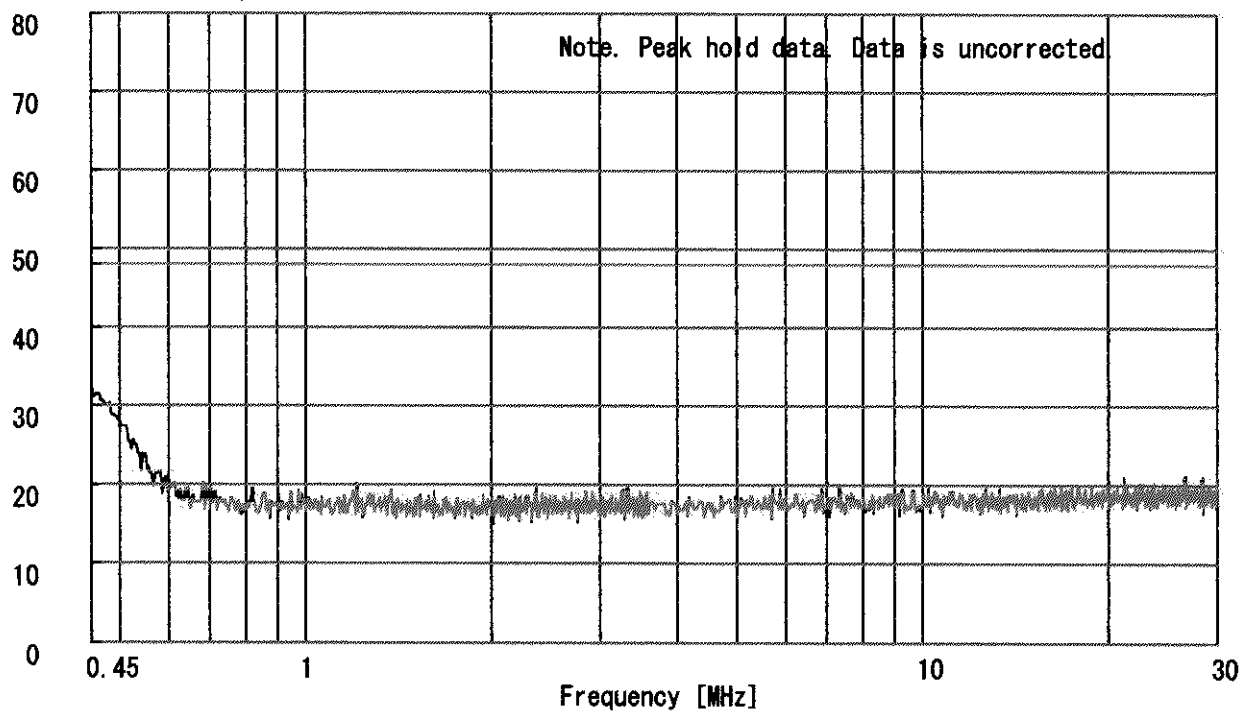
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

A-PEX INTERNATIONAL CO., LTD.

YOKOWA No.2 OPEN TEST SITE

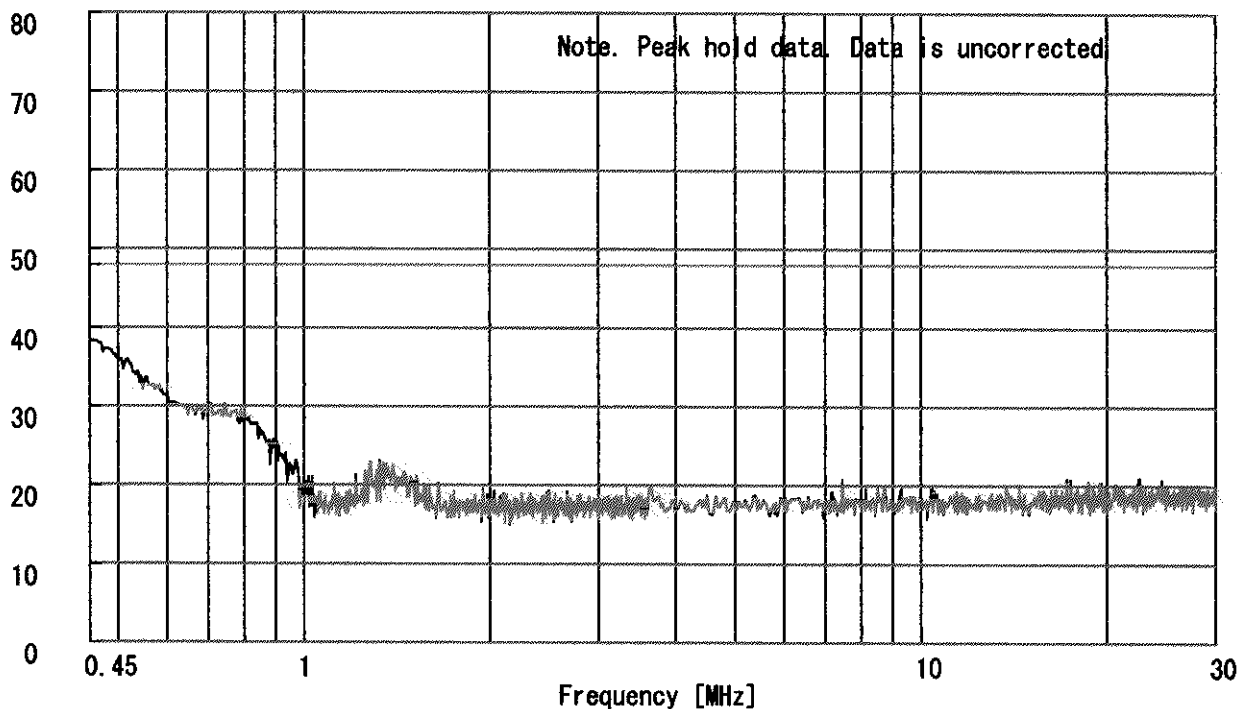
Report No. : 22CE0008-YW-1

Applicant : Sony Corporation
Kind of Equipment : Wireless Speaker System
Model No. : TMR-RF90
Serial No. :
Power : DC9V
Mode : Transmitting (CH3:914.5MHz)
Remarks : FCC ID:AK8TMRRF90
Date : 10/18/2001
Phase : Single Phase
Temperature : 20 °C
Humidity : 69 %
Regulation 1 : FCC Part15.207
Regulation 2 : None

Engineer : Naoki Sakamoto

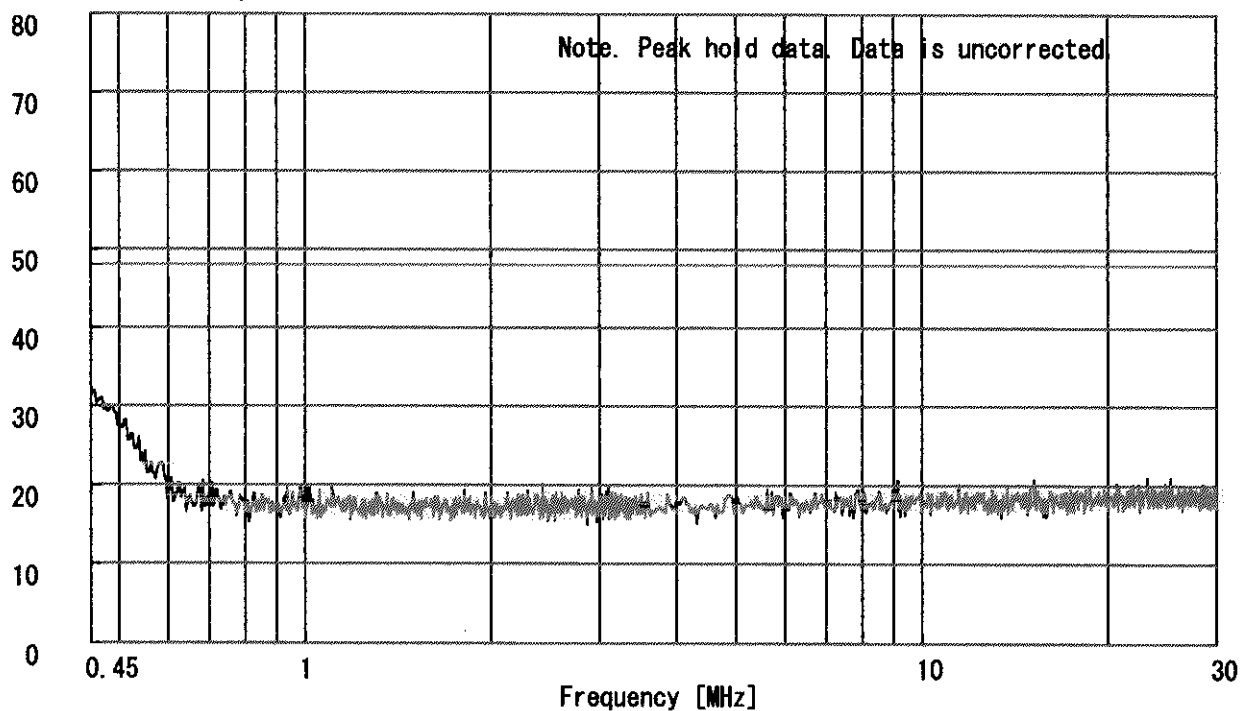
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF FUNDAMENTAL EMISSIONS

A-PEX INTERNATIONAL CO., LTD.
YOKOWA NO.3 OPEN SITE

COMPANY : Sony Corporation
EQUIPMENT : Wireless Speaker System
MODEL : TMR-RF90
SERIAL :
FCC ID : AK8TMRRF90
POWER : AC120V/60Hz
DESCRIPTION : Transmitting

REPORT NO : 22CE008-YW-1
REGULATION : Fcc Part15SubpartC 249
TEST DISTANCE : 3m
DATE : 2001/10/18
Temp./Humi. : 20°C/69%

ENGINEER : Naoki Sakamoto

T/R : QP Detect

Ch No.	FREQ [MHz]	T/R READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	RESULT		Limit AV [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1	913.5	71.9	77.8	22.6	26.6	6.9	5.8	80.6	86.5	93.9	13.3	7.4

Ch No.	FREQ [MHz]	T/R READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	RESULT		Limit AV [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
2	914.0	71.8	77.8	22.6	26.6	6.9	5.8	80.5	86.5	93.9	13.4	7.4

Ch No.	FREQ [MHz]	T/R READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	RESULT		Limit AV [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
3	914.5	71.2	78.0	22.6	26.6	6.9	5.8	79.9	86.7	93.9	14.0	7.2

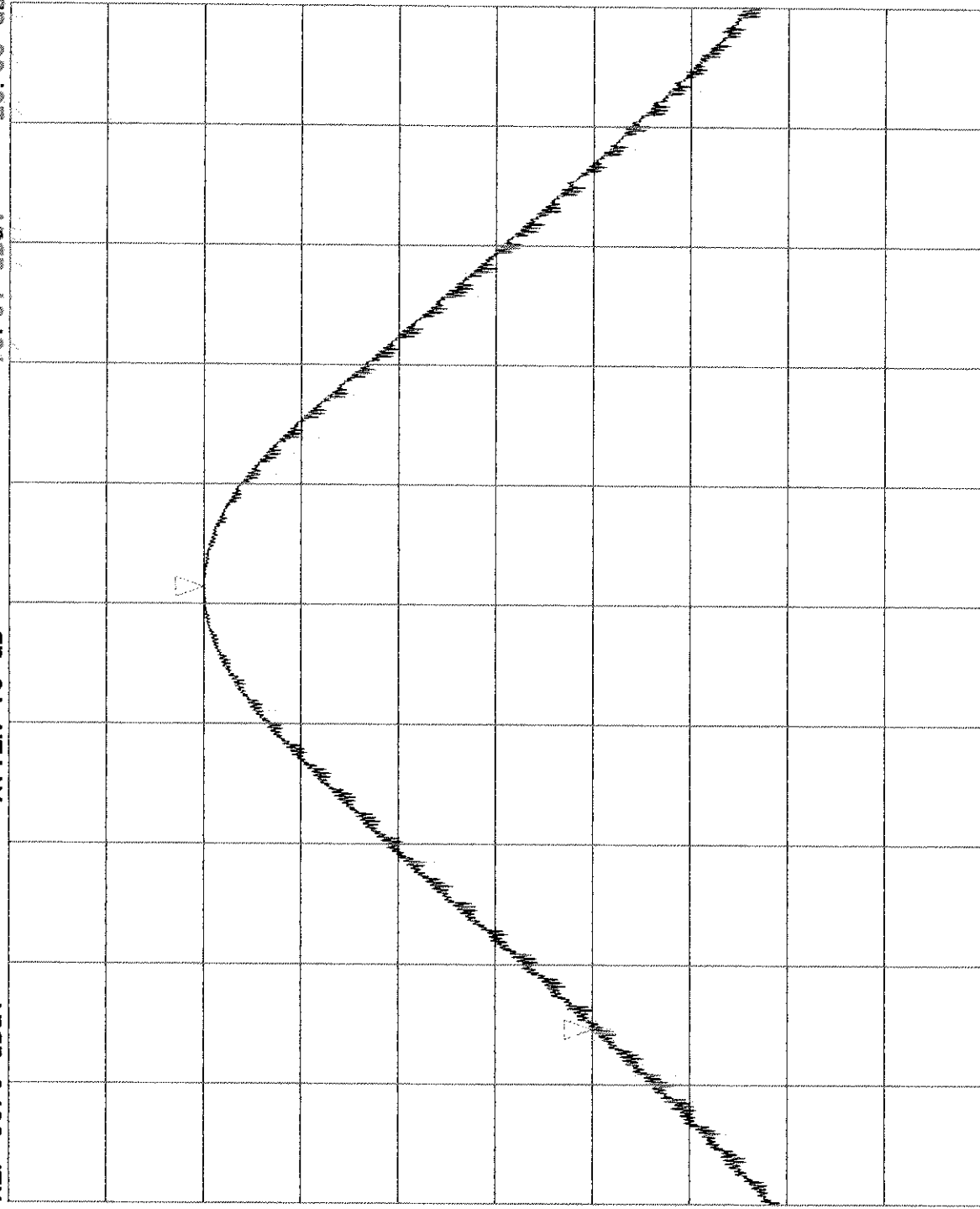
RESULT=Reading + ANT Factor - Amp Gain + CABLE LOSS + ATTEN.

Sony Corporation/Model: TMR-RF90/FCC ID: AK8TMRRF90
20dB band width (CH1: 913.5MHz) / 22CE0008-YW-1
REF 85.0 dBuV
ATTEN 10 dB

MAKER
913.4375 MHz
75.01 dBuV

ΔMAKER
-184.0000 kHz
-20.00 dBuV

5 dB/

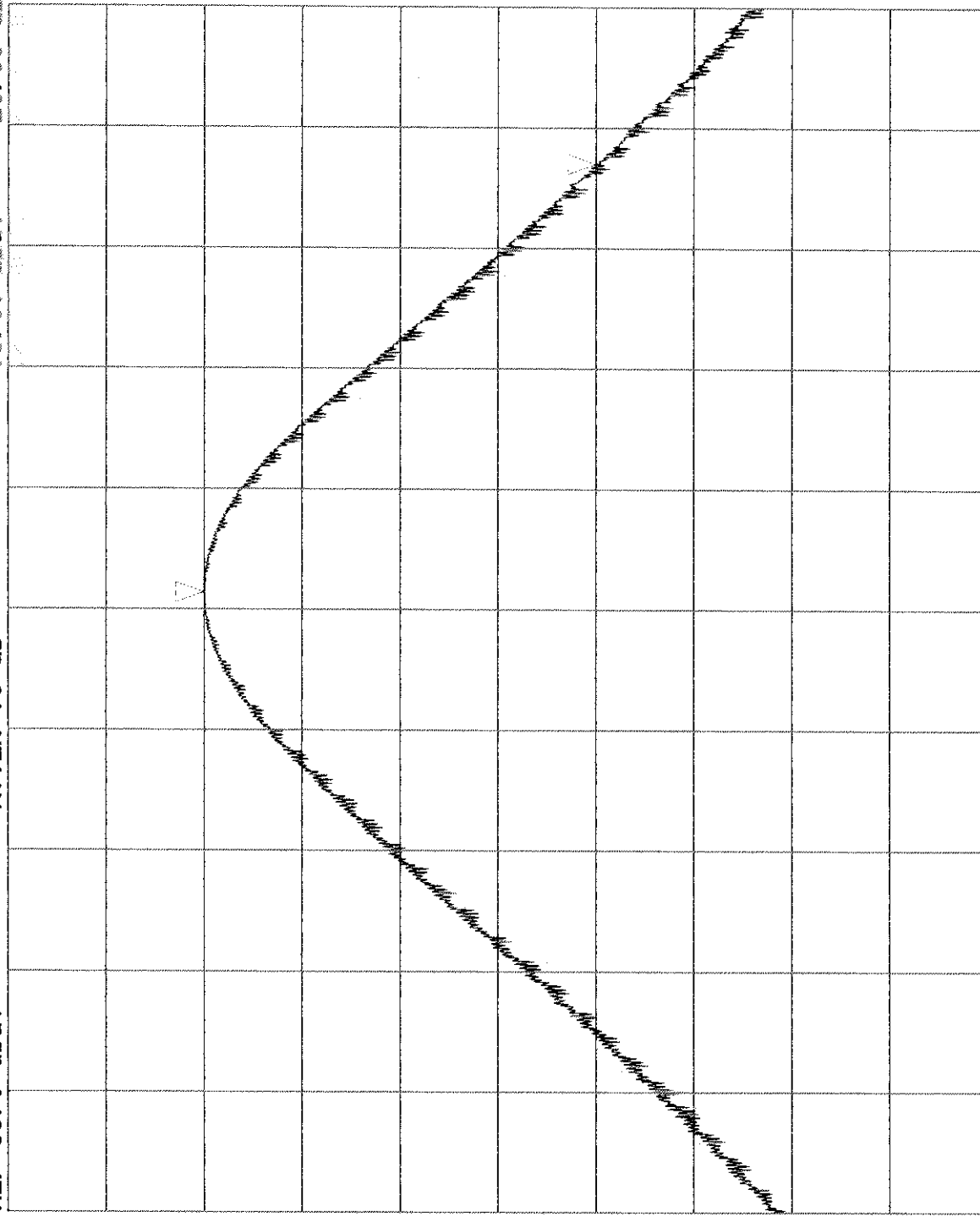


START 913.1805 MHz
RES BW 100 kHz
STOP 913.6805 MHz
SWP 20 msec
VBW 100 kHz

Sony Corporation/Model: TMR-RF90/FCC ID: AK8TMRRF90
20dB band width (CH1: 913.5MHz) / 22CE0008-YW-1
REF 85.0 dBuV
ATTEN 10 dB

NAKER
913.4375 MHz
75.01 dBuV
 Δ NAKER
178.0000 kHz
-20.00 dBuV

5 dB/



START 913.1805 MHz
RES BW 100 kHz

VBW 100 kHz

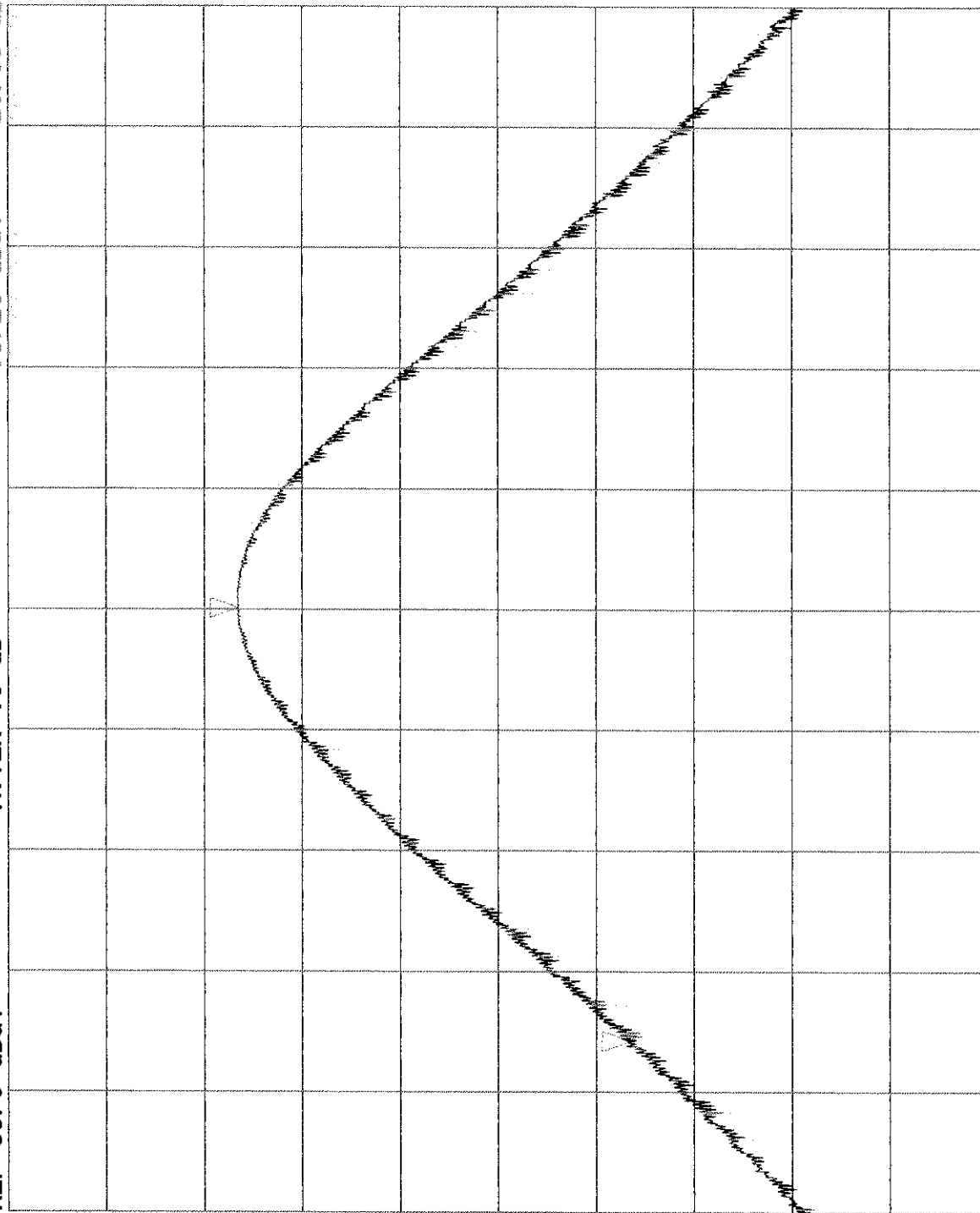
STOP 913.6805 MHz
SWP 20 msec

Sony Corporation/Model:TMR-RF90/FCC ID:AK8TMRRF90
20dB band width(CH2:914MHz)/22CE0008-YW-1
REF 85.0 dBuV
ATTEN 10 dB

NAKER
913.9235 MHz
73.26 dBuV

ΔMAKER
-179.5000 kHz
-20.00 dBuV

5 dB/



START 913.673 MHz
RES BW 100 kHz

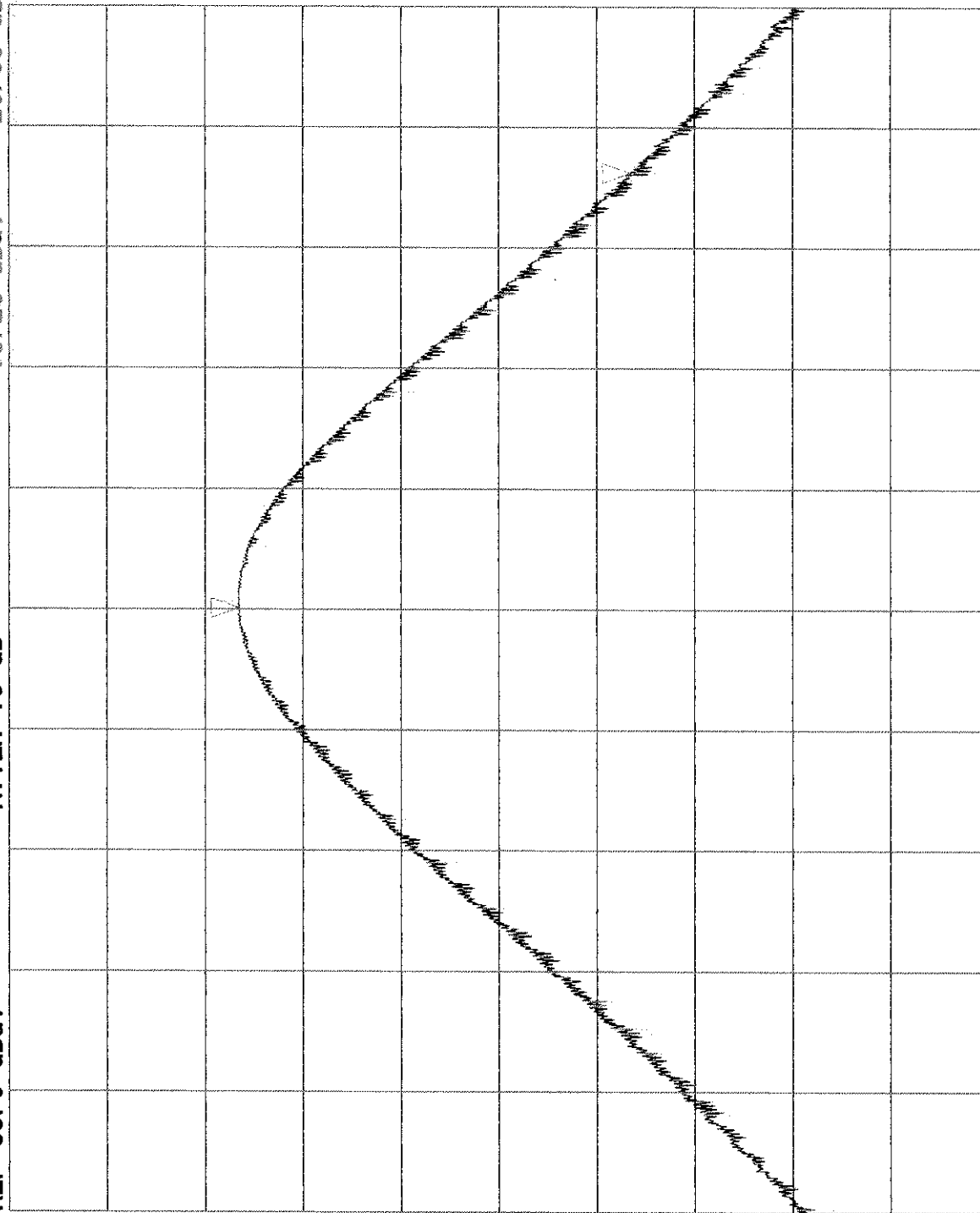
VBW 100 kHz

STOP 914.173 MHz
SWP 20 msec

Sony Corporation/Model:TMR-RF90/FCC ID:AK8TMRRF90
20dB band width(CH2:914MHz)/22CE0008-YW-1
REF 85.0 dBuV
ATTEN 10 dB

MAKER
913.9235 MHz
73.26 dBuV
ΔMAKER
180.5000 kHz
-20.00 dBuV

5 dB/



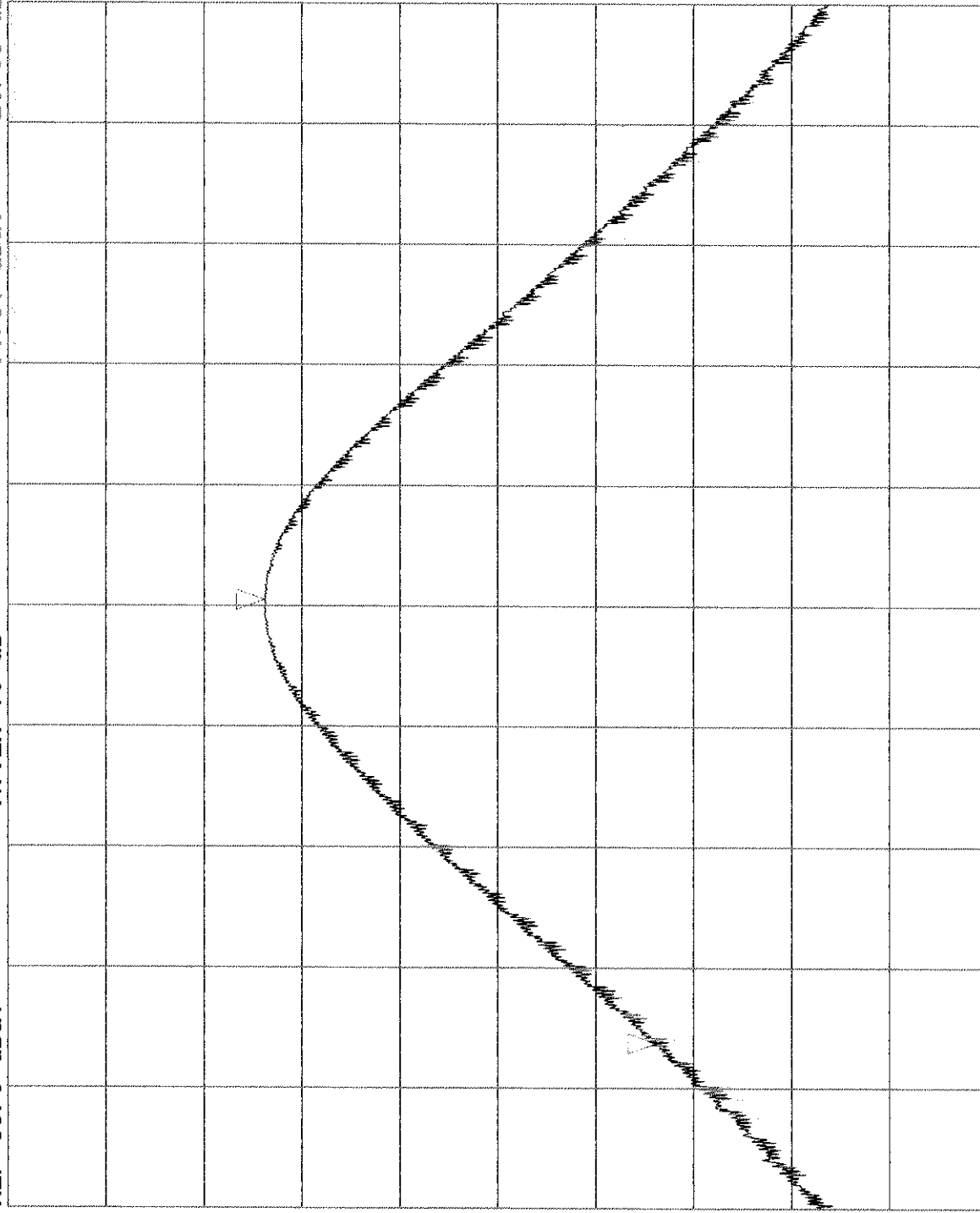
START 913.673 MHz
RES BW 100 kHz

VBW 100 kHz

STOP 914.173 MHz
SWP 20 msec

Sony Corporation/Model: TMR-RF90/FCC ID: AK8TMRRF90
20dB band width (CH3: 914.5MHz) / 22CE0008-YW-1
REF 85.0 dBuV
ATTEN 10 dB
MAKER
914.4460 MHz
71.91 dBuV
 Δ MAKER
-184.0000 kHz
-20.00 dBuV

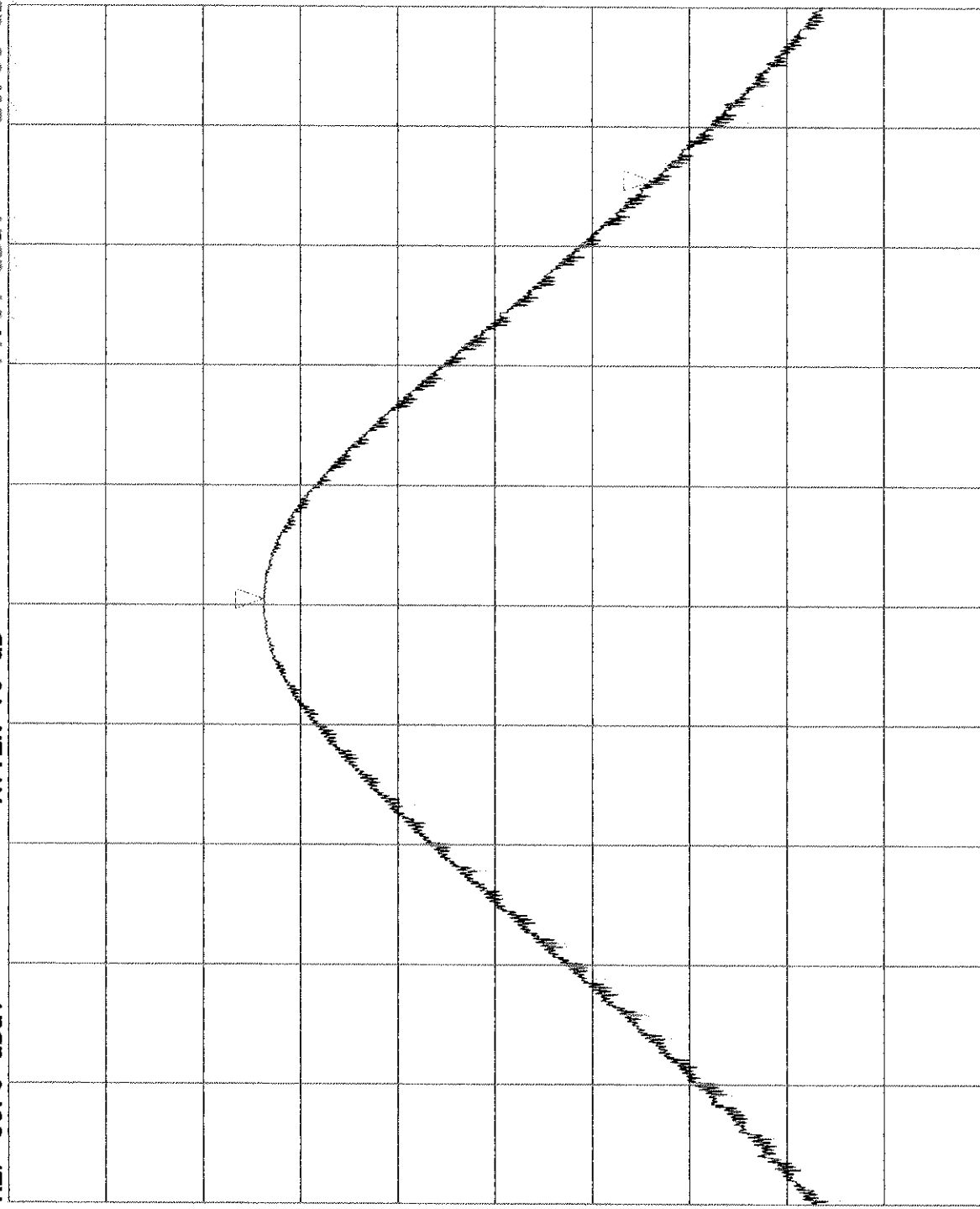
5 dB/



START 914.1935 MHz
RES BW 100 kHz
STOP 914.6935 MHz
SWP 20 msec
VBW 100 kHz

Sony Corporation/Model: TMR-RF90/FCC ID: AK8TMRRF90
20dB band width (CH3: 914.5MHz) / 22CE0008-YW-1
REF 85.0 dBuV
ATTEN 10 dB
MAKER 914.4460 MHz
ΔMAKER 175.0000 kHz
71.91 dBuV
-20.00 dBuV

5 dB/



START 914.1935 MHz
RES BW 100 kHz
VBW 100 kHz
STOP 914.6935 MHz
SWP 20 msec

DATA OF RADIATED SPURIOUS EMISSIONS

A-PEX INTERNATIONAL CO., LTD.
YOKOWA NO.2 OPEN SITE

COMPANY : Sony Corporation
EQUIPMENT : Wireless Speaker System
MODEL : TMR-RF90
POWER : DC9V
DESCRIPTION : Transmitting(CH1:913.5MHz)
DATE : 10/18/2001
Temp./Humi. : 20°C/69%

REPORT NO : 22CE0008YW-1
REGULATION : Fcc 15C §15.209(a)
TEST DISTANCE : 3m
Fcc ID : AK8TMRRF90

ENGINEER : Naoki Sakamoto

S/A RBW: 1MHz, VBW:10Hz

No.	FREQ [GHz]	READING		ANT Factor [dB]	ANP GAIN [dB]	CABLE LOSS [dB]	RESULT		Limit AV [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]				HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1	1.8269	34.1	38.5	29.3	34.5	4.7	33.6	38.0	53.9	20.3	15.9
2	2.7404	46.8	47.8	31.6	34.8	5.9	49.5	50.5	53.9	4.4	3.4
3	3.6539	32.4	31.9	32.2	34.5	6.7	36.8	36.3	53.9	17.1	17.6
4	4.5672	30.4	30.8	34.5	34.6	7.8	38.1	38.5	53.9	15.8	15.4
5	5.4810	27.3	28.0	36.1	34.4	8.3	37.3	38.0	53.9	16.6	15.9
6	6.3945	27.5	27.9	37.8	34.5	9.1	39.9	40.3	53.9	14.0	13.6
7	7.3080	28.0	28.2	39.2	34.9	10.1	42.4	42.6	53.9	11.5	11.3
8	8.2215	31.7	31.9	38.5	35.2	10.5	45.5	45.7	53.9	8.4	8.2
9	9.1350	32.5	32.5	40.0	35.1	10.9	48.3	48.3	53.9	5.6	5.6

S/A RBW: 1MHz, VBW: 1MHz

No.	FREQ [GHz]	READING		ANT Factor [dB]	ANP GAIN [dB]	CABLE LOSS [dB]	RESULT		Limit PK [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]				HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1	1.8270	44.5	47.8	29.3	34.5	4.7	44.0	47.3	73.9	29.9	26.6
2	2.74047	45.4	49.4	31.6	34.8	5.9	48.1	52.1	73.9	25.8	21.8
3	3.6539	42.8	42.9	32.2	34.5	6.7	47.2	47.3	73.9	26.7	26.6
4	4.5674	40.1	40.7	34.5	34.6	7.8	47.8	48.4	73.9	26.1	25.5
5	5.4810	37.5	38.5	36.1	34.4	8.3	47.5	48.5	73.9	26.4	25.4
6	6.3945	38.3	39.2	37.8	34.5	9.1	50.7	51.6	73.9	23.2	22.3
7	7.3080	38.4	39.0	39.2	34.9	10.1	52.8	53.4	73.9	21.1	20.5
8	8.2215	43.4	42.7	38.5	35.2	10.5	57.2	56.5	73.9	16.7	17.4
9	9.1350	42.6	42.8	40.0	35.1	10.9	58.4	58.6	73.9	15.5	15.3

RESULT=Reading + ANT Factor + CABLE LOSS - AMP GAIN

Except for the above table : All other spurious emissions are more than 20dB below the limit

DATA OF RADIATED SPURIOUS EMISSIONS

A-PEX INTERNATIONAL CO., LTD.
YOKOWA NO.2 OPEN SITE

COMPANY : Sony Corporation
EQUIPMENT : Wireless Speaker System
MODEL : TMR-RF90
POWER : DC9V
DESCRIPTION : Transmitting(CH2:914. MHz)
DATE : 10/18/2001
Temp./Humi. : 20℃/69%

REPORT NO : 22CE0008YW-1
REGULATION : Fcc 15C § 15.209(a)
TEST DISTANCE : 3m
Fcc ID : AK8TMRRF90

ENGINEER : Naoki Sakamoto

S/A RBW:1MHz, VBW:10Hz

No.	FREQ [GHz]	READING		ANT Factor [dB]	ANP GAIN [dB]	CABLE LOSS [dB]	RESULT		Limit AV [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]				HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1	1.8279	38.2	42.5	29.3	34.5	4.7	37.7	42.0	53.9	16.2	11.9
2	2.7419	45.7	48.5	31.6	34.8	5.9	48.4	51.2	53.9	5.5	2.7
3	3.6558	32.3	31.5	32.2	34.5	6.7	36.7	35.9	53.9	17.2	18.0
4	4.5697	31.0	29.8	34.5	34.6	7.8	38.7	37.5	53.9	15.2	16.4
5	5.4840	27.4	27.1	36.1	34.4	8.3	37.4	37.1	53.9	16.5	16.8
6	6.3980	27.5	27.3	37.8	34.5	9.1	39.9	39.7	53.9	14.0	14.2
7	7.3120	28.2	28.0	39.2	34.9	10.1	42.6	42.4	53.9	11.3	11.5
8	8.2260	31.8	31.7	38.5	35.2	10.5	45.6	45.5	53.9	8.3	8.4
9	9.1400	32.4	32.4	40.0	35.1	10.9	48.2	48.2	53.9	5.7	5.7

S/A RBW:1MHz, VBW:1MHz

No.	FREQ [GHz]	READING		ANT Factor [dB]	ANP GAIN [dB]	CABLE LOSS [dB]	RESULT		Limit PK [dB μ V/m]	MARGIN	
		HOR [dB μ V]	VER [dB μ V]				HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1	1.8281	44.6	45.4	29.3	34.5	4.7	44.1	44.9	73.9	29.8	29.0
2	2.7420	46.6	48.8	31.6	34.8	5.9	49.3	51.5	73.9	24.6	22.4
3	3.6559	40.9	40.7	32.2	34.5	6.7	45.3	45.1	73.9	28.6	28.8
4	4.5697	40.1	40.5	34.5	34.6	7.8	47.8	48.2	73.9	26.1	25.7
5	5.4840	38.0	37.8	36.1	34.4	8.3	48.0	47.8	73.9	25.9	26.1
6	6.3980	38.9	38.5	37.8	34.5	9.1	51.3	50.9	73.9	22.6	23.0
7	7.3120	38.3	38.6	39.2	34.9	10.1	52.7	53.0	73.9	21.2	20.9
8	8.2260	42.8	42.3	38.5	35.2	10.5	56.6	56.1	73.9	17.3	17.8
9	9.1400	42.8	43.5	40.0	35.1	10.9	58.6	59.3	73.9	15.3	14.6

RESULT=Reading + ANT Factor + CABLE LOSS - AMP GAIN

Except for the above table : All other spurious emissions are more than 20dB below the limit

DATA OF RADIATED SPURIOUS EMISSIONS

A-PEX INTERNATIONAL CO., LTD.
YOKOWA NO.2 OPEN SITE

COMPANY : Sony Corporation
EQUIPMENT : Wireless Speaker System
MODEL : TMR-RF90
POWER : DC9V
DESCRIPTION : Transmitting(CH3:914.5MHz)
DATE : 10/18/2001
Temp./Humi. : 20°C/69%

REPORT NO : 22CE0008YW-1
REGULATION : Fcc 15C § 15.209(a)
TEST DISTANCE : 3m
Fcc ID : AK8TMRRF90

ENGINEER : Naoki Sakamoto

S/A RBW: 1MHz, VBW:10Hz

No.	FREQ [GHz]	READING		ANT Factor [dB]	ANP GAIN [dB]	CABLE LOSS [dB]	RESULT		Limit AV [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]				HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1	1.8290	33.8	41.6	29.3	34.5	4.7	33.3	41.1	53.9	20.6	12.8
2	2.7434	44.6	47.1	31.6	34.8	5.9	47.3	49.8	53.9	6.6	4.1
3	3.6579	33.3	32.4	32.2	34.5	6.7	37.7	36.8	53.9	16.2	17.1
4	4.5724	32.7	32.9	34.5	34.6	7.8	40.4	40.6	53.9	13.5	13.3
5	5.4870	27.6	27.5	36.1	34.4	8.3	37.6	37.5	53.9	16.3	16.4
6	6.4015	27.7	27.7	37.8	34.5	9.1	40.1	40.1	53.9	13.8	13.8
7	7.3160	28.3	28.2	39.2	34.9	10.1	42.7	42.6	53.9	11.2	11.3
8	8.2305	32.0	31.8	38.5	35.2	10.5	45.8	45.6	53.9	8.1	8.3
9	9.1450	32.5	32.4	40.0	35.1	10.9	48.3	48.2	53.9	5.6	5.7

S/A RBW: 1MHz, VBW:1MHz

No.	FREQ [GHz]	READING		ANT Factor [dB]	ANP GAIN [dB]	CABLE LOSS [dB]	RESULT		Limit PK [dB μV/m]	MARGIN	
		HOR [dB μV]	VER [dB μV]				HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1	1.8290	43.2	45.9	29.3	34.5	4.7	42.7	45.4	73.9	31.2	28.5
2	2.7435	47.3	48.7	31.6	34.8	5.9	50.0	51.4	73.9	23.9	22.5
3	3.6580	40.6	39.5	32.2	34.5	6.7	45.0	43.9	73.9	28.9	30.0
4	4.6559	39.5	41.6	34.5	34.6	7.8	47.2	49.3	73.9	26.7	24.6
5	5.4870	37.9	38.0	36.1	34.4	8.3	47.9	48.0	73.9	26.0	25.9
6	6.4015	38.1	38.7	37.8	34.5	9.1	50.5	51.1	73.9	23.4	22.8
7	7.3160	38.4	39.7	39.2	34.9	10.1	52.8	54.1	73.9	21.1	19.8
8	8.2305	42.1	42.9	38.5	35.2	10.5	55.9	56.7	73.9	18.0	17.2
9	9.1450	42.4	43.8	40.0	35.1	10.9	58.2	59.6	73.9	15.7	14.3

RESULT=Reading + ANT Factor + CABLE LOSS - AMP GAIN

Except for the above table : All other spurious emissions are more than 20dB below the limit