Designated by Ministry of international Trade and industry

KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER

HEAD OFFICE
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KEC

IKOMA TESTING LABORATORY
12128 TAKAYAMA-CHO
IKOMA-CITY NARA 630-0101 JAPAN

Corporate Juridical Person

TEST REPORT

Report No.A-005-00-C Date: 21 February 2000

This test report is to certify that the tested device properly complies with the requirements of:

FCC Rules and Regulations Part 15 Subpart C Intentional Radiators.

All the tests necessary to show compliance to the requirements were performed and these results met the specifications of requirement. The results of this report should not be construed to imply compliance of equipment other than that, which was tested. Unless the laboratory permission, this report should not be copied in part.

1. Applicant

Company Name : Funai Electric Co., Ltd.

Mailing Address : 7-1, 7-Chome, Nakagaito, Daito-City, Osaka, 574-0013 Japan

2. Identification of Tested Device

Type of Device : Transmitter
Kind of Equipment Authorization : ☐: DoC ☒: Certification ☐: Verification
FCC ID : ADTCCBT
Device Name : REMOTE CONTROL LOCATOR (INTERNATIONAL RADIATOR)
Trade Name : Philips
Model Number : CCB134AT01
Serial Number : 0001 ☐: Prototype ☒: Pre-production ☐: Production
Date of Manufacture : January 2000

3. Test Items and Procedure

☒: AC Power Line Conducted Emission Measurement
☒: Radiated Emission Measurement
☒: Emission Bandwidth Measurement

Above all tests were performed under: ANSI C63.4 – 1992
☒: without deviation, ☐: with deviation(details are found inside of this report)

4. Date of Test

Receipt of Test Sample : 31 January 2000
Test Completed on : 14 February 2000

Fumitoshi Nagaoka
Associate Director/ Ikoma Testing Laboratory

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0. NVLAP ACCREDITATION AND MEASUREMENT UNCERTAINTY

0.1. NVLAP Accreditation

KEC is accredited by the National Voluntary Accreditation Program for the specific scope of accreditation under Lab Code: 200207-0.

When a test report concerns with the NVLAP Accreditation test, the first page of the test report is sighed by NVLAP Approved Signatory together with the expression.

The report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

0.2. Measurement Uncertainty

The result of a measurement is only an approximation or estimate of the value of a specific quantity. And thus the measurand is complete only when a statement of uncertainty is given.
KEC quotes Measurement Uncertainty (U)

of +/- 4.9 dB for Radiated Emissions
of +/- 2.2 dB for Conducted Emissions

1. CERTIFICATION OF THE COMPLIANCE

This test report is to certify that the tested device properly complies with the requirements of FCC Rules and Regulations Part 15 Subpart C Intentional Radiators.

KEC evaluation criteria for compliance:
The Product complies, if
the measured results are below the specification limit by a margin more than or equal to

1/2 U (2.5 dB) for Radiated Emissions
U (2.2 dB) for Conducted Emissions

2. GENERAL INFORMATION

2.1. Product Description

The Philips Model No. : CCB134AT01 (referred to as the EUT in this report) is REMOTE CONTROL LOCATOR (transmitter) built in television.

1) Technical Specifications

· Operating frequency range	: 390 MHz (typical)
Type of antenna	: Built-in antenna
Emission designator	: K1D
Tx time	: 4.9 sec

2) Contained Oscillators

VCR Micro computer clock	: 10.6 MHz
Chroma(TV and VCR)	: 3.58 MHz
Timer clock	: 32 kHz

3) Provided Terminals

Video In terminal	: RCA type, 75Ω
Audio In terminal	: RCA type, 600Ω
Earphone jack	: Monaural mini jack
RF Jack	: Typed "F", 75Ω(unbalanced)

4) Rated Power Supply : AC 120 V, 60 Hz

2.2. Description for Equipment Authorization

(1) Type of device	: ☒ Intentional Raidators
(2) Reference Rule and Specification	: FCC Rule Part 15 Subpart C, Section 15.231 Periodic operation in the band 40.66 - 40.70MHz and above 70 MHz ☒ Section 15.207 ☒ Section 15.209 ☒ Section 15.231(b) ☒ Section 15.231(c)
(3) Kind of Equipment Authorization	: ☐ DoC ☒ Certification ☐ Verification
(4) Procedure of Application	: ☒ Original Equipment ☐ Modification
(5) Highest Frequency used in the Device	: 390 MHz
(6) Upper Frequency of Radiated Emission Measurement Range	: ☐ 1000 MHz ☐ 2000 MHz ☐ 5000 MHz ☒ Tenth harmonics of the highest fundamental frequency

2.3. Test Facility

All tests described in this report were performed by:

Name: KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER (KEC)
IKOMA TESTING LABORATORY

Open Area Test Site ☐ No.1 ☐ No.2 ☐ No.3 ☒ No.4
EMC M.C. Anechoic Chamber ☐ No.1
Shielded Room ☐ No.2 ☒ No.4 ☐ EMC M.C. Shielded Room

Address: 12128, Takayama-cho Ikoma-city, Nara, 630-0101 Japan

These test facilities have been filed with the FCC under the criteria of ANSI C63.4-1992. The Open Area Test Site No.4, EMC MC. Anechoic Chamber No.1, Shielded Room No.4 and EMC MC. Shielded Room have been accredited by the NVLAP (Lab. Code: 200207-0) based on ISO/IEC Guide 25.
Also the laboratory has been authorized by ITI (Interference Technology International, (UK), TUV Product Service (GER) and TUV Rheinland (GER) based on their criteria for testing laboratory (EN45001).

3. TESTED SYSTEM

3.1. Test Mode

Continuously transmitted code (data) mode.

3.2. Operation of EUT System

1) Turn off the EUT.
2) Key in the remote controller as following.

2, 7, 1, MUTE

Then the EUT turn on.

3) Key in the remote controller as following.

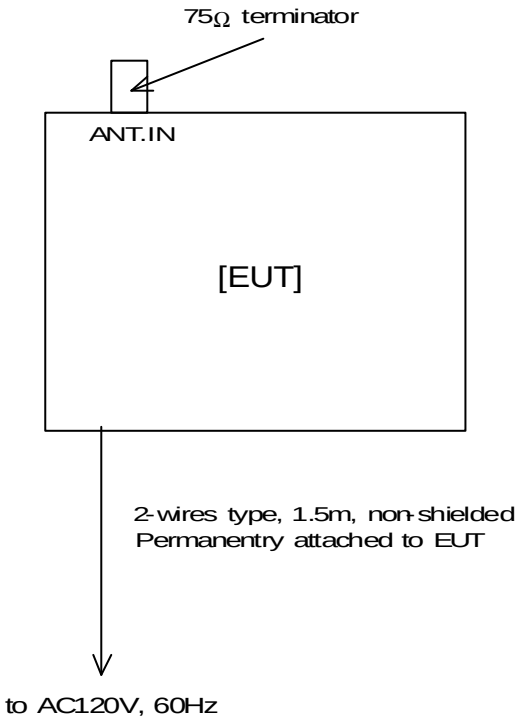
VCR PLUS+/ENTER, MEMORY

Then "LOCATE CODE" is appeared on the screen and modulated carrier was transmitted continuously.

3.3. Characterization and condition of EUT System

☒ : normal , ☐ : not normal (that is)

3.4. Block Diagram of EUT System



4. AC POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Test Procedure

(1)	Configure the EUT System in accordance with ANSI C63.4-1992 section 7. ☒: without deviation, ☐: with deviation(details are found below) See also the block diagram and the photographs of EUT System configuration in this report.
(2)	Connect the EUT's AC power cord to one Line Impedance Stabilization Network (LISN).
(3)	Any other power cord of other equipment is connected to a LISN different from the LISN used for the EUT.
(4)	Warm up the EUT System.
(5)	Activate the EUT System and run the software prepared for the test, if necessary.
(6)	Connect the spectrum analyzer (*1) to the measuring port of the LISN for the EUT, using a calibrated coaxial cable.
(7)	To find out an EUT System condition, which produces the maximum emission, the configuration of EUT System, the position of the cables, and the operation mode, are changed under normal usage of the EUT.
(8)	The spectrums are scanned from 450 kHz to 30 MHz and collect the six highest emissions minimum on the spectrum analyzer relative to the limits in the whole range.
(9)	The test receiver (*2) is connected to the LISN for the EUT, and the six highest emissions minimum recorded above are measured.
	[Note]
(*1)	Spectrum Analyzer Set Up Conditions Frequency range : 450 kHz - 30 MHz Resolution bandwidth : 10 kHz Video bandwidth : 1 MHz Detector function : Peak mode
(*2)	Test Receiver Set Up Conditions Detector function : Quasi-Peak/ Average (if necessary) IF bandwidth : 10 kHz

4.2. Test Results

(1) Measurement with the Q-Peak Detector

Measured Frequency (MHz)	LISN Factor (dB)	Meter Reading Va (dBmV)	Meter Reading Vb (dBmV)	Maximum RF Voltage (dBmV)	Limits (dBmV)	Margin for Limits (dB)
*0.455	0.3	47.6	46.8	47.9	48.0	0.1
0.610	0.3	40.0	41.5	41.8	48.0	6.2
0.673	0.3	38.3	39.8	40.1	48.0	7.9
10.601	0.6	35.2	35.0	35.8	48.0	12.2
13.007	0.6	35.0	34.4	35.6	48.0	12.4
14.633	0.7	35.3	34.7	36.0	48.0	12.0
15.464	0.7	40.5	40.0	41.2	48.0	6.8

(2) Additional Measurement with the Average Detector

Measured Frequency (MHz)	LISN Factor (dB)	Meter Reading Va (dBmV)	Meter Reading Vb (dBmV)	Meter Reading with QP - Meter Reading with AV Va (dB)	Meter Reading with QP - Meter Reading with AV Vb (dB)
0.455	0.3	36.1	35.3	11.5	11.5

(*)The measured date with the quasi-peak detector is higher (more than 6dB) than the measured data with the average detector.
Therefore, in accordance with ANSI C63.4-1992 section 11.5.2 the 13 dB reduced quasi-peak mode level and final result is shown as follows.

-Continued-

(3) Final Result of Measurement with the Q-Peak Detector

Measured Frequency (MHz)	LISN Factor (dB)	Meter Reading Va (dBmV)	Meter Reading Vb (dBmV)	Maximum RF Voltage (dBmV)	Limits (dBmV)	Margin For Limits (dB)
0.455	0.3	34.6	33.8	34.9	48.0	13.1
0.610	0.3	40.0	41.5	41.8	48.0	6.2
0.673	0.3	38.3	39.8	40.1	48.0	7.9
10.601	0.6	35.2	35.0	35.8	48.0	12.2
13.007	0.6	35.0	34.4	35.6	48.0	12.4
14.633	0.7	35.3	34.7	36.0	48.0	12.0
15.464	0.7	40.5	40.0	41.2	48.0	6.8

[Calculation method]
Maximum RF Voltage (dBμV)
= Meter Reading (at maximum level of Va, Vb) + LISN Factor (dB)

[Note]
LISN Correction Factor includes the cable loss.

[Environment]
Temperature 14°C Humidity 33%

[Tested Date / Tester]
14 February 2000 Signature Ikuya Minematsu

4.3. Photographs of EUT System Configuration

FRONT VIEW

SIDE VIEW

5. RADIATED EMISSION MEASUREMENT

5.1. Test Procedure

(1)	Configure the EUT System in accordance with ANSI C63.4-1992 section 8. ☒: without deviation, ☐: with deviation(details are found below) See also the block diagram and the photographs of EUT System configuration in this report.
(2)	If the EUT system is connected to a public power network, all power cords for the EUT System are connected the receptacle on the turntable.
(3)	Warm up the EUT System.
(4)	Activate the EUT System and run the prepared software for the test, if necessary.
(5)	To find out the emissions of the EUT System, preliminary radiated measurement are performed at a closer distance than that specified for final radiated measurement using the spectrum analyzer (*1) and the broad band antenna. In the frequency above 1 GHz, it is performed using the spectrum analyzer (*2) and the horn antenna.
(6)	To find out an EUT System condition, which produces the maximum emission, the configuration of EUT System, the position of the cables, and the operation mode, are changed under normal usage of the EUT.
(7)	The spectrums are scanned from 30 MHz to the upper frequency of measurement range, and collect the six highest emissions minimum on the spectrum analyzer relative to the limits in the whole range.
(8)	In final compliance test, the six highest emissions minimum, recorded above, are measured at the specified distance using the broad band antenna or the tuned dipole antenna and the test receiver (*3). In the frequency above 1 GHz, the measurements are performed by the horn antenna and ☐ the test receiver (*4). ☒ the spectrum analyzer(*2) with pre-amplifier.

[Note]

(*1) Spectrum Analyzer Set Up Conditions

Frequency range	: 30 - 1000 MHz
Resolution bandwidth	: 100 kHz
Detector function	: Peak mode

(*2) Spectrum Analyzer Set Up Conditions

Frequency range	: 1 GHz - Upper frequency of measurement range
Resolution bandwidth	: 1 MHz
Video bandwidth	: 1 MHz
Attenuator	: 10 dB
Detector function	: Peak mode

(*3) Test Receiver Set Up Conditions

Detector function	: Quasi-Peak or Peak
IF bandwidth	: 120 kHz

(*4) Test Receiver Set Up Conditions

Detector function	: Average
IF bandwidth	: 1 MHz

5.2. Test Results

(1) In the frequency range : 30 MHz to 1000 MHz

Measurement Distance ☒: 3m ☐: 10m

Measured Frequency	Antenna Factor	Conversion Factor Peak to Average (*1)	Meter Reading		Maximum Field Strength	Limits	Margin for Limits
			Horizontal	Vertical			
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Fundamental							
1) Peak Detector Measurement							
389.70	18.9	-	54.2	50.3	73.1	99.2	26.1
2) Conversion Peak to Average							
389.70	18.9	-5.1	54.2	50.3	68.0	79.2	11.2
Harmonics							
1) Peak Detector Measurement							
779.45	26.6	-	34.0	29.5	60.6	79.2	18.6
2) Conversion Peak to Average							
779.45	26.6	-5.1	34.0	29.5	55.4	59.2	3.8
Other Emission							
Quasi-Peak Detector Measurement							
38.97	15.1	-	1.2	13.9	29.0	40.0	11.0
53.00	10.8	-	1.0	10.0	20.8	40.0	19.2
106.00	12.8	-	8.3	14.2	27.0	43.5	16.5
110.98	13.4	-	6.0	14.4	27.8	43.5	15.7

- Continued -

(2) In the frequency range : above 1 GHz

Measurement Distance ☒: 3m ☐: 10m

Measured Frequency	Antenna Factor	Conversion Factor Peak to Average (*1)	Meter Reading		Maximum Field Strength	Limits	Margin for Limits
			Horizontal	Vertical			
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Harmonics							
1) Peak Detector Measurement							
1169.37	-9.7	-	62.1	65.0	55.3	74.0	18.7
1559.17	-10.3	-	52.5	56.3	46.0	74.0	28.0
1948.93	-8.8	-	55.3	56.2	47.4	79.2	31.8
2338.50	-8.6	-	54.4	54.0	45.8	74.0	28.2
2728.18	-9.0	-	56.4	55.4	47.4	74.0	26.6
3118.00	-8.3	-	54.2	56.6	48.3	79.2	30.9
3507.70	-7.0	-	48.0	48.5	41.5	79.2	37.7
3897.38	-6.1	-	47.2	46.9	41.1	74.0	32.9
2) Conversion Peak to Average							
1169.37	-9.7	-5.1	62.1	65.0	50.2	54.0	3.8
1559.17	-10.3	-5.1	52.5	56.3	40.9	54.0	13.1
1948.93	-8.8	-5.1	55.3	56.2	42.3	59.2	16.9
2338.50	-8.6	-5.1	54.4	54.0	40.7	54.0	13.3
2728.18	-9.0	-5.1	56.4	55.4	42.3	54.0	11.7
3118.00	-8.3	-5.1	54.2	56.6	43.2	59.2	16.0
3507.70	-7.0	-5.1	48.0	48.5	36.4	59.2	22.8
3897.38	-6.1	-5.1	47.2	46.9	36.0	54.0	18.0
Other Emission							
Peak Detector Measurement							
1816.00	24.7	-	52.0	50.5	41.9	54.0	12.1
2270.70	26.0	-	50.1	53.3	44.7	54.0	9.3

- Continued -

(3) In the frequency range : 30 MHz to 1000 MHz (Restricted Bands)

Quasi-Peak Detector Measurement

Measurement Distance ☒: 3m ☐: 10m

Measured Frequency	Antenna Factor	Meter Reading		Maximum Field Strength	Limits	Margin for Limits
		Horizontal	Vertical			
(MHz)	(dB/m)	(dBmV)	(dBmV)	(dBmV/m)	(dBmV/m)	(dB)
37.50	15.7	1.0	12.5	28.2	40.0	11.8
38.25	15.4	0.2	13.8	29.2	40.0	10.8
73.00	7.9	3.8	9.4	17.3	40.0	22.7
74.60	7.9	1.7	5.4	13.3	40.0	26.7
74.80	7.9	1.8	7.0	14.9	40.0	25.1
75.20	8.0	2.4	5.3	13.3	40.0	26.7
108.00	13.0	1.6	5.4	18.4	43.5	25.1
110.98	13.4	6.0	14.4	27.8	43.5	15.7
121.94	14.7	<0.0	3.0	17.7	43.5	25.8
123.00	14.7	<0.0	3.1	17.8	43.5	25.7
138.00	16.1	3.1	3.0	19.2	43.5	24.3
149.90	16.9	1.0	0.1	17.9	43.5	25.6
150.05	16.9	1.2	0.5	18.1	43.5	25.4
156.52475	17.0	<0.0	<0.0	<17.0	43.5	>26.5
156.52525	17.0	<0.0	<0.0	<17.0	43.5	>26.5
156.70	17.0	<0.0	1.5	18.5	43.5	25.0
156.90	17.1	<0.0	2.0	19.1	43.5	24.4
162.0125	17.2	<0.0	<0.0	<17.2	43.5	>26.3
167.17	17.5	2.4	2.3	19.9	43.5	23.6
167.72	17.5	0.5	1.8	19.3	43.5	24.2
173.20	17.8	<13.0	<10.0	<30.8	43.5	>12.7
240.00	19.7	<0.0	<0.0	<19.7	46.0	>26.3
285.00	22.0	<10.0	<10.0	<32.0	46.0	>14.0
322.00	17.3	3.2	2.5	20.5	46.0	25.5
335.40	17.6	4.0	2.0	21.6	46.0	24.4
399.90	19.1	2.0	1.6	21.1	46.0	24.9
410.00	19.4	1.0	1.8	21.2	46.0	24.8
608.00	23.9	<0.0	<0.0	<23.9	46.0	>22.1
614.00	24.0	<0.0	<0.0	<24.0	46.0	>22.0
960.00	27.9	<0.0	<0.0	<27.9	46.0	>18.1
1000.00	27.7	<0.0	<0.0	<27.7	54.0	>26.3

- Continued -

(3) In the frequency range : above 1 GHz (Restricted Bands)

Conversion Peak to Average

Measurement Distance ☒: 3m ☐: 10m

Measured Frequency	Antenna Factor	Conversion Factor Peak to Average (*1)	Meter Reading		Maximum Field Strength	Limits	Margin for Limits
			Horizontal	Vertical			
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
1000.00	-9.8	-5.1	<48.0	<48.0	<33.1	54.0	>20.9
1169.37	-9.7	-5.1	62.1	65.0	50.2	54.0	3.8
1240.00	-10.4	-5.1	<48.0	<48.0	<32.5	54.0	>21.5
1300.00	-9.3	-5.1	<47.0	<47.0	<32.6	54.0	>21.4
1427.00	-10.6	-5.1	<47.0	<47.0	<31.3	54.0	>22.7
1435.00	-10.6	-5.1	<48.0	<48.0	<32.3	54.0	>21.7
1559.17	-10.3	-5.1	52.5	56.3	40.9	54.0	13.1
1626.50	-12.2	-5.1	<48.0	<48.0	<30.7	54.0	>23.3
1645.50	-11.9	-5.1	<48.0	<48.0	<31.0	54.0	>23.0
1646.50	-11.9	-5.1	<48.0	<48.0	<31.0	54.0	>23.0
1660.00	-11.6	-5.1	<48.0	<48.0	<31.3	54.0	>22.7
1710.00	-10.5	-5.1	<48.0	<48.0	<32.4	54.0	>21.6
1718.00	-10.5	-5.1	<47.0	<47.0	<31.4	54.0	>22.6
1722.00	-10.5	-5.1	<48.0	<48.0	<32.4	54.0	>21.6
2200.00	-8.9	-5.1	<47.0	<47.0	<33.0	54.0	>21.0
2300.00	-8.5	-5.1	<48.0	<48.0	<34.3	54.0	>19.7
2310.00	-8.5	-5.1	<48.0	<48.0	<34.3	54.0	>19.7
2338.50	-8.6	-5.1	54.4	54.0	40.7	54.0	13.3
2390.00	-8.7	-5.1	<48.0	<48.0	<34.2	54.0	>19.8
2483.50	-9.0	-5.1	<47.0	<47.0	<32.9	54.0	>21.1
2500.00	-9.0	-5.1	<47.0	<47.0	<32.9	54.0	>21.1
2655.00	-9.1	-5.1	<47.0	<47.0	<32.8	54.0	>21.2
2728.18	-9.0	-5.1	56.4	55.4	42.3	54.0	11.7
2900.00	-8.7	-5.1	<47.0	<47.0	<33.2	54.0	>20.8
3260.00	-8.3	-5.1	<45.0	<45.0	<31.6	54.0	>22.4
3267.00	-8.3	-5.1	<45.0	<45.0	<31.6	54.0	>22.4
3332.00	-8.2	-5.1	<45.0	<45.0	<31.7	54.0	>22.3
3339.00	-8.1	-5.1	<45.0	<45.0	<31.8	54.0	>22.2
3345.80	-8.1	-5.1	<45.0	<45.0	<31.8	54.0	>22.2
3358.00	-8.1	-5.1	<45.0	<45.0	<31.8	54.0	>22.2
3600.00	-7.6	-5.1	<43.0	<43.0	<30.3	54.0	>23.7
3897.38	-6.1	-5.1	47.2	46.9	36.0	54.0	18.0
4400.00	-5.0	-5.1	<43.0	<43.0	<32.9	54.0	>21.1

- Continued -

[Remark]
(*1) : Conversion Factor, See next figure 1 an figure 2 (the picture of spectrum analyzer) and See Page 19, Calculation of Conversion Factor (Peak detector to Average).

[Note]
(1) Antenna Factor includes the cable loss.
(2) * mark in Measured Frequency : Measured with the tuned dipole antenna.
no mark in Measured Frequency : Measured with the broadband antenna.
(3) Above 1GHz, antenna factor includes both of the cable loss and pre-amplifier gain.

[Calculation method at Peak detector]
Maximum Field Strength (dBμV/m)
= Meter Reading (at maximum level of Horizontal or Vertical) (dBμV) + Antenna Factor (dB/m)

[Environment]
Temperature: 14℃ Humidity: 50%

[Tested Date/ Tester]
10 February 2000 Signature

Ikuya Minematsu

The Radiated fundamental emission waveform (Sweep Time 50m sec).

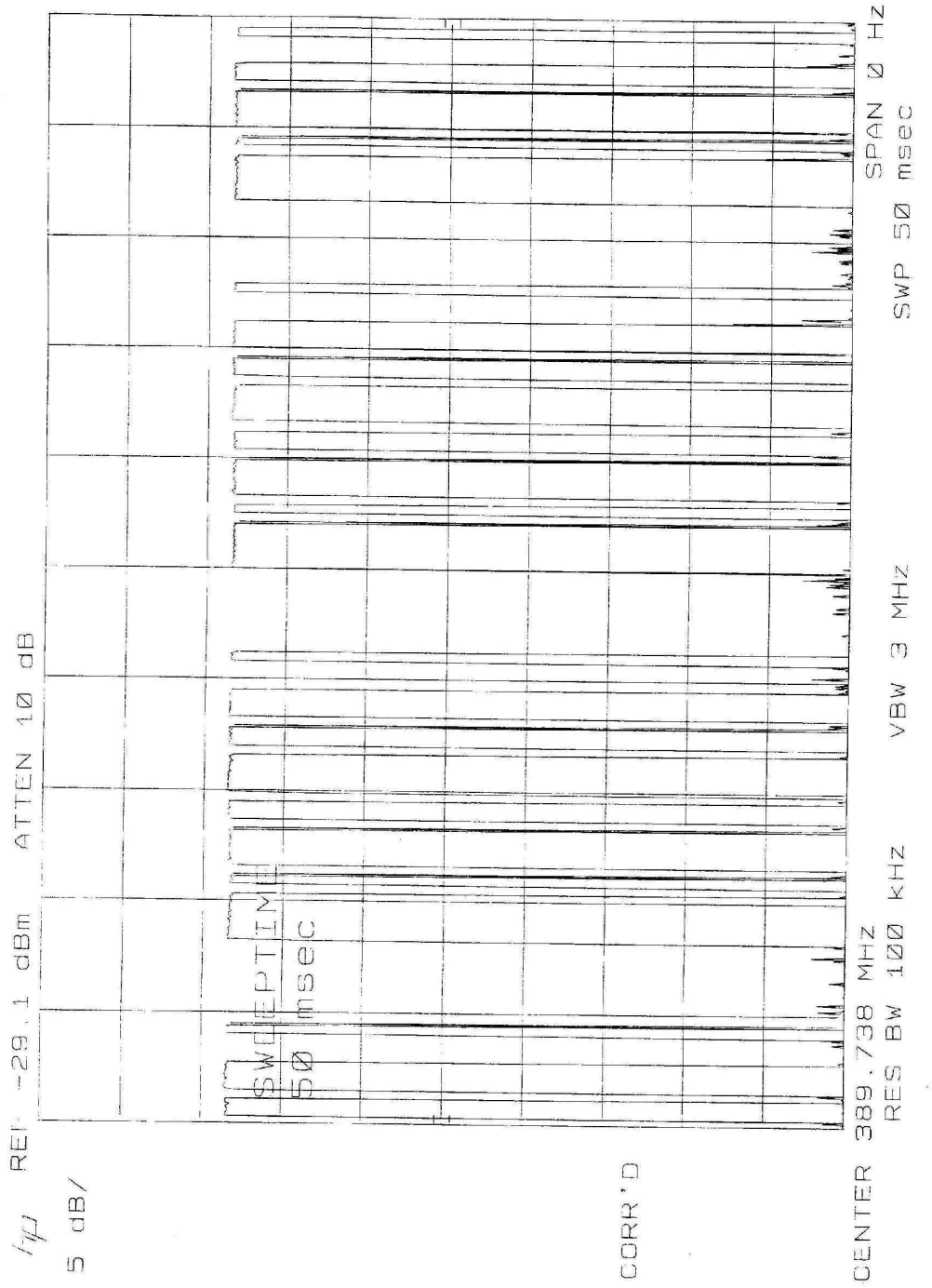


Figure 1

The Radiated fundamental emission waveform (Sweep Time 30m sec).

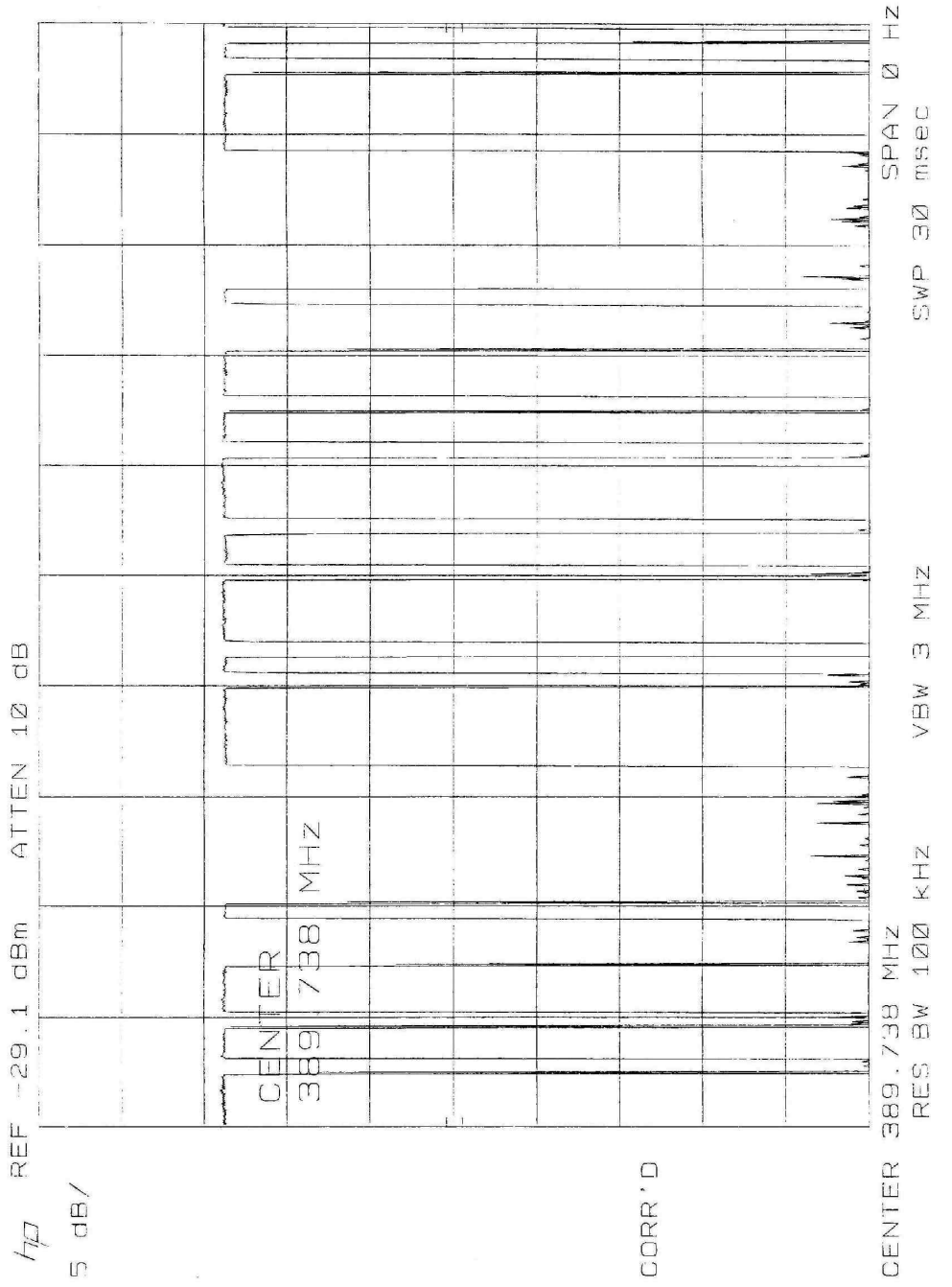
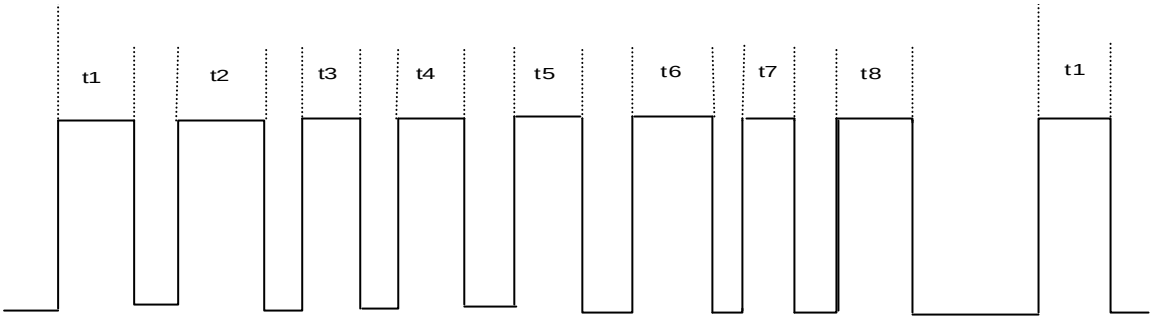


Figure 2

[Calculation of Conversion Factor (Peak detector to Average)]

In accordance with ANSI C63.4-1992 section 13.1.4.2, The EUT's transmitting pulse modulated emissions, therefore the average level of emissions are found by measuring peak level of the emission and correcting them with the duty cycle.



$$\text{Duty cycle} = \frac{\text{The value of the sum of the pulse widths in one period } \sum_{n=1}^{8} t_n}{\text{The length of period (T)}}$$

From Figure 2.

The value of the sum of the pulse widths in one period : 9.3 [msec]
The length of the period : 16.7 [msec]

Then, Conversion Factor PEAK to AVERAGE is calculated as follows.

$$\text{Conversion Factor PEAK to AVERAGE (dB)} = 20 \text{ Log (Duty cycle)} = 20 \text{ Log } \frac{9.3 \text{ [msec]}}{16.7 \text{ [msec]}}$$
$$= -5.1 \text{ (dB)}$$

[Sample Calculation at conversion Peak to Average]

Field Strength (dBμV/m)

= Meter Reading (at Maximum level of horizontal or vertical) (dBμV) + Antenna Factor (dB/m) + Conversion Factor (dB)

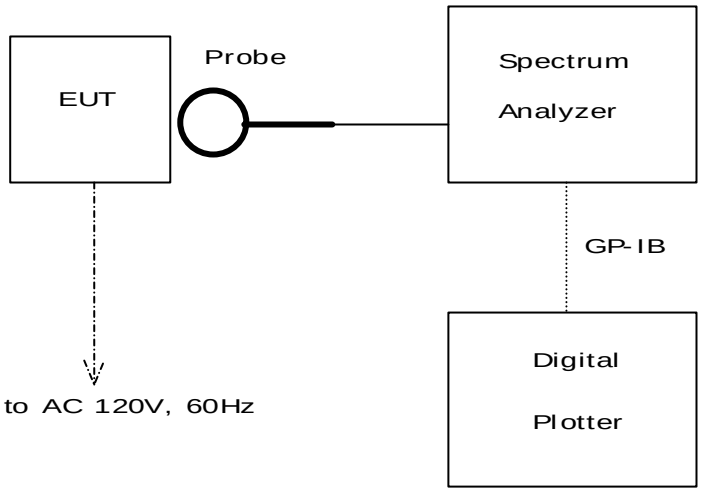
5.3. Photographs of EUT System Configuration

FRONT VIEW

REAR VIEW

6. EMISSION BANDWIDTH MEASUREMENT

6.1. Test Configuration



6.2. Test Results

Measured emission bandwidth = 460 kHz

See next Figure 3(the picture of spectrum analyzer)

[Note]

Emission Bandwidth was determined at the points 20dB down from the modulated carrier.

Spectrum Analyzer Setting:

Center Frequency	= 389.738 MHz
Frequency Span	= 200 kHz/div.
Resolution Bandwidth	= 100 kHz
Video Bandwidth	= 3 MHz
Sweep Time	= 20 m sec
Trace Mode	: MAX. HOLD

[Environment]

Temperature : 14°C Humidity : 33%

[Calculation of Limit]

Limit of Emission bandwidth = 389.738 MHz × 0.25% = 974.35 kHz

[Summary of Test Results]

Minimum margin of emission bandwidth was 514.35 kHz.

Tested Date : 14 February 2000 Signature

Ikuya Minematsu

- Continued -

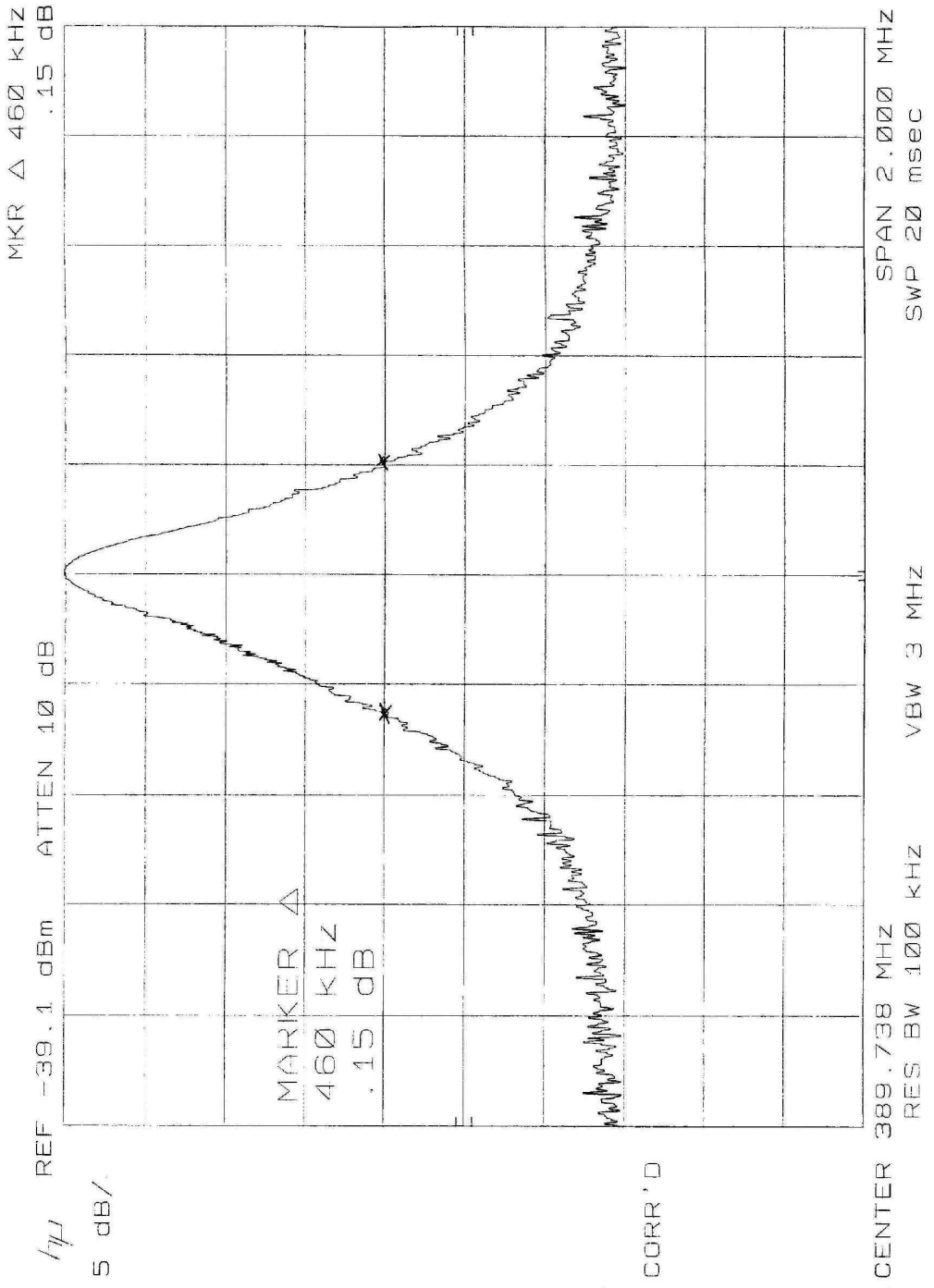


Figure 3

7. USED TEST EQUIPMENTS AND CALIBRATION STATUS

Equipment	Manufacturer	Model No.	Speecifications	KEC Control No.	Test Item (*)	Last Cal.	Next Cal.
Test Receiver	Rohde & Schwarz	ESH3	Frequency Range 9kHz-30MHz	FS-48-2	1	1999/12	2000/12
		ESVS10	Frequency Range 20MHz-1GHz	FS-82	2	2000/1	2001/1
Spectrum Analyzer	Rohde & Schwarz	8564E	Frequency Range 30 Hz-40 GHz	SA-39	2	1999/12	2000/12
	Hewlett Packard	8568B	Frequency Range 100 Hz-1.5 GHz	FS-46-3	1,3	1999/6	2000/6
Pre-amplifier	Anritsu	8449B	Frequency Range 1 GHz-26.5 GHz	AM-52	2	1999/4	2000/4
Biconical Antenna	Schwarzbeck	BBA9106	Frequency Range 30MHz-300MHz	AN-94	2	1999/2	2000/2
Log-Periodic Antenna	Schwarzbeck	UHALP9108A	Frequency Range 300MHz-1GHz	AN-217	2	1999/2	2000/2
Tuned Dipole Antenna	Kyoritsu	KBA-511AS	Frequency Range 25MHz-500MHz	AN-135	N/A	1999/3	2000/3
		KBA-611S	Frequency Range 500MHz-1GHz	AN-137	N/A	1999/3	2000/3
Horn Antenna	Raven	92888-2	Frequency Range 1 GHz- 2GHz	AN-167	2	1999/11	2000/11
		91889-2	Frequency Range 1 GHz- 5GHz	AN-168	2	1999/11	2000/11
LISN for EUT	Kyoritsu	KNW-407	Frequency Range 150kHz- 30MHz	FL-106	1	1999/4	2000/4
LISN for Peripheral	Kyoritsu	KNW-242	Frequency Range 10kHz- 30MHz	FL-110	N/A	1999/4	2000/4
Digital Plotter	Hewlett Packard	7440A	Plot Area A4 size	FS-51-7	3	-	-

[Note]

Test Item (*): 1: Conducted Emission Measurement
2: Radiated Emission Measurement
3: Bandwidth Measurement
N/A: Not Applicable

The overall program of calibration and verification of equipment is designed and operated so as to ensure that measurements made by KEC are traceable to national standards of measurement or equivalent abroad.