

TEST REPORT

Issue Date: March 14, 2005

Roland Report No. : RJA02404

Manufacturer : Roland Corporation
5-3, Shinmiyakoda 1-chome, Hamamatsu, Shizuoka, 431-2103 Japan
PHONE (053) 428-5095, FAX (053) 428-5097

Description of Device : Digital Piano

a) Category : Class B personal computers & peripherals

b) FCC ID : SOPRG-7

c) Trade Name : Roland

d) Model No. : RG-7

e) Serial No. : ZT20114

f) Date of Manufacture : February 25, 2005

g) Power Supply : 117 V AC 60 Hz

h) EUT Grounding : Grounding by power supply cord.

Regulation Applied and Measurement Procedure : ■ FCC Rules and Regulations Part 15 Subpart B
ANSI C63.4-2003
■ Canadian Regulation ICES-003
(CSA C108.8 - M1983)

Measurement Results : The results obtained from the measuring of the above-mentioned device are as shown in the attached sheets.

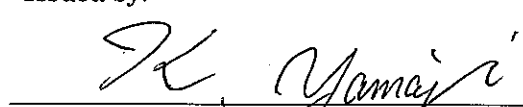
Test Result : Passed

Approved by:



Tatsuro Horiuchi
Manager
Roland Miyakoda EMC Testing
Laboratory

Issued by:



Kazunori Yamaji
Roland Miyakoda EMC Testing
Laboratory

1. TEST CONDITIONS

1.1 AC Powerline Conducted Emissions (0.15 – 30 MHz)

1.1.1 Test Location:

Roland Corporation, Miyakoda Testing Laboratory
 5-3, Shinmiyakoda 1-chome, Hamamatsu, Shizuoka, 431-2103 JAPAN
 PHONE (053) 428-5095, FAX (053) 428-5097

Shielded Room

1.1.2 Measuring Instrument(s) Used:

Description	Manufacturer	Model No.	Serial No.	Last Cal.	Interval
LISN (for EUT)	Kyoritsu	KNW-407	8-532-8	Aug. 9, 2004	1 Year
LISN (for Peripherals)	Kyoritsu	KNW-407	8-1512-2	Aug. 9, 2004	1 Year
Field Strength Meter	Rohde & Schwarz	ESHS10	100002	Aug. 10, 2004	1 Year
Spectrum Analyzer	Hewlett Packard	E7402A	US391501	Aug. 14, 2004	1 Year
Transient Limiter (for Spectrum Analyzer)	Agilent Technologies	11947A	3107A032	Aug. 19, 2004	1 Year
Pulse Limiter (for Field Strength Meter)	Rohde & Schwarz	ESH3-Z2	100018	Aug. 19, 2004	1 Year
Termination (50Ω)	Stack Electronics	T1302	-	Aug. 18, 2004	1 Year

1.1.3 Setting of Field Strength Meter:

Quasi-Peak Detector
 IF Bandwidth : 10 kHz
 Average Detector
 IF Bandwidth : 10 kHz

1.1.4 Environmental Conditions:

Temperature : 26.7°C
 Humidity : 17.2%

1.1.5 Date of Measurement:

March 1, 2005

1.1.6 Note:

1.2 Radiated Emissions (30 – 1000 MHz)

1.2.1 Test Location:

Roland Corporation, Miyakoda Testing Laboratory
 5-3, Shinmiyakoda 1-chome, Hamamatsu, Shizuoka, 431-2103 JAPAN
 PHONE (053) 428-5095, FAX (053) 428-5097

Open Field Test Site

1.2.2 Measuring Instrument(s) Used:

Description	Manufacturer	Model No.	Serial No.	Last Cal.	Interval
Field Strength Meter	Rohde & Schwarz	ESCS30	100154	Aug. 10, 2004	1 Year
Spectrum Analyzer	Hewlett Packard	8546A	3807A004	Aug. 16, 2004	1 Year
Biconical Antenna	Schwarzbeck	BBA9106	32 2229	Aug. 11, 2004	1 Year
Log-Periodic Antenna	Schwarzbeck	UHALP9108-A	0364	Aug. 11, 2004	1 Year
Pre Amplifier	Hewlett Packard	8447D	2648A047	Aug. 9, 2004	1 Year
Antenna Pad 6 dB (for Biconical Antenna)	Anritsu	MP721B	40 62003137	Aug. 10, 2004	1 Year
Antenna Pad 6 dB (for Log-Periodic Antenna)	Anritsu	MP721B	90 62003137	Aug. 10, 2004	1 Year
			88		

1.2.3 Setting of Field Strength Meter:

Quasi-Peak Detector
 IF Bandwidth : 120 kHz

1.2.4 Environmental Conditions:

Temperature : 22.6°C
 Humidity : 18%

1.2.5 Date of Measurement:

February 28, 2005

1.2.6 Note:

1.3 Radiated Emissions (1 – 2 GHz)

1.3.1 Test Location:

Roland Corporation, Miyakoda Testing Laboratory
5-3, Shinmiyakoda 1-chome, Hamamatsu, Shizuoka, 431-2103 JAPAN
PHONE (053) 428-5095, FAX (053) 428-5097

Open Field Test Site

1.3.2 Measuring Instrument(s) Used:

Description	Manufacturer	Model No.	Serial No.	Last Cal.	Interval
Field Strength Meter	Rohde & Schwarz	ESCS30	100154	Aug. 10, 2004	1 Year
Spectrum Analyzer	Hewlett Packard	8546A	3807A004	Aug. 16, 2004	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120A	32 379	Aug. 12, 2004	1 Year
Pre Amplifier	Agilent Technologies	8449B	3008A016	Aug. 18, 2004	1 Year
			90		

1.3.3 Setting of Spectrum Analyzer:

Peak Detector
IF Bandwidth : 1 MHz
Average Detector
IF Bandwidth : 1 MHz

1.3.4 Environmental Conditions:

Temperature : 22.6°C
Humidity : 18%

1.3.5 Date of Measurement:

February 28, 2005

1.3.6 Note:

2. CONFIGURATION OF EUT

2.1 The Equipment Under Test (EUT) consists of:

Description	Manufacturer	Model No.	Serial No.	FCC ID
Digital Piano	Roland	RG-7	ZT20114	SOPRG-7

2.2 The measurement was carried out with the following equipment(s) connected:

Description	Manufacturer	Model No.	Serial No.	FCC ID
Music Player	Roland	MT-300S	ZP84826	N/A
Monitor Speaker	Roland	MA-12C	ZA92697	N/A
Audio Mixer	BOSS	BX-600	601883	N/A
Personal Computer	DELL	DHP	7W2Y71X	DoC
VGA Display	SUMSUNG	GH15LS	NB15HMEW9	DoC
Keyboard	DELL	SK-8110	03485T CN-07N247- 38842-33Q- 1H91	DoC
Mouse	DELL	63618-OEM	1795193- 61003	DoC
Software Protect Key	Rainbow Technologies	SENTINEL	-	IVZSPRO1188
Television	SONY	KV-PF14M70	1001476	N/A
Microphone	Roland	DR-10	-	N/A
Headphone	Roland	RH-25	-	N/A
Headphone	Roland	RH-25	-	N/A

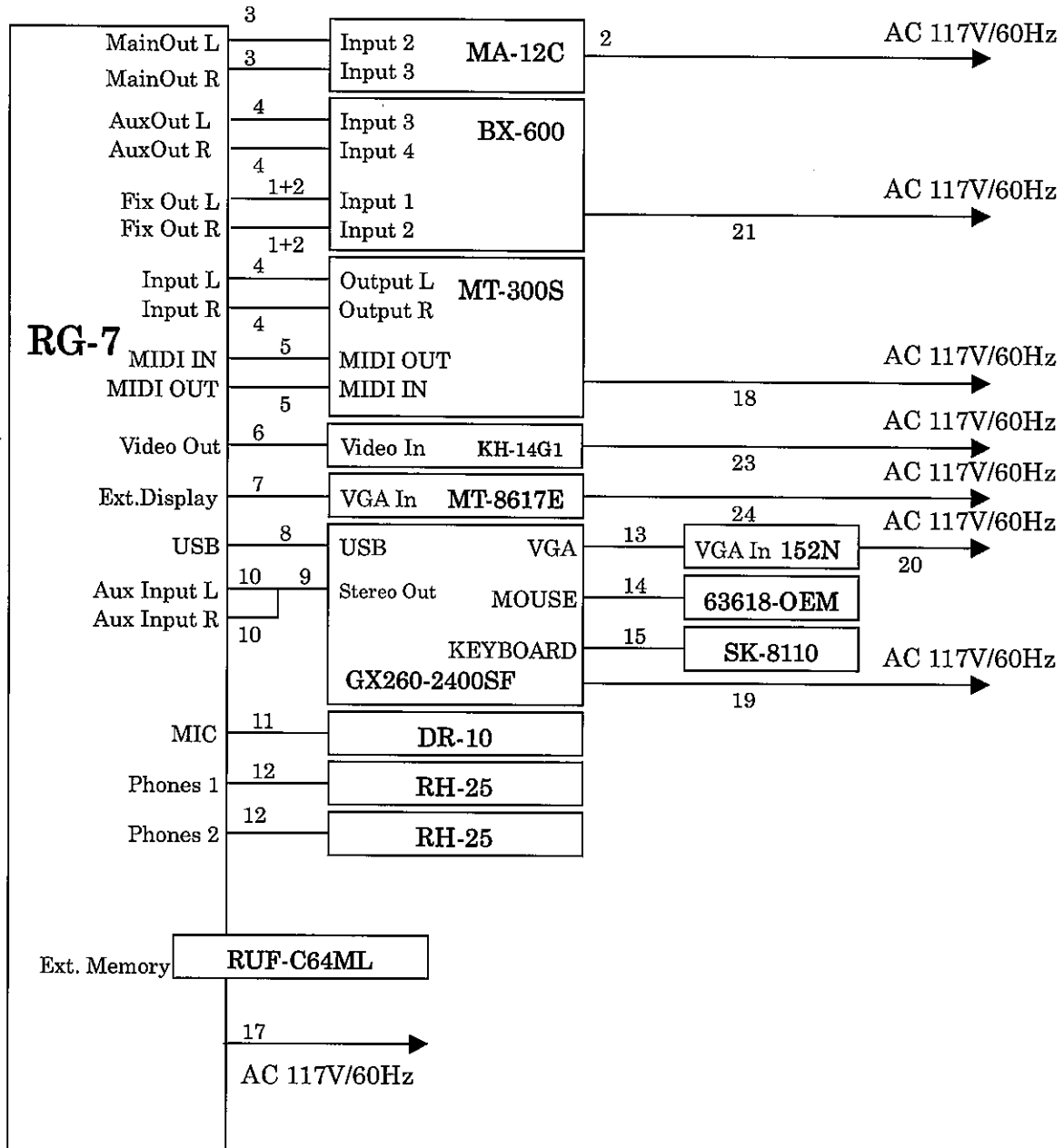
2.3 Operating Conditions of the EUT:

The piano CD data (10key&mov.mid) was loaded and played by the EUT.
 And the SMF data (1_16.mid) was played by the personal computer was inputted into the EUT.
 And the SMF data (1_16.mid) was played by the music player was inputted into the EUT.
 The volume of the EUT was adjusted to 1/8 of the non-clipped maximum output power using 1kHz sine wave.
 The "H" character, as per ANSI C63.4-11992, was displayed on the screen of the display that was connected to the Ext. Display terminal of the EUT.

2.4 Type of Interface Cable(s):

Cable No.	Description	Shielded	Ferrite Core	Connector	Length
1	Audio Cable	Yes	No	Metal	2.5 m
2	Extra Canon Cable	Yes	No	Metal	2.0 m
3	Audio Cable (PHONE type)	Yes	No	Non-Metal	8.0 m
4	Audio Cable (PHONE type)	Yes	No	Non-Metal	5.0 m
5	MIDI Cable	Yes	No	Non-Metal	5.0 m
6	Video Cable	Yes	No	Non-Metal	3.0 m
7	VGA Cable	Yes	No	Metal	5.0 m
8	USB Cable	Yes	No	Non-Metal	3.0 m
9	Stereo Audio Cable	Yes	No	Non-Metal	2.5 m
10	Audio Cable (PIN type)	Yes	No	Non-Metal	1.5 m
11	MIC Cable	Yes	No	Non-Metal	5.0 m
12	Headphones Cable	Yes	No	Non-Metal	3.0 m
13	VGA Cable (GX260-2400SF)	Yes	No	Non-Metal	1.5 m
14	Mouse Cable	Yes	No	Non-Metal	1.5 m
15	Keyboard Cable	Yes	No	Non-Metal	1.0 m
16	Extra USB Cable	Yes	No	Non-Metal	1.0 m
17	AC Power Cable (RG-7)	Yes	No	Non-Metal	1.5 m
18	AC Power Cable (MT-300S)	Yes	No	Non-Metal	1.5 m
19	AC Power Cable (GX260-2400SF)	Yes	No	Non-Metal	1.5 m
20	AC Power Cable (152N)	Yes	No	Non-Metal	1.5 m
21	AC Power Cable (BX-600)	Yes	No	Non-Metal	1.5 m
22	AC Power Cable (MA-12C)	Yes	No	Non-Metal	1.5 m
23	AC Power Cable (TH-14G1)	Yes	No	Non-Metal	1.5 m
24	AC Power Cable (MT-8617E)	Yes	No	Non-Metal	1.5 m

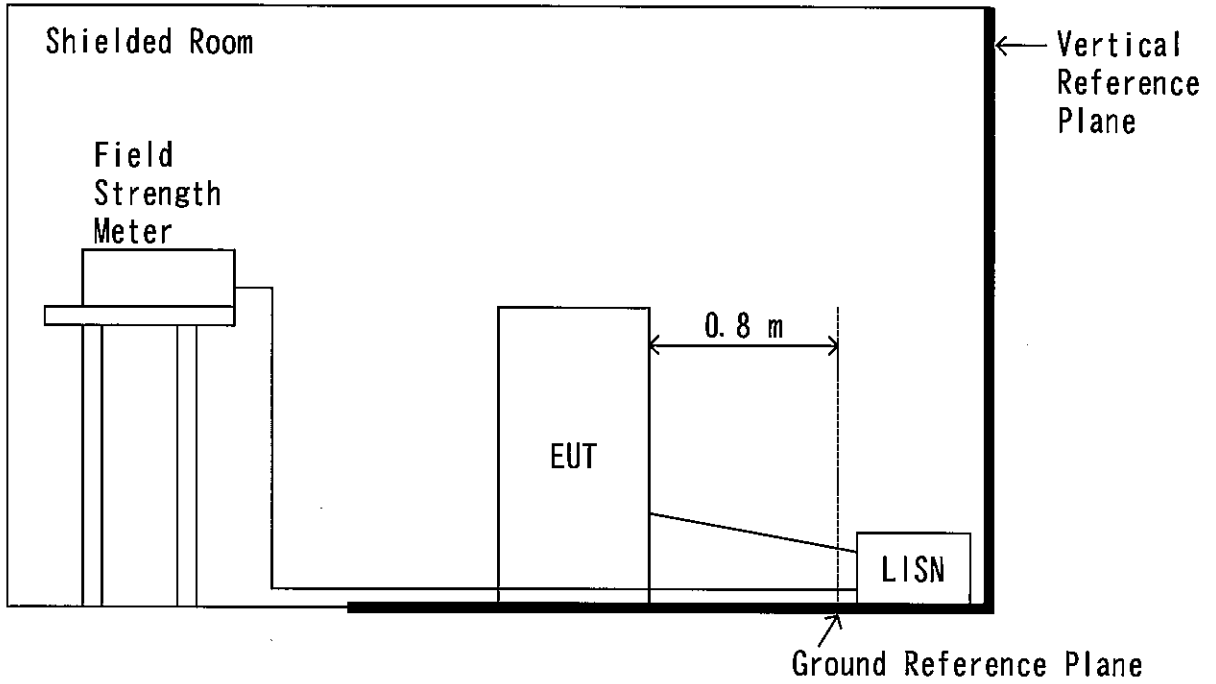
2.5 Arrangement of the Interface Cable(s):



3. TEST SET-UP

3.1 AC Powerline Conducted Emissions (0.15 – 30 MHz)

3.1.1 Test Set-up Sketch:



3.1.2 Photograph(s) of Maximum Emission Set-up:

Left side front View



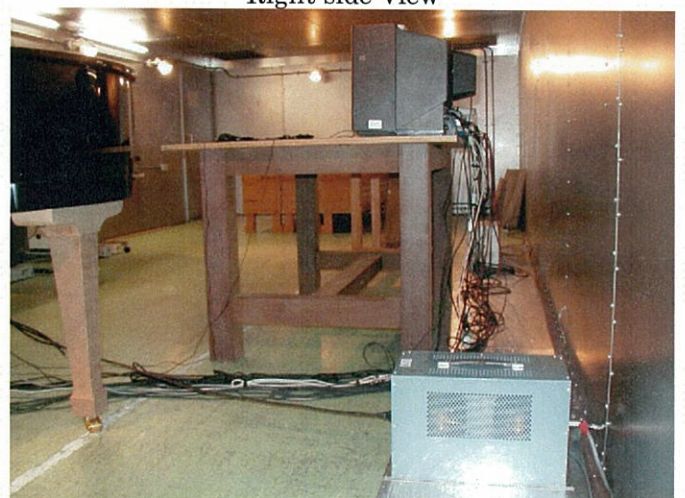
Right side front View



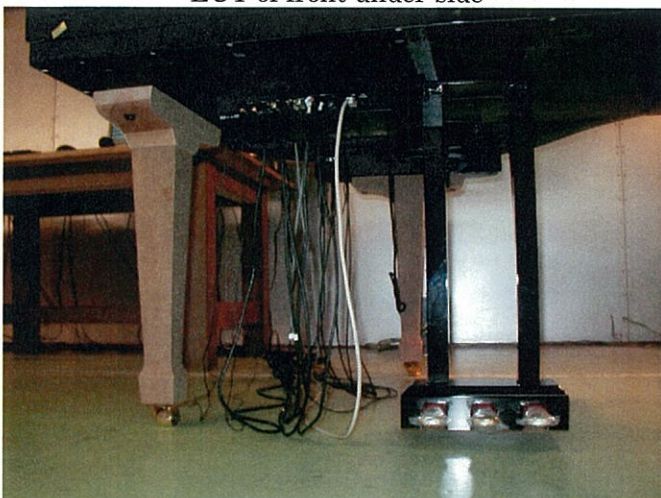
Left side View



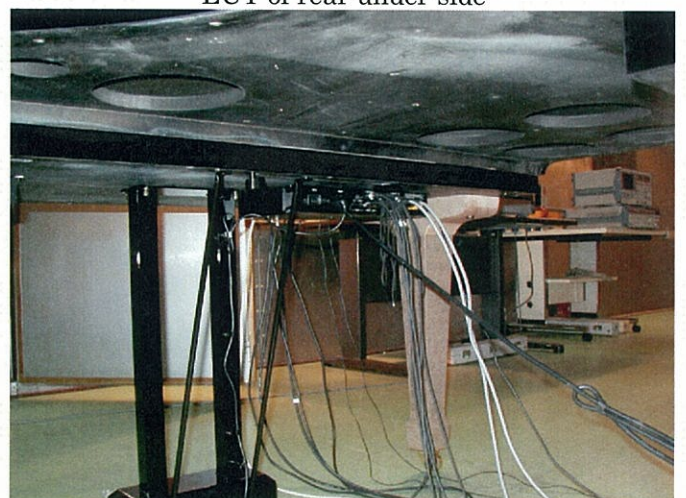
Right side View



EUT of front under side

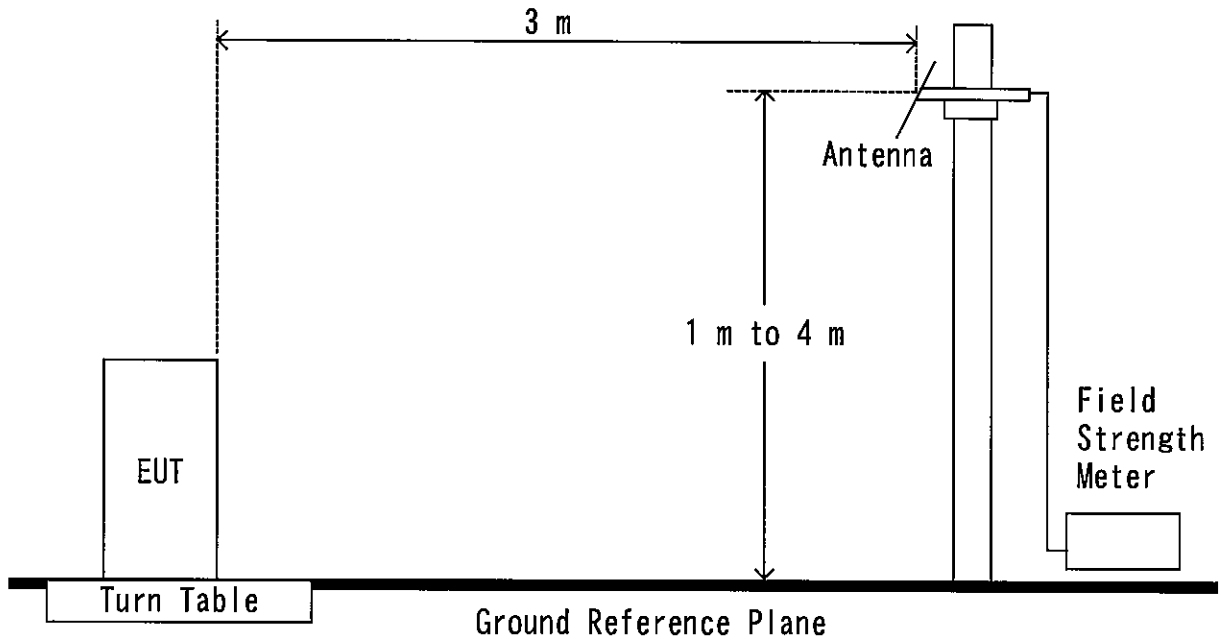


EUT of rear under side



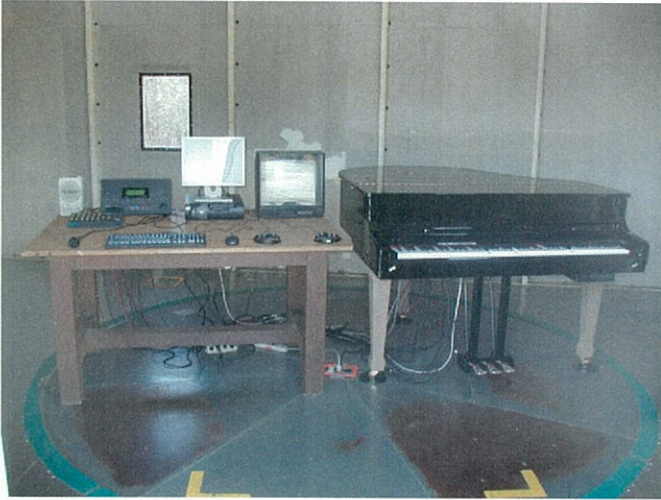
3.2 Radiated Emissions (30 – 1000 MHz)

3.2.1 Test Set-up Sketch:



3.2.2 Photograph(s) of Maximum Emission Set-up

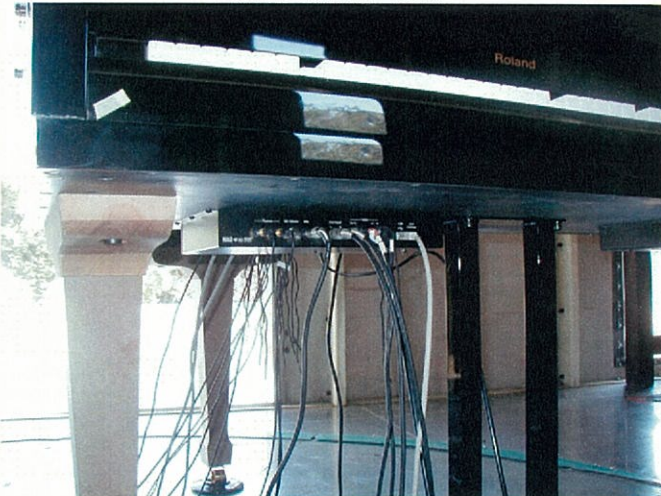
Front View



Rear View



Front under View



Rear under View



RADIATED EMISSIONS

Model No.: RG-7 ZT20114

Date: 2005.02.28

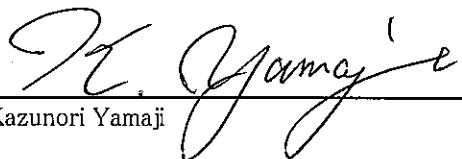
Temp.: 22.6 °C Humi.: 18 %

Frequency MHz	Corr. Factor dB	Meter Reading at 3 m		Limit dB(uV/m)	Emission Level at 3 m		Horizontal		Vertical		Margin	
		Horizontal dB(uV)	Vertical dB(uV)		Horizontal dB(uV/m)	Vertical dB(uV/m)	Table Angle Deg.	Antenna Height m	Table Angle Deg.	Antenna Height m	Horizontal dB	Vertical dB
30.77	-2.6	26.0	31.8	40.0	23.4	29.2	169	4.00	249	1.00	16.6	10.8
37.23	-5.1	28.0	38.0	40.0	22.9	32.9	294	3.36	238	1.00	17.1	7.1
38.85	-5.6	26.5	35.1	40.0	20.9	29.5	280	3.26	230	1.93	19.1	10.5
106.49	-8.6	37.1	37.1	43.5	28.5	28.5	204	1.00	197	1.00	15.0	15.0
119.99	-6.0	37.4	38.1	43.5	31.4	32.1	244	2.16	174	1.00	12.1	11.4
120.00	-6.0	37.7	38.1	43.5	31.7	32.1	253	1.58	157	1.00	11.8	11.4
131.06	-5.2	41.7	41.1	43.5	36.5	35.9	252	2.53	244	2.33	7.0	7.6
131.99	-5.2	33.2	30.1	43.5	28.0	24.9	101	2.30	147	1.00	15.5	18.6
159.99	-3.8	31.3	29.0	43.5	27.5	25.2	247	1.98	275	1.00	16.0	18.3
197.99	-1.6	30.1	32.2	43.5	28.5	30.6	321	2.70	290	1.00	15.0	12.9
239.98	-1.0	31.0	28.2	46.0	30.0	27.2	76	1.35	46	1.48	16.0	18.8
259.99	-0.3	32.6	26.7	46.0	32.3	26.4	218	1.31	332	2.80	13.7	19.6
263.99	0.0	30.1	30.5	46.0	30.1	30.5	70	1.80	279	1.00	15.9	15.5
299.99	2.2	28.4	26.1	46.0	30.6	28.3	278	1.25	324	1.00	15.4	17.7
499.98	1.0	29.1	26.4	46.0	30.1	27.4	196	1.00	238	1.08	15.9	18.6
527.98	1.7	28.7	29.0	46.0	30.4	30.7	72	1.38	60	1.05	15.6	15.3
593.98	3.4	27.9	26.9	46.0	31.3	30.3	102	1.00	25	1.00	14.7	15.7
646.27	4.3	24.6	29.3	46.0	28.9	33.6	133	1.00	179	1.09	17.1	12.4
659.98	4.6	24.5	28.0	46.0	29.1	32.6	337	1.00	174	1.23	16.9	13.4
623.99	4.0	25.8	28.5	46.0	29.8	32.5	99	1.00	56	1.05	16.2	13.5
745.10	5.9	26.2	26.6	46.0	32.1	32.5	332	1.00	336	1.00	13.9	13.5
857.97	8.1	23.5	27.9	46.0	31.6	36.0	100	1.00	335	1.00	14.4	10.0
923.97	9.6	22.4	22.8	46.0	32.0	32.4	79	1.61	333	1.00	14.0	13.6
1039.96	-10.5	31.8	32.4	54.0	21.3	21.9	203	1.00	8	1.00	32.7	32.1
1055.97	-10.5	32.9	34.9	54.0	22.4	24.4	58	1.00	96	1.00	31.6	29.6
1099.99	-10.1	31.9	31.6	54.0	21.8	21.5	250	1.00	228	1.00	32.2	32.5
1286.99	-8.8	32.0	36.0	54.0	23.2	27.2	312	1.00	95	1.00	30.8	26.8
80.00	-13.6	38.0	46.0	40.0	24.4	32.4	270	4.00	218	1.00	15.6	7.6
81.92	-13.3	46.0	36.4	40.0	32.7	23.1	263	4.00	176	1.52	7.3	16.9

(Ver. 2004.12.24)

- Notes: 1) The correction factor contains the antenna factor, cable loss and any other loss.
2) The symbol of (-) means that disturbance voltage could not be measured.

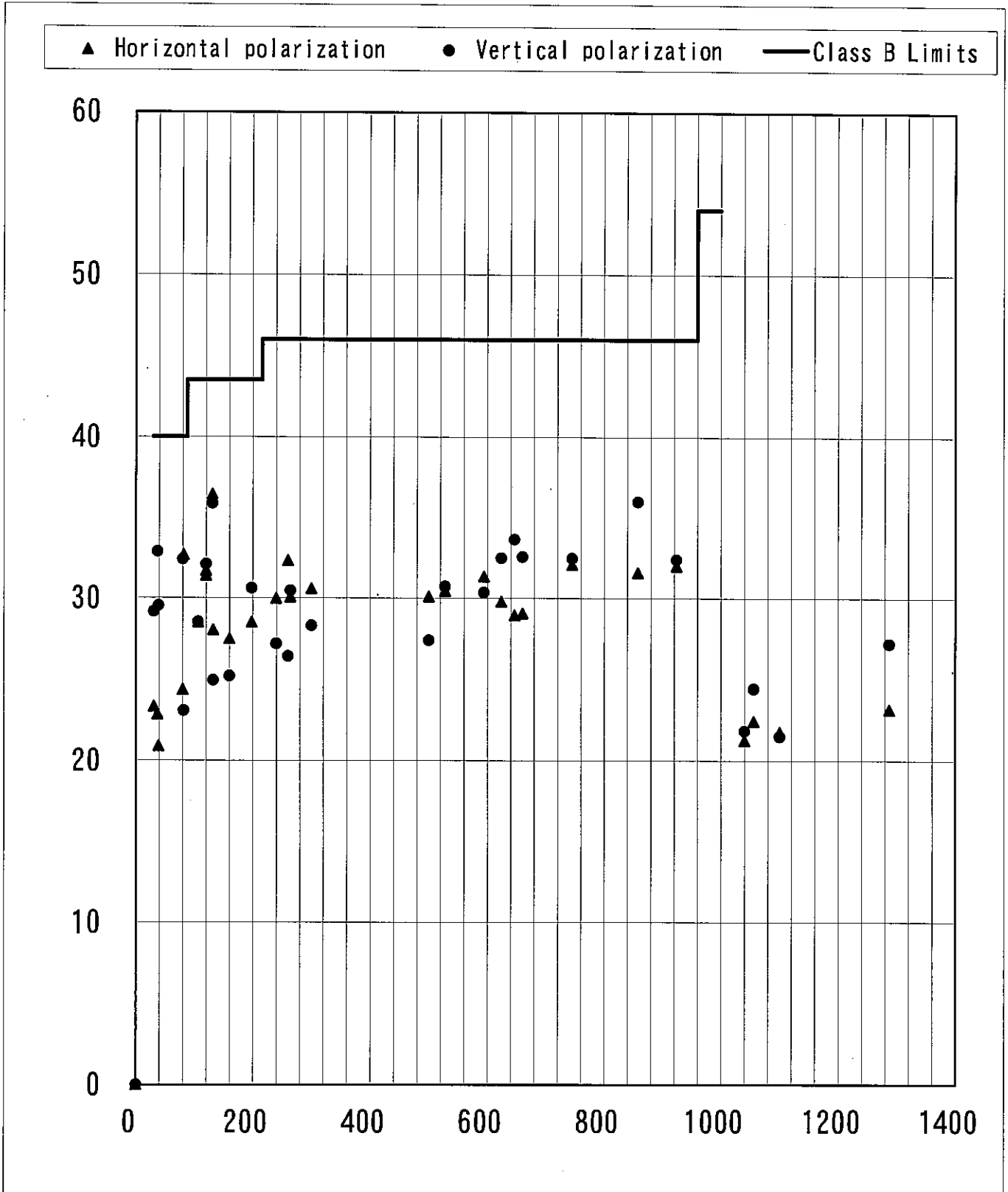
Tested by:



Kazunori Yamaji

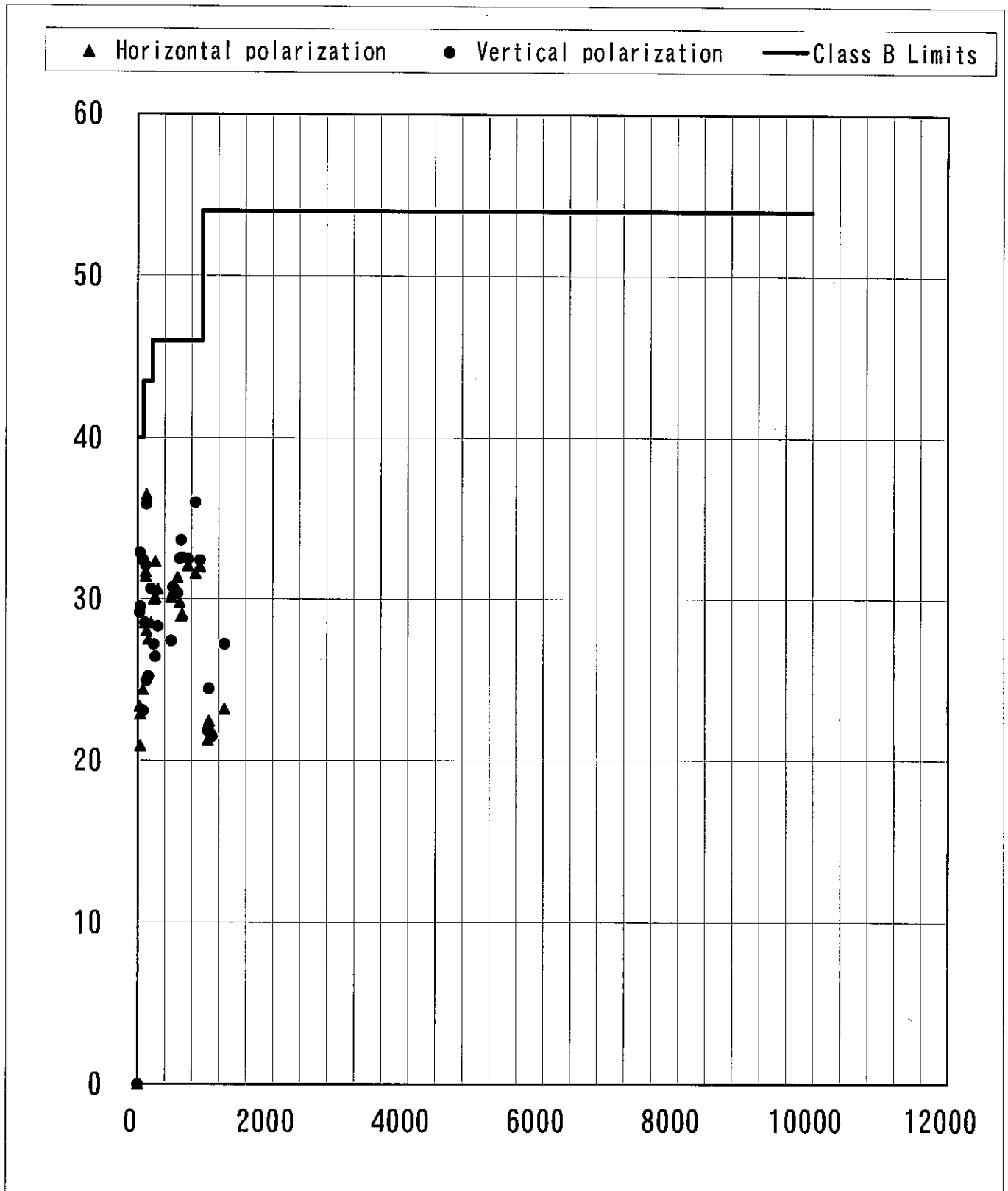
RADIATED EMISSIONS

Model No.: RG-7 ZT20114



RADIATED EMISSIONS

Model No.: RG-7 ZT20114



AC POWERLINE CONDUCTED EMISSIONS

Model No.: RG-7 ZT20114

Date: 2005.03.01

Temp.: 26.7 °C

Humi.: 17.2 %

Frequency MHz	Correction Factor dB	Kind of Detector QP/AVE	Meter Reading		Limit dB(uV)	Disturbance Level		Margin	
			V-A dB(uV)	V-B dB(uV)		V-A dB(uV)	V-B dB(uV)	V-A dB	V-B dB
0.15	0.2	QP	41.3	39.0	66.0	41.5	39.2	24.5	26.8
0.21	0.1	QP	42.7	43.3	63.1	42.8	43.4	20.3	19.7
2.15	0.2	QP	29.8	29.7	56.0	30.0	29.9	26.0	26.1
2.86	0.2	QP	30.1	30.7	56.0	30.3	30.9	25.7	25.1
5.80	0.3	QP	33.0	33.9	60.0	33.3	34.2	26.7	25.8
10.88	0.6	QP	35.7	32.2	60.0	36.3	32.8	23.7	27.2
10.89	0.6	QP	35.3	33.4	60.0	35.9	34.0	24.1	26.0
12.17	0.6	QP	36.8	33.0	60.0	37.4	33.6	22.6	26.4
14.00	0.8	QP	32.2	30.0	60.0	33.0	30.8	27.0	29.2

(Ver. 2004.12.24)


Notes: 1) The correction factor contains the LISN factor, cable loss and insertion loss of pulse limiter.

2) V-A: One end & Ground ; V-B: The other end & Ground

3) QP: Quasi-Peak Detector ; AVE: Average Detector

4) The symbol of (-) means that disturbance voltage could not be measured.

Tested by:



Kazunori Yamaji

AC POWERLINE CONDUCTED EMISSIONS

Model No.: RG-7 ZT20114

