



Issue Date : January 25, 1999
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EMC ~~EMISSION~~ - TEST REPORT

JQA APPLICATION No. : KL8080649

Model/Type No. : KX-TC1000B

Name of Product : 43MHz/49MHz Cordless Telephone (Base Unit)

FCC ID : ACJ96NKX-TC1000

Applicant : Kyushu Matsushita Electric Co., Ltd.

Address : 1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan

Manufacturer : Kyushu Matsushita Electric Co., Ltd.

Address : 1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan

Final Judgement : Passed

TEST RESULTS IN THIS REPORT are obtained in use of equipment that is traceable to Electro-technical Lab. of MITI Japan and Communications Research Lab. of PTT Japan.

THE TEST RESULTS only responds to the test sample. This test report shall not be reproduced except in full.

JAPAN QUALITY ASSURANCE ORGANIZATION (JQA)
KITA-KANSAI TESTING CENTER
EMC DIVISION



LAB CODE: 200191-0

DIRECTORY

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TEST REGULATION

FCC Rules and Regulations Part 15 Subpart A, B and C (April 17, 1997)

- ☐ - Class A Digital Device
- ☐ - Class B Digital Device
- ☒ - Intentional Radiator
- ☒ - Receiver (employing superheterodyne techniques)

Test procedure:

Conducted and radiated emission test were performed according to the procedures in ANSI C63.4-1992.

GENERAL INFORMATION

Test facility:

- 1) Test Facility located at Kita-Kansai : 1st and 2nd Open Sites (3 m Site)
Test Facility located at Kameoka Open Site (3, 10 and 30 m, on common plane)
FCC filing No. : 31040/SIT 1300F2
- 2) KITA-KANSAI TESTING CENTER is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance established in Title 15, Part 285 Code of Federal Regulations.
NAVLAP Lab Code: 200191-0

Description of the Equipment Under Test (EUT):

- | | |
|---------------------------|---|
| 1) Name | : 43MHz/49MHz Cordless Telephone (Base Unit) |
| 2) Model/Type No. | : KX-TC1000B |
| 3) Product Type | : Pre-Production |
| 4) Category | : Intentional Radiator and Receiver
(employing superheterodyne techniques) |
| 5) EUT Authorization | : ☐ - Verification ☒ - Certification ☐ - D.o.C |
| 6) Transmitting Frequency | : 43.720 MHz - 44.480 MHz(1ch-15ch)
46.610 MHz - 46.970 MHz(16ch-25ch) |
| 7) Receiving Frequency | : 48.760 MHz - 49.500 MHz(1ch-15ch)
49.670 MHz - 49.990 MHz(16ch-25ch) |
| 8) Power Rating | : AC 120V 60Hz |

Definitions for symbols used in this test report:

- ☒ - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
- ☐ - Blank box indicates that the listed condition, standard or equipment is not applicable for this Report.

TEST CONDITIONS

The measurement of the Conducted Emission (Disturbance Voltage)
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

● - Shielded room

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - Shielded room

○ - On metal plane of open site

Used test instruments and sites:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○ - ESH 3	A - 1		
● - ESH 2	A - 2	December, 1998	1 Year
○ - ESH 2	A - 3		
● - KNW-407	D - 6	February, 1998	1 Year
○ - KNW-408	D - 11		
○ - KNW-242	D - 7		
○ - ESH3-Z5	D - 12		
○ - KNW-341C	D - 13		
○ - KNW-408	D - 14		
○ - KNW-244C	D - 77		
○ - KNW-408	D - 78		
○ - ESH2-Z5	D - 10		
○ - ESH2-Z3	D - 17		
○ - 8568B	A - 10		
○ - 8566B	A - 13		
○ - 8593A	A - 15		
● - Cable	H - 8	February, 1998	1 Year

Environmental conditions:

Temperature: 24 °C Humidity: 24 %

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The measurement of the Radiated Emission (Magnetic Field)

was performed in the frequency range of 9 kHz - 30 MHz, in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

● - 1st site (3 meters)

○ - 2nd site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - 3 meters

○ - 10 meters

○ - 30 meters

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○ - ESH 3	A - 1		
● - ESH 2	A - 2	December, 1998	1 Year
○ - ESH 2	A - 3		
● - HFH2-Z2	C - 2	September, 1998	1 Year
○ - HFH2-Z2	C - 3		

Environmental conditions:

Temperature: 19 °C Humidity: 21 %

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The measurement of the Radiated Emission (Electric Field)

was performed in horizontal and vertical polarization, in the frequency range of 30 MHz - 1000 MHz, in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

● - 1st site (3 meters)

○ - 2nd site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - 3 meters

○ - 10 meters

Validation of Site Attenuation:

1) Last Confirmed Date: November 27, 1998

2) Interval : 1 Year

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - ESV/ESV-Z3	A - 7 / A - 17	December, 1998	1 Year
○ - ESV/ESV-Z3	A - 6 / A - 18		
○ - ESV/ESV-Z3	A - 5 / A - 16		
○ - ESV/ESV-Z3	A - 4 / A - 20		
○ - ESV/ESV-Z3	A - 8 / A - 19		
● - KBA-511A	C - 12	November, 1998	1 Year
● - KBA-611	C - 22	November, 1998	1 Year
○ - KBA-511A	C - 13		
○ - KBA-611	C - 19		
○ - KBA-511A	C - 11		
○ - KBA-611	C - 21		
● - Cable	H - 5	November, 1998	1 Year

Environmental conditions:

Temperature: 19 °C Humidity: 21 %

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The measurement of the Radiated Emission (Electric Field)

was performed in horizontal and vertical polarization, in the frequency range of 1 GHz - 10 GHz, in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

○ - 1st site (3 meters)

○ - 2nd site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - 3 meters

○ - 10 meters

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○ - 8566B	A - 13		
○ - 8593A	A - 15		
○ - ESV	A - 5		
○ - 4T-10	D - 73		
○ - 4T-10	D - 74		
○ - WJ-6611-513	A - 23		
○ - WJ-6882-824	A - 21		
○ - DBL-0618N515	A - 33		
○ - 91888-2	C - 41 - 1		
○ - 91889-2	C - 41 - 2		
○ - 94613-1	C - 41 - 3		
○ - 91891-2	C - 41 - 4		
○ - 94614-1	C - 41 - 5		
○ - 3160-09	C - 48		
○ - TRA-603D	D - 24		
○ - 8494H/8595H	D - 76		
○ - MZ5010C	D - 81		
○ - Cable	C - 40 - 11		
○ - Cable	C - 40 - 12		

Setting of the spectrum analyzer:

RES B.W : 1 MHz Video B.W : 1 MHz
SCALE : LINEAR Sweep Time: 20 msec

Environmental conditions:

Temperature: _____ °C Humidity: _____ %

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The measurement of the Occupied Bandwidth
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

- - 1st site
- - 2nd site
- - Shielded room

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

- - Open site
- - Shielded room

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - 8568B	A - 10	May, 1998	1 Year
○ - 8566B	A - 13		
○ - 8593A	A - 15		
○ - 8673D	B - 2		
● - TR5212	B - 30	March, 1998	1 Year
● - KBA-511A	C - 16	November, 1998	1 Year
○ - KBA-611	C - 18		
○ - 2-10	D - 40		
○ - TRA-603D	D - 24		
○ - 8494H/8595H	D - 76		

Setting of the spectrum analyzer:

RES B.W.: 300 Hz Video B.W.: 1 kHz
SCALE : LOG 10dB/div Sweep Time: 10 sec

Environmental conditions:

Temperature: 24 °C Humidity: 46 %

The measurement of the Operating Frequency
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

- ☐ - 1st site
- ☐ - 2nd site
- ☐ - Shielded room
- ☒ - Temperature Control Chamber(PL-3G,S/N:1381786,TABAI ESPC CORP.)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

- ☐ - Open site
- ☐ - Shielded room

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - TR5212	B - 30	March, 1998	1 Year
● - 8447D	A - 25	June, 1998	1 Year
● - EL100-06	138786	December, 1998	1 Year

CONFIGURATION OF EUT

The Equipment Under Test (EUT) consists of:

Description	Applicant (Manufacturer)	Model No. (Serial No.)	FCC ID
43MHz/49MHz Cordless Telephone (Base Unit)	Kyushu Matsushita Electric Co., Ltd. (Kyushu Matsushita Electric Co., Ltd.)	KX-TC1000B (--)	ACJ96NKX-TC1000
AC Adapter	Kyushu Matsushita Electric Co., Ltd. (Kyushu Matsushita Electric Co., Ltd.)	KX-TCA1 (--)	N/A

The measurement was carried out with the following equipment connected:

Description	Grantee/Distributor	Model No. (Serial No.)	FCC ID
None			

Type of Interference Cable(s) and the AC Power Cord used with the EUT:

No.	Cable	Shielded	Ferrite Core	Length
1	EUT "LINE" / No termination	NO	NO	2.5m
2	DC Power Cord (EUT / AC Adapter) with 2-pin plug	NO	NO	1.9m

Operation - mode of the EUT:

The EUT was operated during the test under the following specification:

- 1) Conducted and radiated emission measurement:
Communicating (transmitting and receiving) with the Handset.
- 2) Measurement of the occupied frequency :
 - a. Inputting the 2.5 kHz sine wave from a telephone line terminal.
 - b. Pushing "HANDSET LOCATOR"

Test system:

The EUT has a DC terminal and a telephone line terminal.

Special accessories:

None

Detailed Transmitter Portion:

Transmitting frequency : 43.720 MHz - 44.480 MHz(1ch-15ch)
46.610 MHz - 46.970 MHz(16ch-25ch)

Detailed Receiver Portion:

Receiving frequency : 48.760 MHz - 49.500 MHz(1ch-15ch)
49.670 MHz - 49.990 MHz(16ch-25ch)

1st Local frequency : 38.065 MHz - 39.295 MHz

2nd Local frequency : 10.240 MHz

1st Intermediate frequency : 10.695 MHz (Lower side)

2nd Intermediate frequency : 455 kHz

Other Clock Frequency :

CPU : 3.573 MHz

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EUT Modification

- - No modifications were conducted by JQA to achieve compliance to applied levels.
- - To achieve compliance to applied levels, the following change(s) were made by JQA during the compliance test.

The modification(s) will be implemented in all production models of this equipment.

Applicant : N/A Date : N/A

Typed Name : N/A Position : N/A

Responsible Party

Responsible Party of Test Item(Product)

Responsible party :

Contact Person :

Signatory

Regulation : CFR 47 FCC Rules Part 15
Issue Date : January 25, 1999

TEST RESULTS

[Transmitter Portion]

Conducted Emission 450 kHz - 30 MHz

● - KEPT ○ - NOT KEPT

More than +37.1 dB at 29.90 MHz

_____ dB at _____ MHz

$$\underline{+ 2.1} \text{ dB}(2\sigma) \quad \underline{- 2.1} \text{ dB}(2\sigma)$$

Remarks: _____

Radiated Emission 9 kHz - 1 GHz

● - KEPT ○ - NOT KEPT

+ 2.4 dB at 46.730 MHz

_____ dB at _____ MHz

$$\begin{array}{rcl} + 2.5 & \text{dB}(2\sigma) & - 2.5 \text{ dB}(2\sigma) \\ + 4.1 & \text{dB}(2\sigma) & - 4.2 \text{ dB}(2\sigma) \end{array}$$

Remarks: _____

Occupied Bandwidth

● - KEPT ○ - NOT KEPT

Refer to pages 27 - 34 18.15 kHz

±0.05 ppm(2σ)

Remarks: _____

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TEST RESULTS

[Transmitter Portion]

Operating Frequency

The requirements are

● - KEPT

○ - NOT KEPT

Worst Result
Results

-0.00059 %
Refer to page 35

Uncertainty of measurement results

±0.05 ppm(2σ)

Remarks:

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[Receiver Portion]

Conducted Emission 450 kHz - 30 MHz

The requirements are

● - KEPT ○ - NOT KEPT

Min. limit margin

More than +37.1 dB at 29.90 MHz

Max. limit exceeding

_____ dB at _____ MHz

Uncertainty of measurement results

+ 2.1 dB(2 σ) - 2.1 dB(2 σ)

Remarks: _____

Radiated Emission 30 MHz - 1 GHz

The requirements are

● - KEPT ○ - NOT KEPT

Min. limit margin

More than +24.9 dB at 274.260 MHz

Max. limit exceeding

_____ dB at _____ MHz

Uncertainty of measurement results 30 MHz - 1 GHz

+ 4.1 dB(2 σ) - 4.2 dB(2 σ)

Remarks: _____

SUMMARY

GENERAL REMARKS :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A, B and C (April 17, 1997) under the test configuration, as shown in page 17.

The conclusion for the test items of which are required by the applied regulation is indicated under the final judgement.

FINAL JUDGEMENT :

The "as received" sample;

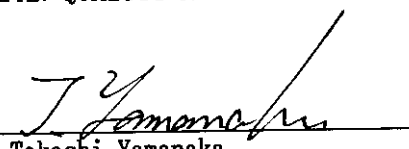
- - fulfill the test requirements of the regulation mentioned on page 3.
- - fulfill the test requirements of the regulation mentioned on page 3, but with certain qualifications.
- - doesn't fulfill the test regulation mentioned on page 3.

Begin of testing : January 5, 1999

End of testing : January 20, 1999

- JAPAN QUALITY ASSURANCE ORGANIZATION -

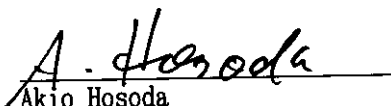
Approved Signatory :


Takashi Yamanaka

Manager

EMC Div.

JQA KITA-KANSAI Testing Center

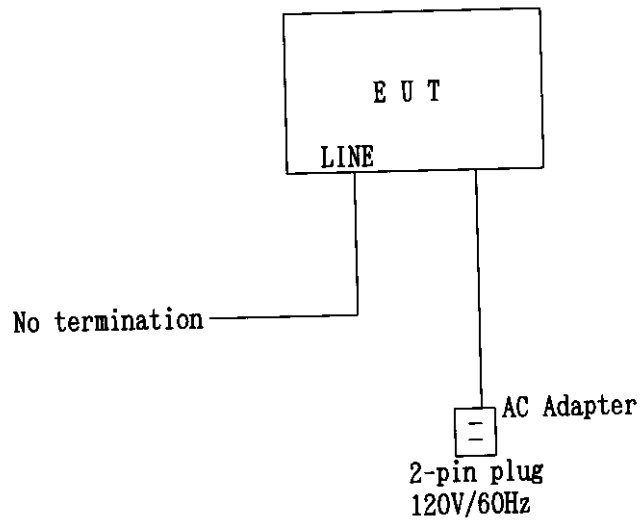

Akio Hosoda

Project Manager

EMC Div.

JQA KITA-KANSAI Testing Center

Test System-Arrangement (Drawings)



Preliminary Test and Test-setup(Drawings)

Conducted Emission 450 kHz - 30 MHz:

The preliminary test was performed according to the description of ANSI C63.4-1992 Sec.13.1.3.1 (or Sec.7.2.3) and Sec.13.1.2 (or Sec.11.2), the preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions, and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.

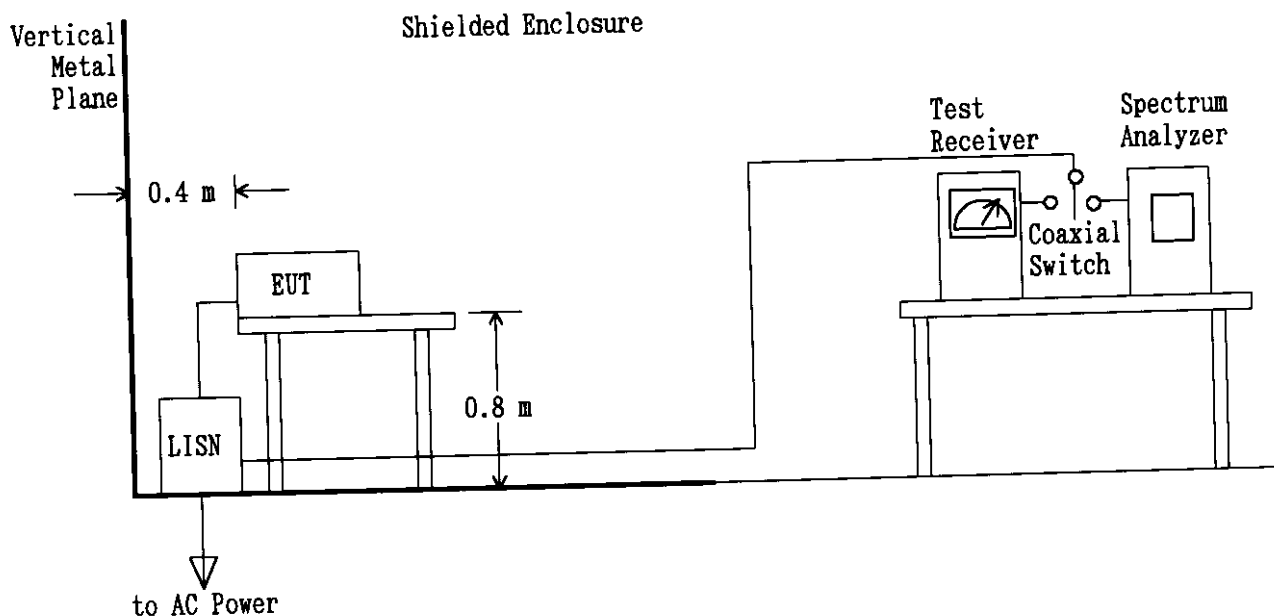
Step 1: One operation mode of the test system was setting.

Step 2: Using both of a spectrum analyzer and a test receiver, the emission's circumstance from the system was monitored in one of ten divided frequency bands of the specified frequency range (450 kHz - 30 MHz). The maximum emission in the band was found by selecting of current-carrying conductor. The level and the frequency at the one point which are regarded as relative high emission in the band was measured and recorded. This step was repeated until the ending frequency band.

Step 3: Return to step 1, if the other operation mode was possible to be setting.

Step 4: Based on the collected results, the operation mode produced the maximum emission was selected. The final test on the selected operation mode was performed. But if it was difficult to select the operation mode, the final tests on all operation modes were performed.

Step 5: Based on the same data, as result if the final measurement, at the worst point that has the highest amplitude relative to the limit the repeatability of the worst was reconfirmed. The photographs of the test system setup on the worst point were taken and recorded.



Radiated Emission (Magnetic Field) 9 kHz - 30 MHz:

The preliminary test was performed according to the description of ANSI C63.4-1992 Sec.13.1.4.1 (Preliminary Radiated Emissions Tests) and Sec.13.1.2 (Equipment Configurations), the preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.

Step 1: One operation mode of the test system was setting.

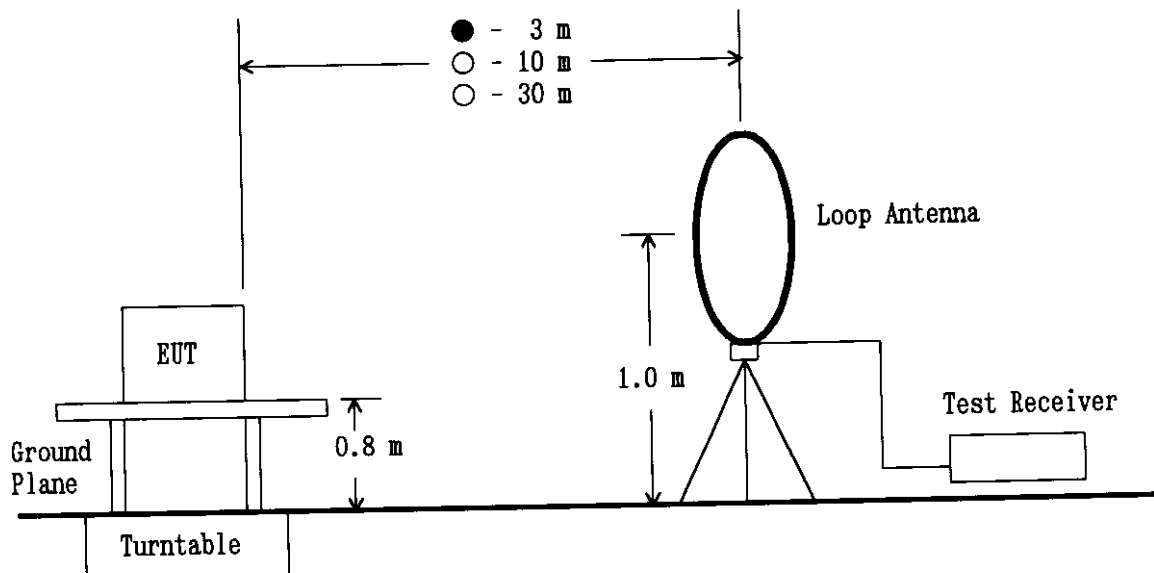
Step 2: In order to investigate the frequencies of maximum emissions, the loop antenna position was approached to the EUT and the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded in the specified frequency band (9 kHz - 30 MHz).

Step 3: Using a test receiver and a loop antenna, the emission's circumstance from the test system was measured in according with ANSI C63.4-1992 Sec.13.1.4.2 (Final Radiated Emissions Tests) at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the loop antenna. The maximum emission was found by rotating three orthogonal axes under a typical system configuration.

Step 4: Return to step 1, if the other operation mode was possible to be setting.

Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.

At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



Radiated Emission (Electric Field) 30 MHz - 1000 MHz:

The preliminary test was performed according to the description of ANSI C63.4-1992 Sec.13.1.4.1 (or Sec.8.3.1.1) and Sec.13.1.2 (or Sec.11.2), the preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions, and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.

Step 1: One operation mode of the test system was setting.

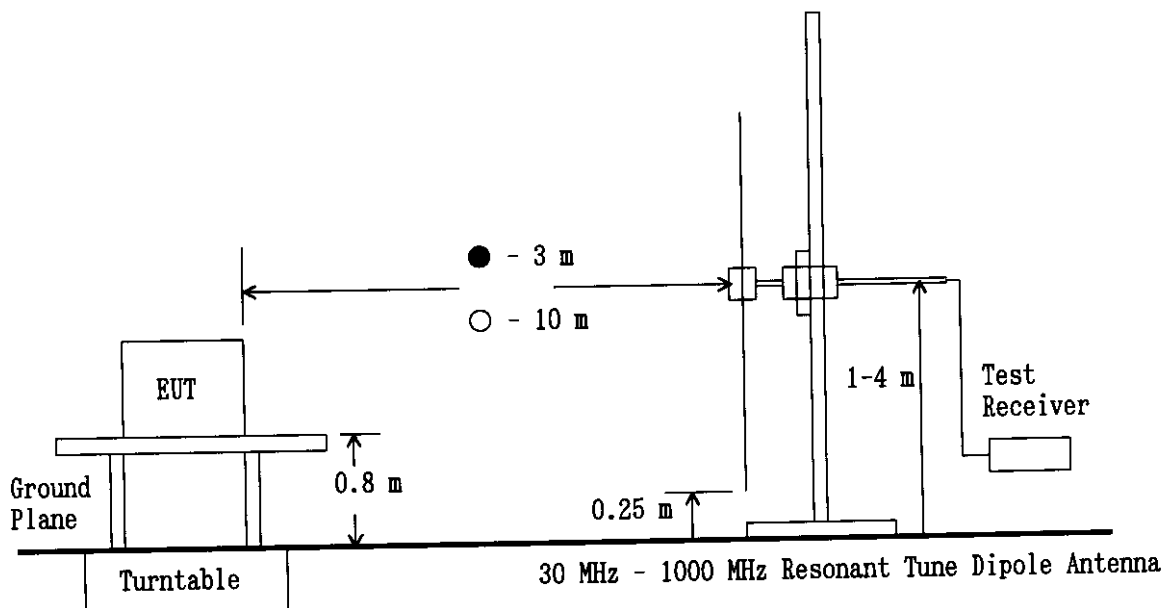
Step 2: Using a test receiver and a test antenna probe, the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded every one of 22 divided bands in the specified frequency band (30 MHz - 1000 MHz).

Step 3: Using a test receiver and a resonant tuned dipole antenna, the emission's circumstance from the test system was measured in according with ANSI C63.4-1992 Sec.13.1.4.2 (or Sec.8.3.1.2) at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the resonant tuned dipole antenna. The maximum emission was found by rotating three orthogonal axes under a typical system configuration.

Step 4: Return to step 1, if the other operation mode was possible to be setting.

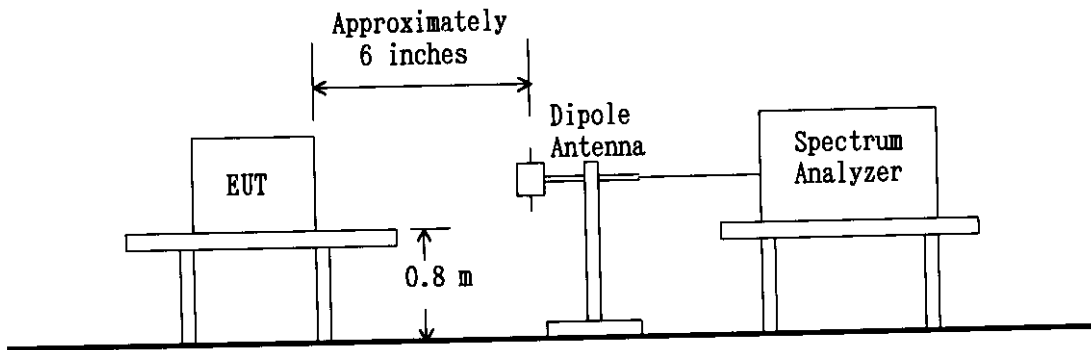
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.

At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the the worst point were taken and recorded.



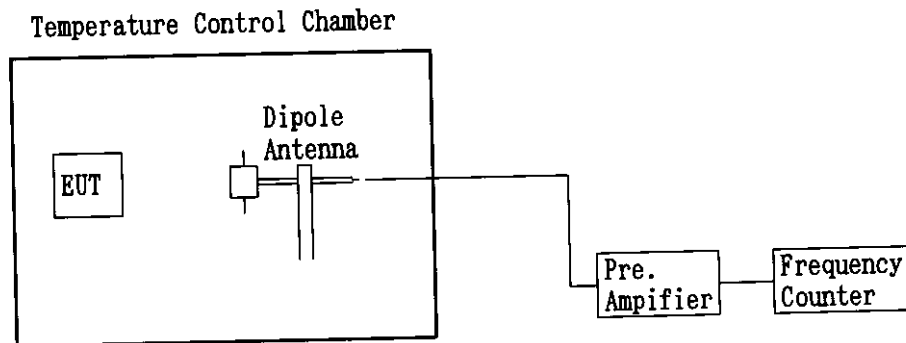
Occupied Bandwidth:

The measurement of the occupied bandwidth were made by a spectrum analyzer with a resonant tuned dipole antenna.



Operating Frequency:

By using a frequency counter with a suitable pre-amplifier, the carrier frequency of the transmitter frequency was measuring with a temperature variation of -20°C to $+50^{\circ}\text{C}$ at the normal supply voltage, and with a variation in the primary voltage 85% to 115% of the rated voltage at the temperature of $+20^{\circ}\text{C}$.



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Mains terminal Disturbance Measurement Intentional Radiator

Based on the test result of every test mode, the mode of operation that produce the conducted emission that has the highest amplitude is shown as follows:

Operating Frequency : 44.120 MHz

Test Date: January 12, 1999
Temp.: 24 °C ; Humi.: 24 %

Frequency [MHz]	Correction Factor [dB]	Meter Readings dB(μV)				Limits dB(μV)	Results dB(μV)		Margin [dB]	Remarks (Note 2)
		VA-QP	VA-AV	VB-QP	VB-AV		QP	AV		
0.45	0.1	< 10.0	-	< 10.0	-	48.0	< 10.1	-	>+37.9	A
1.40	0.2	< 10.0	-	< 10.0	-	48.0	< 10.2	-	>+37.8	A
3.57	0.3	< 10.0	-	< 10.0	-	48.0	< 10.3	-	>+37.7	A
7.14	0.4	< 10.0	-	< 10.0	-	48.0	< 10.4	-	>+37.6	A
10.24	0.5	< 10.0	-	< 10.0	-	48.0	< 10.5	-	>+37.5	A
10.72	0.5	< 10.0	-	< 10.0	-	48.0	< 10.5	-	>+37.5	A
14.30	0.6	< 10.0	-	< 10.0	-	48.0	< 10.6	-	>+37.4	A
21.44	0.8	< 10.0	-	< 10.0	-	48.0	< 10.8	-	>+37.2	A
23.23	0.8	< 10.0	-	< 10.0	-	48.0	< 10.8	-	>+37.2	A
29.50	0.9	< 10.0	-	< 10.0	-	48.0	< 10.9	-	>+37.1	A

Sample of calculated result at 29.50 MHz, as the Minimum Margin point:

Correction Factor = 0.9 dB

+) Meter Reading = <10.0 dB(μV)

Result = <10.9 dB(μV)

Minimum Margin : 48.0 - <10.9 = >37.1(dB)

The point shown on "___" is the Minimum Margin Point.

Note 1:

1. The correction factors includes the LISN insertion loss and the cable loss.

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	9 kHz
B	Average	10 kHz

Tester Signature : A. Hosoda

Type Name : Akio Hosoda

Electromagnetic Radiation Disturbance Measurement

Intentional Radiator

Based on the test result of every test mode, the mode of operation that produce the radiated emission that has the highest amplitude is shown as follows:

Operating Frequency : 44.120 MHz

Test Date: January 7, 1998
 Temp.: 19 °C ; Humi.: 21 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits* dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
Fundamental									
44.120	1.8	1.3	70.0	74.0	80.0	73.1	77.1	+ 2.9	C
Harmonics									
88.240	7.8	1.8	< 14.0	< 6.0	43.5	< 23.6	< 15.6	>+19.9	A
132.360	11.3	2.2	4.0	< 2.0	43.5	17.5	< 15.5	+26.0	A
176.480	13.8	2.6	15.0	2.0	43.5	31.4	18.4	+12.1	A
220.600	15.8	3.0	21.0	14.0	46.0	39.8	32.8	+ 6.2	A
264.720	17.4	3.3	17.0	10.0	46.0	37.7	30.7	+ 8.3	A
308.840	18.7	3.6	5.0	< -5.0	46.0	27.3	< 17.3	+18.7	A
352.960	19.9	3.9	5.0	< 8.0	46.0	28.8	< 31.8	+14.2	A
397.080	21.1	4.2	0.0	< -5.0	46.0	25.3	< 20.3	+20.7	A
441.200	22.1	4.4	2.0	< -5.0	46.0	28.5	< 21.5	+17.5	A

Operating Frequency : 46.730 MHz

Test Date: January 7, 1998
 Temp.: 19 °C ; Humi.: 21 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits* dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
Fundamental									
46.730	2.3	1.3	70.0	74.0	80.0	73.6	77.6	+ 2.4	C
Harmonics									
93.460	8.3	1.8	7.0	2.0	43.5	17.1	12.1	+26.4	A
140.190	11.8	2.3	8.0	4.0	43.5	22.1	18.1	+21.4	A
186.920	14.3	2.7	<15.0	< 4.0	43.5	< 32.0	< 21.0	>+11.5	A
233.650	16.3	3.1	17.0	7.0	46.0	36.4	26.4	+ 9.6	A
280.380	17.9	3.4	14.0	< 11.0	46.0	35.3	< 32.3	+10.7	A
327.110	19.2	3.7	11.0	2.0	46.0	33.9	24.9	+12.1	A
373.840	20.5	4.0	4.0	1.0	46.0	28.5	25.5	+17.5	A
420.570	21.6	4.3	<-5.0	< -5.0	46.0	< 20.9	< 20.9	>+25.1	A
467.300	22.6	4.6	<-5.0	< -5.0	46.0	< 22.2	< 22.2	>+23.8	A

Sample of calculated result at 46.730 MHz, as the Minimum Margin point:

Antenna Factor = 2.3 dB(1/m)
Corr. Factor = 1.3 dB
+) Meter Reading = 74.0 dB(μ V/m)
Result = 77.6 dB(μ V/m)

Minimum Margin : 80.0 - 77.6 = 2.4(dB)

The point shown on "____" is the Minimum Margin Point.

Note 1:

- 1)The highest frequency generated or used in the EUT: 49.990 MHz
- 2)The upper frequency of measurement range : 1000 MHz
- 3)The spectrum was scanned 9 kHz to 1000 MHz and all emissions not reported were more than 20dB below the applied limits.
- 4)Corr. Factor (30 MHz - 1 GHz) : Cable Loss(dB)
- 5)* Fundamental Limits : Average(80dB(μ V/m)),Peak(100dB(μ V/m))
Harmonics Limits : CISPR QP(Refer to § 15.209)

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	120 kHz
B	Average	120 kHz
C	Peak	120 kHz
D	Average	12 kHz
E	Average	7.5 kHz

Tester Signature : A. Hosoda
Type Name : Akio Hosoda

Occupied Bandwidth Measurement
Intentional Radiator

The measurement of the occupied bandwidth were made under the following modulation conditions of the transmitter under test.

Modulation Signal:

1) Internal Signal

The transmitter under test was modulated with all internal signal with pushing the keys.

2) External Sine Signal

The transmitter under test was modulated by 2.5 kHz tone at an input level 16dB greater than necessary to produce 50% modulation. The input level was established at the frequency of the maximum response of the audio modulating circuit.

Input terminal : Telephone line

Input level : -25.0 dBV + 16.0 dB

Measurement Results: Refer to pages 28 - 34.

The graphs are the worst result in each of 2 signal types.

The Worst Occupied Bandwidth : 18.15 kHz at pushing the key "HANDSET LOCATOR"

Tester Signature :

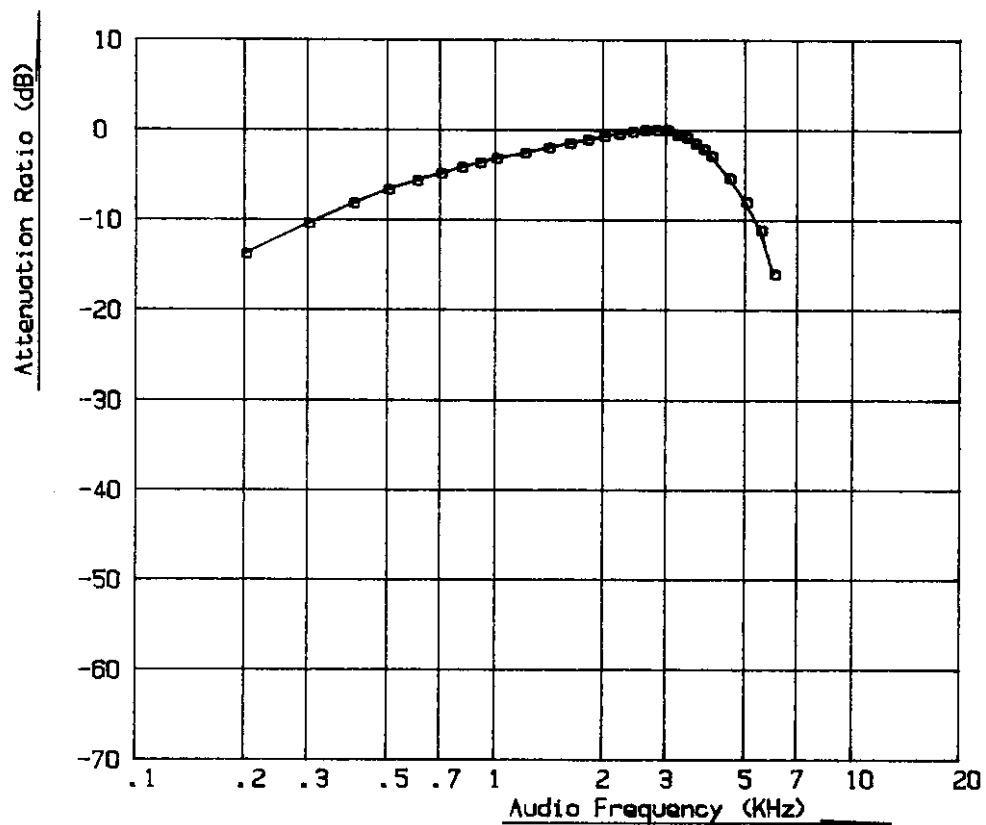
A. Hosoda

Type Name

: Akio Hosoda

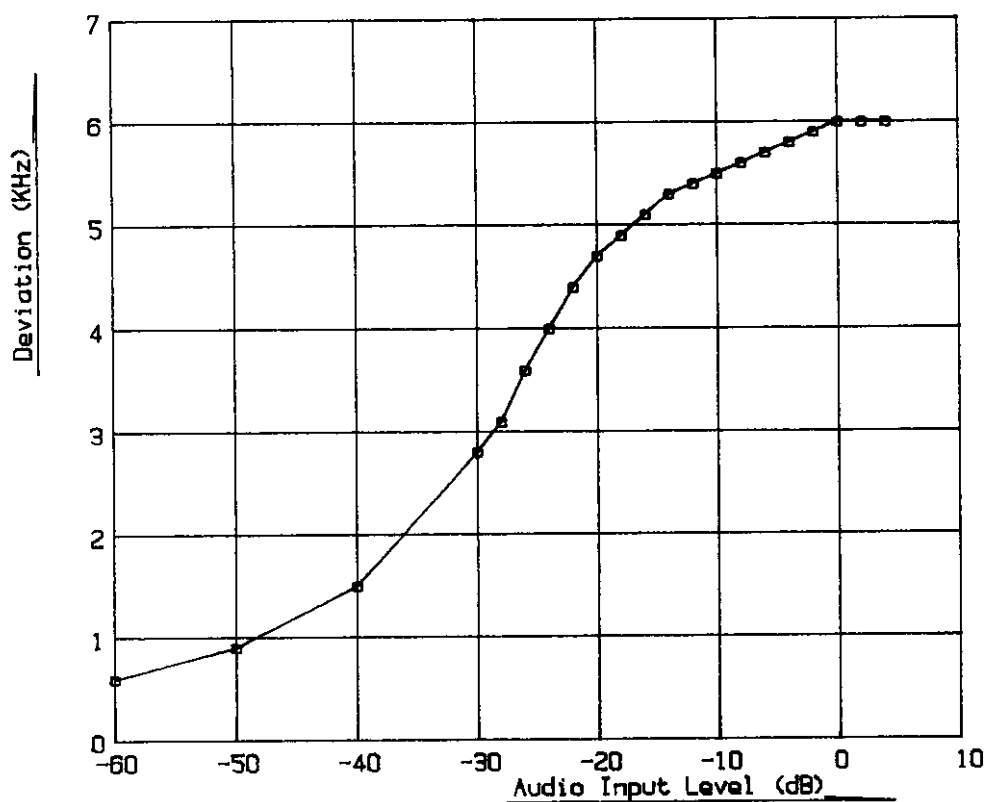
Audio Frequency Response

Model No. : KX-TC1000B 0dB= 1000mV



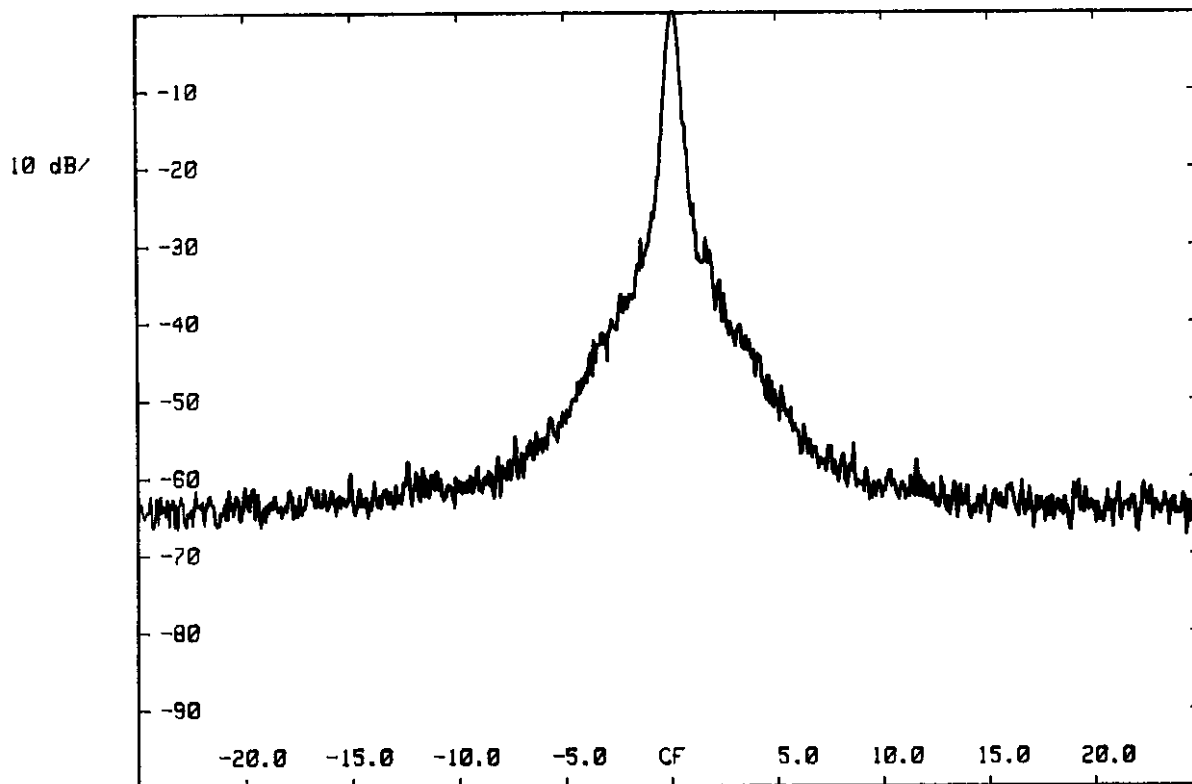
Modulation Characteristics

Model No. : KX-TC1000B 1V=0dB
at 3KHz



EMISSION LIMITATION

REF 65.5 dBuV



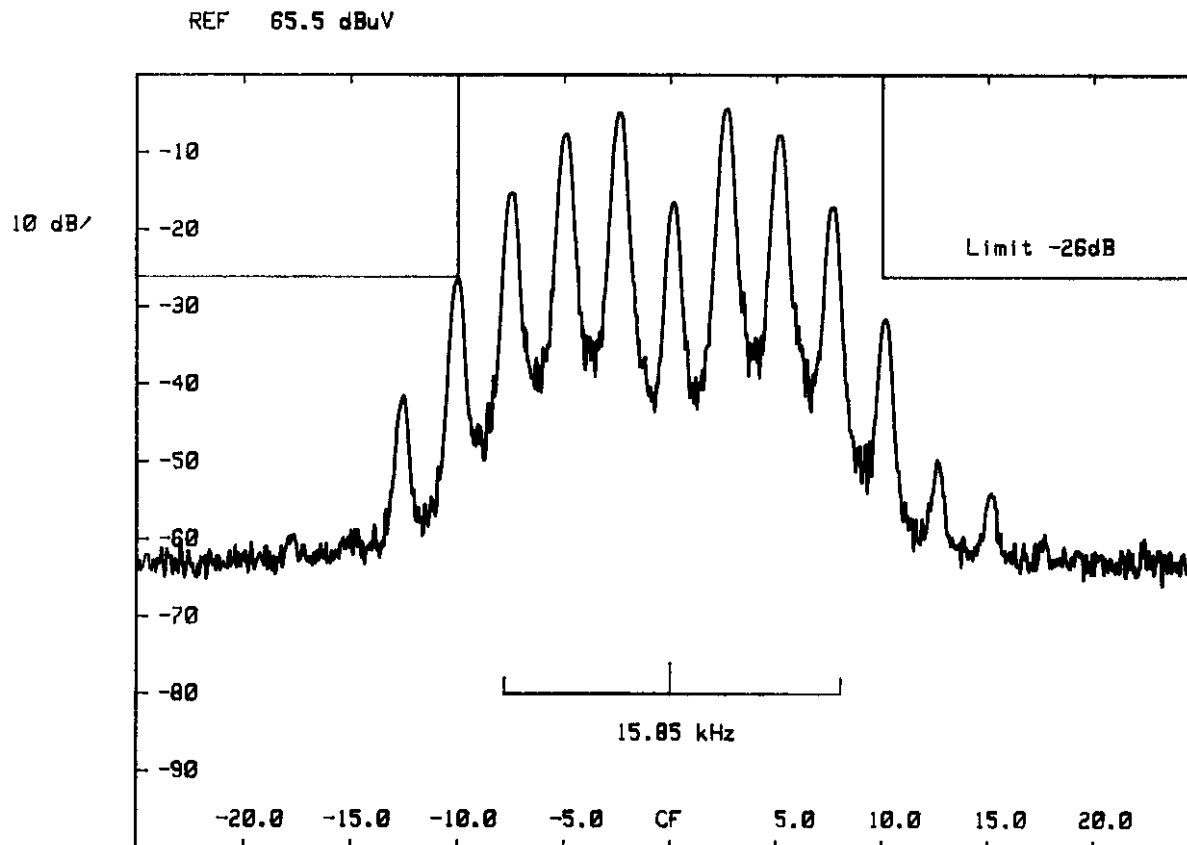
CENTER 46.7300 MHz
RES BW .3 kHz

VBW 1 kHz

SPAN 50.0 kHz
SWP 10.0 sec

Reference Carrier Level

EMISSION LIMITATION



CENTER 46.7300 MHz

RES BW .3 kHz

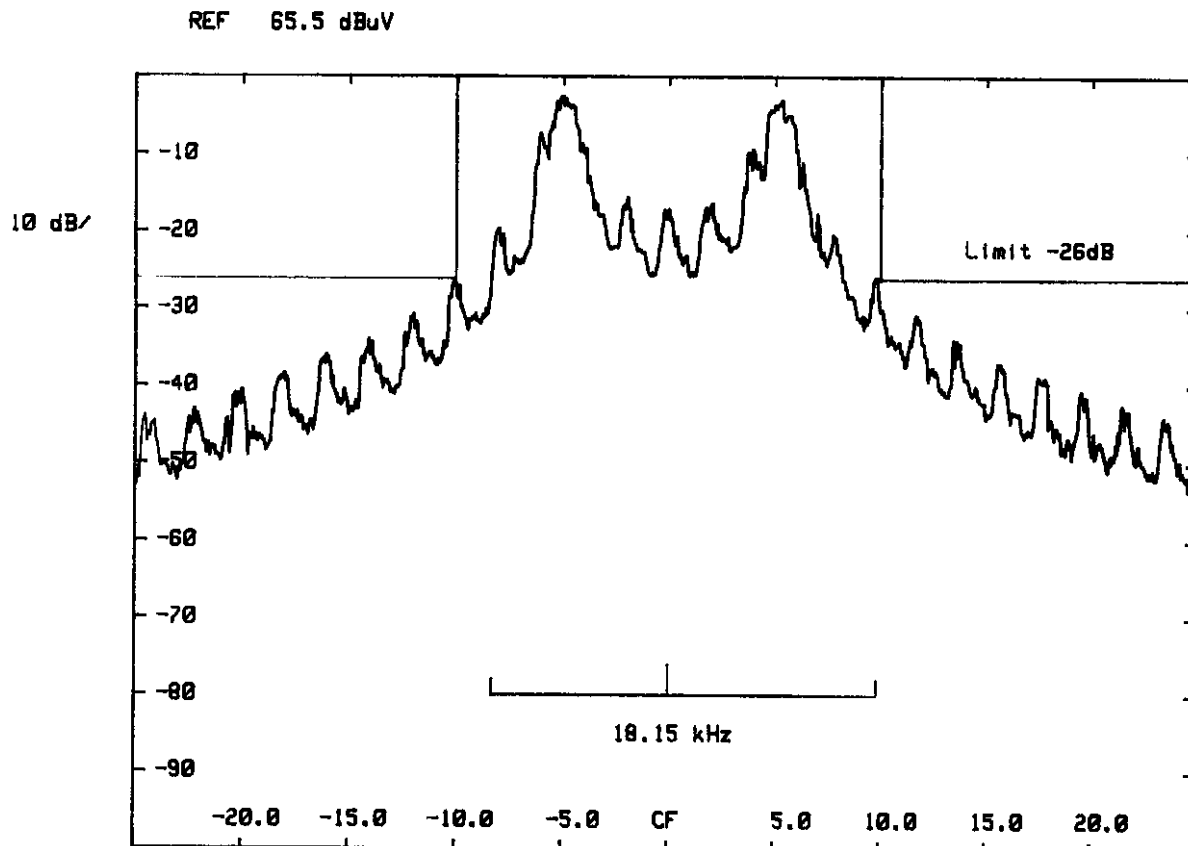
VBW 1 kHz

SPAN 50.0 kHz

SWP 10.0 sec

Modulation: External Sine Wave from Telephone Line

EMISSION LIMITATION



CENTER 46.7300 MHz
RES BW .3 kHz

VBW 1 kHz

SPAN 50.0 kHz
SWP 10.0 sec

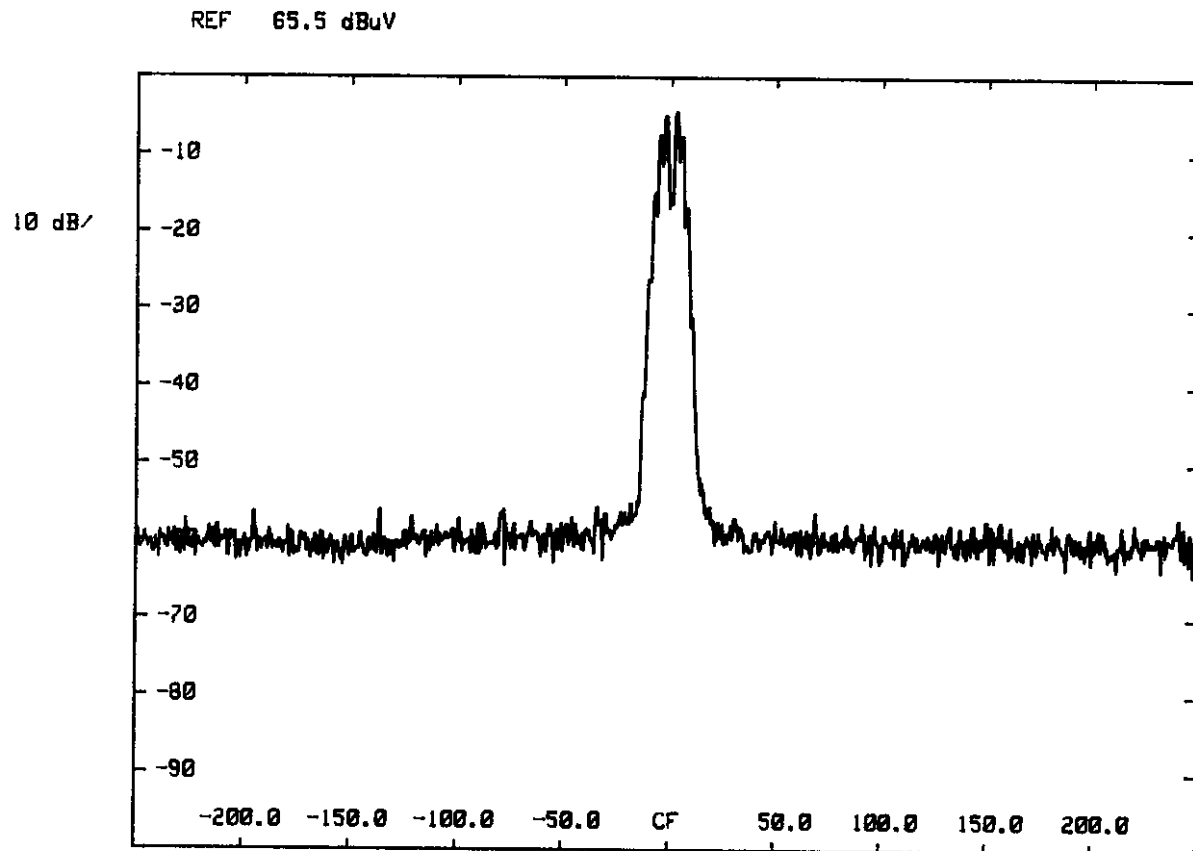
Mode: Key "HANDSET LOCATOR"

JQA Application No. : KL8080649
Model No. : KX-TC1000B
FCC ID : ACJ96NKX-TC1000

Regulation : CFR 47 FCC Rules Part 15
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EMISSION LIMITATION



CENTER 46.7300 MHz

SPAN 500.0 kHz

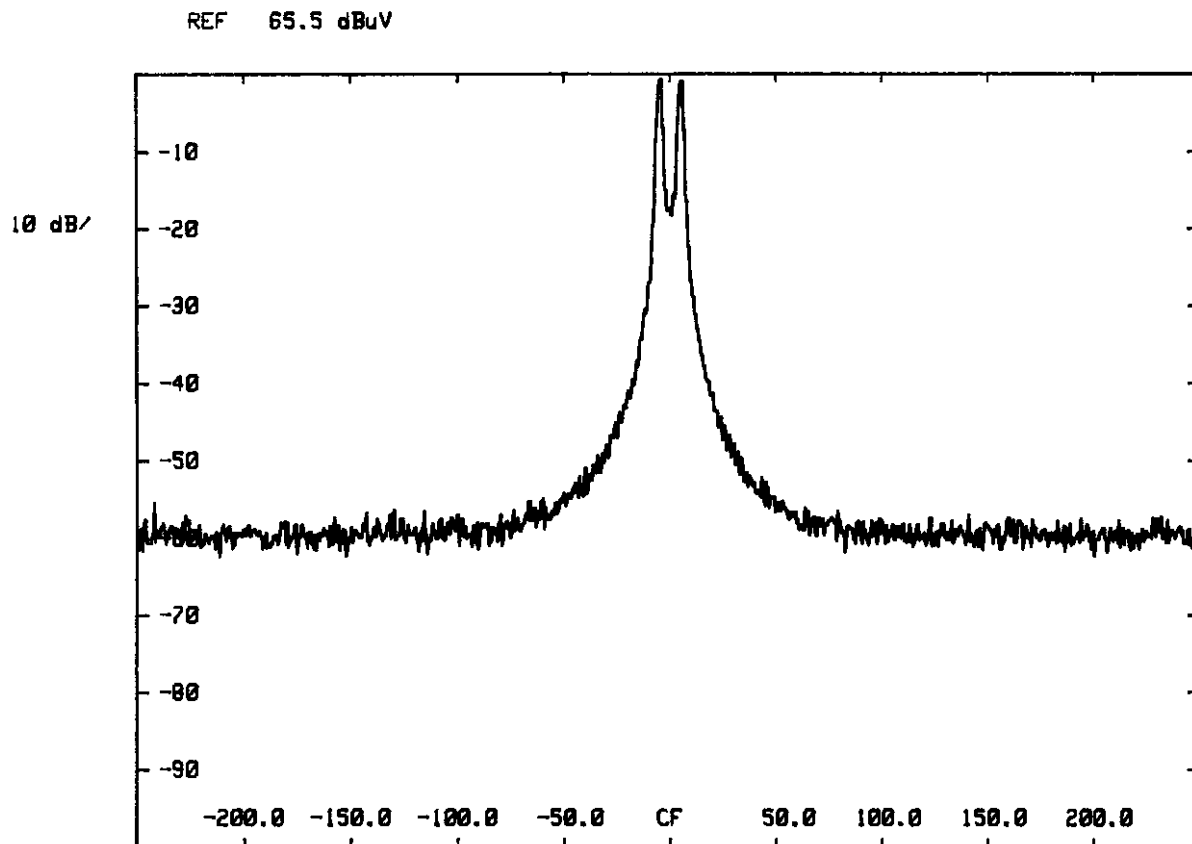
RES BW 1.0 kHz

VBW 3 kHz

SWP 10.0 sec

Modulation: External Sine Wave from Telephone Line

EMISSION LIMITATION



CENTER 46.7300 MHz
RES BW 1.0 kHz

VBW 3 kHz

SPAN 500.0 kHz
SWP 10.0 sec

Mode: Key "HANDSET LOCATOR"

Operating Frequency Measurement
Intentional Radiator

Measurement Results:

1) Operating Frequency: 44.120 MHz(Specified for Base Unit)

Ambient Temperature (°C)	Frequency Tolerance with Time elapse (%)			
	Start up	2 minutes	5 minutes	10 minutes
-20	-0.00026	-0.00016	-0.00008	-0.00010
-50	+0.00009	+0.00008	+0.00007	+0.00007
Primary Supply Voltage (V)	Frequency Tolerance with Time elapse (%)			
	Start up	2 minutes	5 minutes	10 minutes
at 20°C 102(85%)	-0.00010	-0.00006	-0.00014	-0.00034
at 20°C 120(100%)	-0.00008	-0.00008	-0.00005	-0.00023
at 20°C 138(115%)	-0.00008	-0.00014	-0.00022	-0.00012

2) Operating Frequency: 46.730 MHz(Specified for Base Unit)

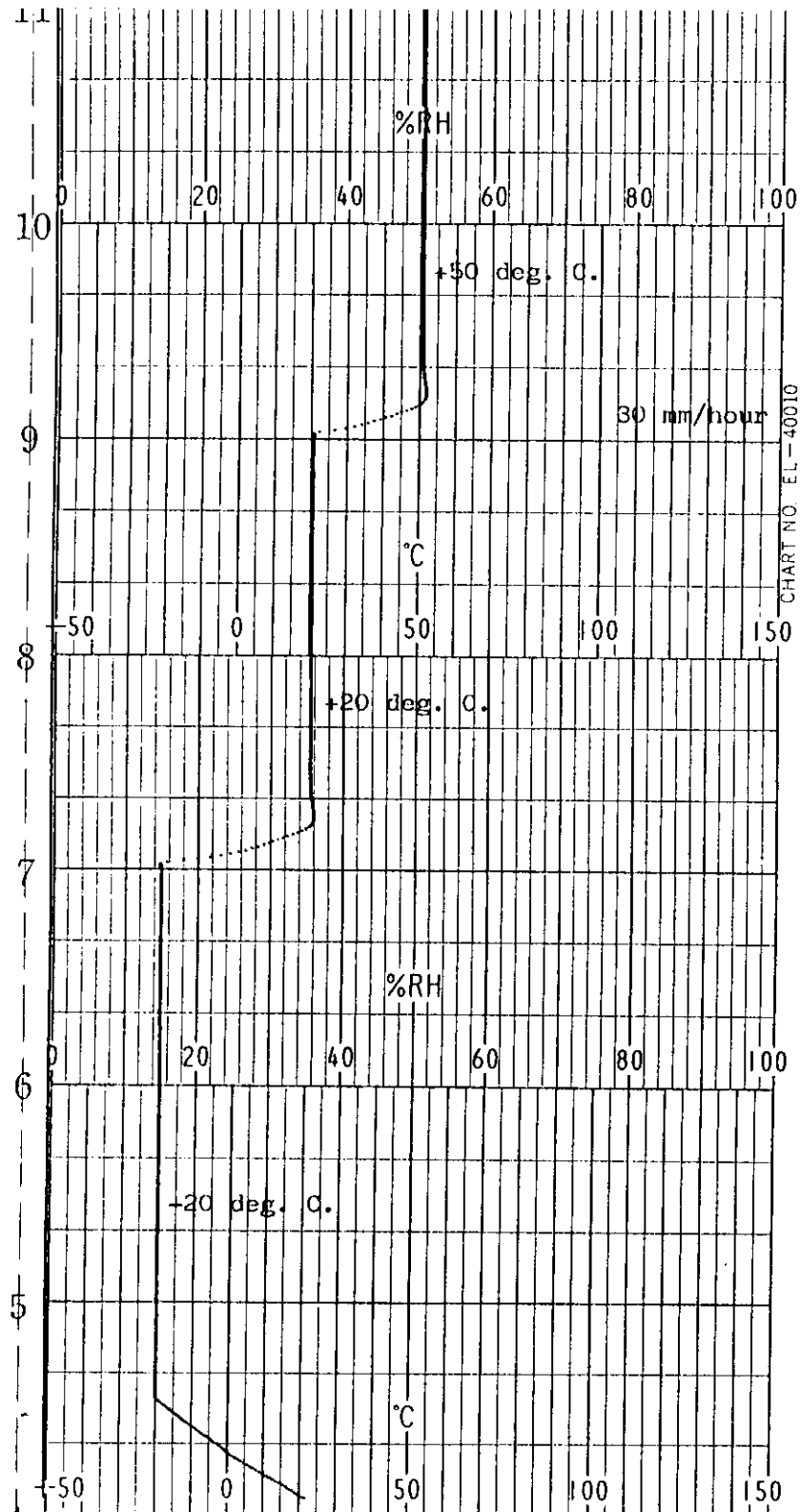
Ambient Temperature (°C)	Frequency Tolerance with Time elapse (%)			
	Start up	2 minutes	5 minutes	10 minutes
-20	-0.00051	-0.00059	-0.00037	-0.00023
-50	+0.00009	+0.00008	+0.00007	+0.00008
Primary Supply Voltage (V)	Frequency Tolerance with Time elapse (%)			
	Start up	2 minutes	5 minutes	10 minutes
at 20°C 102(85%)	+0.00008	-0.00011	-0.00002	-0.00034
at 20°C 120(100%)	-0.00031	+0.00004	+0.00006	-0.00043
at 20°C 138(115%)	+0.00003	+0.00003	+0.00011	+0.00001

- Note: 1. Time elapse vs. temperature setting : Refer to page 36.
2. The measurements were made after all of components of the oscillator sufficiently stabilized at each temperature.

Tester Signature : A. Hosoda

Type Name : Akio Hosoda

Time elapse vs. temperature



JQA Application No. : KL8080649
Model No. : KX-TC1000B
FCC ID : ACJ96NKX-TC1000

Regulation : CFR 47 FCC Rules Part 15
Issue Date : January 25, 1999

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Mains terminal Disturbance Measurement

Receiver (employing superheterodyne techniques)

Based on the test result of every test mode, the mode of operation that produce the conducted emission that has the highest amplitude is shown as follows:

Tuning Frequency : : 49.100 MHz

Test Date: January 12, 1999

Temp.: 24 °C ; Humi.: 24 %

Frequency [MHz]	Correction Factor [dB]	Meter Readings dB(μV)				Limits dB(μV)	Results dB(μV)		Margin [dB]	Remarks (Note 2)
		VA-QP	VA-AV	VB-QP	VB-AV		QP	AV		
0.45	0.1	< 10.0	-	< 10.0	-	48.0	< 10.1	-	>+37.9	A
1.40	0.2	< 10.0	-	< 10.0	-	48.0	< 10.2	-	>+37.8	A
3.57	0.3	< 10.0	-	< 10.0	-	48.0	< 10.3	-	>+37.7	A
7.14	0.4	< 10.0	-	< 10.0	-	48.0	< 10.4	-	>+37.6	A
10.24	0.5	< 10.0	-	< 10.0	-	48.0	< 10.5	-	>+37.5	A
10.72	0.5	< 10.0	-	< 10.0	-	48.0	< 10.5	-	>+37.5	A
14.30	0.6	< 10.0	-	< 10.0	-	48.0	< 10.6	-	>+37.4	A
21.44	0.8	< 10.0	-	< 10.0	-	48.0	< 10.8	-	>+37.2	A
23.23	0.8	< 10.0	-	< 10.0	-	48.0	< 10.8	-	>+37.2	A
29.50	0.9	< 10.0	-	< 10.0	-	48.0	< 10.9	-	>+37.1	A

Sample of calculated result at 29.50 MHz, as the Minimum Margin point:

Correction Factor = 0.9 dB

+) Meter Reading = <10.0 dB(μV)

Result = <10.9 dB(μV)

Minimum Margin : 48.0 - <10.9 = >37.1(dB)

The point shown on "___" is the Minimum Margin Point.

Note 1:

1. The correction factors includes the LISN insertion loss and the cable loss.

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	9 kHz
B	Average	10 kHz

Tester Signature :

A. Hosoda

Type Name

: Akio Hosoda

Electromagnetic Radiation Disturbance Measurement

Receiver (employing superheterodyne techniques)

Based on the test result of every test mode, the mode of operation that produce the radiated emission that has the highest amplitude is shown as follows:

Tuning Frequency : 49.100 MHz

Test Date: January 7, 1998

Temp.: 19 °C ; Humi.: 21 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
38.405	0.7	1.2	< 4.0	< 3.0	40.0	< 5.9	< 4.9	>+34.1	A
76.810	6.6	1.7	< 0.0	< 0.0	40.0	< 8.3	< 8.3	>+31.7	A
115.215	10.1	2.0	< 0.0	< 0.0	43.5	< 12.1	< 12.1	>+31.4	A
153.620	12.6	2.4	< 0.0	< 0.0	43.5	< 15.0	< 15.0	>+28.5	A
192.025	14.6	2.7	< 0.0	< 0.0	43.5	< 17.3	< 17.3	>+26.2	A
230.430	16.2	3.0	< 0.0	< 0.0	46.0	< 19.2	< 19.2	>+26.8	A
268.835	17.5	3.3	< -5.0	< -5.0	46.0	< 20.8	< 20.8	>+25.2	A
307.240	18.6	3.6	< -5.0	< -5.0	46.0	< 17.2	< 17.2	>+28.8	A
345.645	19.7	3.9	< -5.0	< -5.0	46.0	< 18.6	< 18.6	>+27.4	A
384.050	20.8	4.1	< -5.0	< -5.0	46.0	< 19.9	< 19.9	>+25.0	A

Tuning Frequency : 49.875 MHz

Test Date: January 7, 1998

Temp.: 19 °C ; Humi.: 21 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
39.180	0.9	1.3	< 5.0	< 12.0	40.0	< 7.2	< 14.2	>+25.8	A
78.360	6.8	1.7	< 0.0	< 0.0	40.0	< 8.5	< 8.5	>+31.5	A
117.540	10.3	2.1	< 0.0	< 0.0	43.5	< 12.4	< 12.4	>+31.1	A
156.720	12.8	2.4	< 0.0	< 0.0	43.5	< 15.2	< 15.2	>+28.3	A
195.900	14.7	2.8	< 0.0	< 0.0	43.5	< 17.5	< 17.5	>+26.0	A
235.080	16.3	3.1	< 0.0	< 0.0	46.0	< 19.4	< 19.4	>+26.6	A
274.260	17.7	3.4	< 0.0	< 0.0	46.0	< 21.1	< 21.1	>+24.9	A
313.440	18.8	3.6	< -5.0	< -5.0	46.0	< 17.4	< 17.4	>+28.6	A
352.620	19.9	3.9	< -5.0	< -5.0	46.0	< 18.8	< 18.8	>+27.2	A
391.800	20.9	4.1	< -5.0	< -5.0	46.0	< 20.0	< 20.0	>+26.0	A

Sample of calculated result at 274.260 MHz, as the Minimum Margin point:

Antenna Factor = 17.7 dB(1/m)

Corr. Factor = 3.4 dB

+)Meter Reading = < 0.0 dB(μ V/m)

Result = <21.1 dB(μ V/m)

Minimum Margin : 46.0 - <21.1 = >24.9(dB)

The point shown on "___" is the Minimum Margin Point.

Note 1:

1)The highest frequency generated or used in the EUT: 49.990 MHz

2)The upper frequency of measurement range : 1000 MHz

3)The spectrum was scanned 9 kHz to 1000 MHz and all emissions not reported were more than 20dB below the applied limits.

4)Corr. Factor (30 MHz - 1 GHz) : Cable Loss(dB)

Remarks:

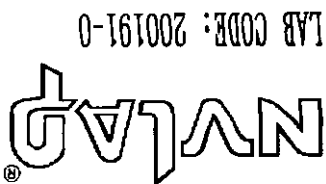
Note 2	Detector Function	IF Bandwidth
A	CISPR QP	120 kHz
B	Average	120 kHz
C	Peak	120 kHz
D	Average	12 kHz
E	Average	7.5 kHz

Tester Signature :

A. Hosoda

Type Name

: Akio Hosoda



JAPAN QUALITY ASSURANCE ORGANIZATION (JQA)
KITA-KANSAI TESTING CENTER
EMC DIVISION

TEST RESULTS IN THIS REPORT are obtained in use of equipment that is traceable to Electro-technical Lab. of MITI Japan and Communications Research Lab. of PTT Japan.
THE TEST RESULTS only responds to the test sample. This test report shall not be reproduced except in full.

Final Judgement : Passed

Address : 1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan

Manufacturer : Kyushu Matsushita Electric Co., Ltd.

Address : 1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan

Applicant : Kyushu Matsushita Electric Co., Ltd.

FCC ID : ACJ96NKX-TC1000

Name of Product : 43MHz/49MHz Cordless Telephone (Handset Unit)

Model/Type No. : KX-TC1000B

JQA APPLICATION No. : KL8080650

EMC ~~EMC~~ - TEST REPORT

Issue Date : January 25, 1999
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JQA
JAPAN QUALITY ASSURANCE ORGANIZATION
KITA-KANSAI TESTING CENTER
7-7, Ishimaru 1-Chome, Minoh-shi, Osaka 562 Japan. Phone: +81-727-29-2243/Facsimile: +81-727-28-6648

FCC/MELLON

FEB 08 1999

DIRECTORY

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Preliminary Test and Test-setup (Drawings)	<u>18 - 21</u>
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B) Test data	
Transmitter Portion	
Conducted Emission	450 kHz - 30 MHz <u>N/A</u>
Radiated Emission	9 kHz - 1 GHz <u>23 - 24</u>
Occupied Bandwidth	<u>25 - 32</u>
Operating Frequency	<u>33 - 34</u>
Receiver Portion	
Conducted Emission	450 kHz - 30 MHz <u>N/A</u>
Radiated Emission	30 MHz - 1 GHz <u>35 - 36</u>

TEST REGULATION

FCC Rules and Regulations Part 15 Subpart A, B and C (April 17, 1997)

- ☐ - Class A Digital Device
- ☐ - Class B Digital Device
- ☒ - Intentional Radiator
- ☒ - Receiver (employing superheterodyne techniques)

Test procedure:

Radiated emission test was performed according to the procedures in ANSI C63.4-1992.

GENERAL INFORMATION

Test facility:

- 1) Test Facility located at Kita-Kansai : 1st and 2nd Open Sites (3 m Site)
Test Facility located at Kameoka Open Site (3, 10 and 30 m, on common plane)
FCC filing No. : 31040/SIT 1300F2
- 2) KITA-KANSAI TESTING CENTER is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance established in Title 15, Part 285 Code of Federal Regulations.
NAVLAP Lab Code: 200191-0

Description of the Equipment Under Test (EUT):

- 1) Name : 43MHz/49MHz Cordless Telephone (Handset Unit)
- 2) Model/Type No. : KX-TC1000B
- 3) Product Type : Pre-Production
- 4) Category : Intentional Radiator and Receiver
(employing superheterodyne techniques)
- 5) EUT Authorization : ☐ - Verification ☒ - Certification ☐ - D.o.C
- 6) Transmitting Frequency : 48.760 MHz - 49.500 MHz(1ch-15ch)
49.670 MHz - 49.990 MHz(16ch-25ch)
- 7) Receiving Frequency : 43.720 MHz - 44.480 MHz(1ch-15ch)
46.610 MHz - 46.970 MHz(16ch-25ch)
- 8) Power Rating : DC2.7V(Ni-Cd Battery Pack P-P305)

Definitions for symbols used in this test report:

- ☒ - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
- ☐ - Blank box indicates that the listed condition, standard or equipment is not applicable for this Report.

TEST CONDITIONS

The measurement of the Conducted Emission (Disturbance Voltage)
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

○ - Shielded room

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - Shielded room

○ - On metal plane of open site

Used test instruments and sites:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○ - ESH 3	A - 1		
○ - ESH 2	A - 2		
○ - ESH 2	A - 3		
○ - KNW-407	D - 6		
○ - KNW-408	D - 11		
○ - KNW-242	D - 7		
○ - ESH3-Z5	D - 12		
○ - KNW-341C	D - 13		
○ - KNW-408	D - 14		
○ - KNW-244C	D - 77		
○ - KNW-408	D - 78		
○ - ESH2-Z5	D - 10		
○ - ESH2-Z3	D - 17		
○ - 8568B	A - 10		
○ - 8566B	A - 13		
○ - 8593A	A - 15		
○ - Cable	H - 8		

Environmental conditions:

Temperature: _____ °C Humidity: _____ %

The measurement of the Radiated Emission (Magnetic Field)

was performed in the frequency range of 9 kHz - 30 MHz, in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

● - 1st site (3 meters)

○ - 2nd site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - 3 meters

○ - 10 meters

○ - 30 meters

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○ - ESH 3	A - 1		
● - ESH 2	A - 2	December, 1998	1 Year
○ - ESH 2	A - 3		
● - HFH2-Z2	C - 2	September, 1998	1 Year
○ - HFH2-Z2	C - 3		

Environmental conditions:

Temperature: 19 °C Humidity: 21 %

The measurement of the Radiated Emission (Electric Field)

was performed in horizontal and vertical polarization, in the frequency range of 30 MHz - 1000 MHz, in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

● - 1st site (3 meters)

○ - 2nd site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - 3 meters

○ - 10 meters

Validation of Site Attenuation:

1) Last Confirmed Date: November 27, 1998

2) Interval : 1 Year

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - ESV/ESV-Z3	A - 7 / A - 17	December, 1998	1 Year
○ - ESV/ESV-Z3	A - 6 / A - 18		
○ - ESV/ESV-Z3	A - 5 / A - 16		
○ - ESV/ESV-Z3	A - 4 / A - 20		
○ - ESV/ESV-Z3	A - 8 / A - 19		
● - KBA-511A	C - 12	November, 1998	1 Year
● - KBA-611	C - 22	November, 1998	1 Year
○ - KBA-511A	C - 13		
○ - KBA-611	C - 19		
○ - KBA-511A	C - 11		
○ - KBA-611	C - 21		
● - Cable	H - 5	November, 1998	1 Year

Environmental conditions:

Temperature: 15 °C Humidity: 23 %

The measurement of the Radiated Emission (Electric Field)

was performed in horizontal and vertical polarization, in the frequency range of 1 GHz - 10 GHz,
in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

○ - 1st site (3 meters)

○ - 2nd site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - 3 meters

○ - 10 meters

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
○ - 8566B	A - 13		
○ - 8593A	A - 15		
○ - ESV	A - 5		
○ - 4T-10	D - 73		
○ - 4T-10	D - 74		
○ - WJ-6611-513	A - 23		
○ - WJ-6882-824	A - 21		
○ - DBL-0618N515	A - 33		
○ - 91888-2	C - 41 - 1		
○ - 91889-2	C - 41 - 2		
○ - 94613-1	C - 41 - 3		
○ - 91891-2	C - 41 - 4		
○ - 94614-1	C - 41 - 5		
○ - 3160-09	C - 48		
○ - TRA-603D	D - 24		
○ - 8494H/8595H	D - 76		
○ - MZ5010C	D - 81		
○ - Cable	C - 40 - 11		
○ - Cable	C - 40 - 12		

Setting of the spectrum analyzer:

RES B.W : 1 MHz Video B.W : 1 MHz
SCALE : LINEAR Sweep Time: 20 msec

Environmental conditions:

Temperature: _____ °C Humidity: _____ %

The measurement of the Occupied Bandwidth
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

○ - 1st site

○ - 2nd site

● - Shielded room

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - Open site

○ - Shielded room

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - 8568B	A - 10	May, 1998	1 Year
○ - 8566B	A - 13		
○ - 8593A	A - 15		
○ - 8673D	B - 2		
● - TR5212	B - 30	March, 1998	1 Year
● - KBA-511A	C - 16	November, 1998	1 Year
○ - KBA-611	C - 18		
○ - 2-10	D - 40		
○ - TRA-603D	D - 24		
○ - 8494H/8595H	D - 76		

Setting of the spectrum analyzer:

RES B.W.: 300 Hz Video B.W.: 1 kHz
SCALE : LOG 10dB/div Sweep Time: 10 sec

Environmental conditions:

Temperature: 24 °C Humidity: 46 %

The measurement of the Operating Frequency
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan

- - 1st site
- - 2nd site
- - Shielded room
- - Temperature Control Chamber(PL-3G,S/N:1381786,TABAI ESPC CORP.)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

- - Open site
- - Shielded room

Used test instruments:

Model No.	Device I.D No.	Last Cal. Date	Cal. Interval
● - TR5212	B - 30	March, 1998	1 Year
● - 8447D	A - 25	June, 1998	1 Year
● - EL100-06	138786	December, 1998	1 Year

JQA Application No. : KL8080650
Model No. : KX-TC1000B
FCC ID : ACJ96NKX-TC1000

Regulation : CFR 47 FCC Rules Part 15
Issue Date : January 25, 1999

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CONFIGURATION OF EUT

The Equipment Under Test (EUT) consists of:

Description	Applicant (Manufacturer)	Model No. (Serial No.)	FCC ID
43MHz/49MHz Cordless Telephone (Base Unit)	Kyushu Matsushita Electric Co., Ltd. (Kyushu Matsushita Electric Co., Ltd.)	KX-TC1000B (--)	ACJ96NKX-TC1000

The measurement was carried out with the following equipment connected:

Description	Grantee/Distributor	Model No. (Serial No.)	FCC ID
None			

Type of Interference Cable(s) and the AC Power Cord used with the EUT:

No.	Cable	Shielded	Ferrite Core	Length
	None			

Operation - mode of the EUT:

The EUT was operated during the test under the following specification:

- 1) Radiated emission measurement:
Communicating (transmitting and receiving) with the Base Unit.
- 2) Measurement of the occupied frequency :
 - a. Inputting the 2.5 kHz sine wave from a microphone.
 - b. Pushing the internal keys (Dial #0-#9, "*", "#", "RINGER", "DIRECT", "REDIAL" etc.)

Test system:

There is not any interface port on the EUT.

Special accessories:

None

Detailed Transmitter Portion:

Transmitting frequency : 48.760 MHz - 49.500 MHz(1ch-15ch)
49.670 MHz - 49.990 MHz(16ch-25ch)

Detailed Receiver Portion:

Receiving frequency : 43.720 MHz - 44.480 MHz(1ch-15ch)
46.610 MHz - 46.970 MHz(16ch-25ch)

1st Local frequency : 33.025 MHz - 36.275 MHz

2nd Local frequency : 10.240 MHz

1st Intermediate frequency : 10.695 MHz (Lower side)

2nd Intermediate frequency : 455 kHz

Other Clock Frequency :

CPU : 32.76 kHz, 3.991 MHz

EUT Modification

- - No modifications were conducted by JQA to achieve compliance to applied levels.
- - To achieve compliance to applied levels, the following change(s) were made by JQA during the compliance test.

The modification(s) will be implemented in all production models of this equipment.

Applicant : N/A Date : N/A

Typed Name : N/A Position : N/A

Responsible Party

Responsible Party of Test Item(Product)

Responsible party :

Contact Person :

Signatory

TEST RESULTS

[Transmitter Portion]

Conducted Emission 450 kHz - 30 MHz

The requirements are	☐ - KEPT	☐ - NOT KEPT
Min. limit margin	_____ dB	at _____ MHz
Max. limit exceeding	_____ dB	at _____ MHz
Uncertainty of measurement results	_____ dB(2 σ)	_____ dB(2 σ)

Remarks: Not Applicable

Radiated Emission 9 kHz - 1 GHz

The requirements are	☒ - KEPT	☐ - NOT KEPT
Min. limit margin	<u>+ 6.7</u> dB	at <u>49.875</u> MHz
Max. limit exceeding	_____ dB	at _____ MHz
Uncertainty of measurement results	<u>+ 2.5</u> dB(2 σ)	<u>- 2.5</u> dB(2 σ)
9 kHz - 30 MHz	<u>+ 4.1</u> dB(2 σ)	<u>- 4.2</u> dB(2 σ)
30 MHz - 1 GHz		

Remarks: _____

Occupied Bandwidth

The requirements are	☒ - KEPT	☐ - NOT KEPT
Worst Result		<u>17.30</u> kHz
Results		Refer to pages <u>25 - 32</u>
Uncertainty of measurement results		<u>± 0.05</u> ppm(2 σ)

Remarks: _____

JQA Application No. : KL8080650
Model No. : KY-TC1000B
FCC ID : ACJ96NKX-TC1000

Regulation : CFR 47 FCC Rules Part 15
Issue Date : January 25, 1999

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TEST RESULTS

[Transmitter Portion]

Operating Frequency

The requirements are

● - KEPT

○ - NOT KEPT

Worst Result
Results

-0.00107 %

Refer to page 33

Uncertainty of measurement results

±0.05 ppm(2σ)

Remarks:

[Receiver Portion]

Conducted Emission 450 kHz - 30 MHz

The requirements are

☐ - KEPT ☐ - NOT KEPT

Min. limit margin

_____ dB at _____ MHz

Max. limit exceeding

_____ dB at _____ MHz

Uncertainty of measurement results

_____ dB(2 σ) _____ dB(2 σ)

Remarks: Not Applicable

Radiated Emission 30 MHz - 1 GHz

The requirements are

☒ - KEPT ☐ - NOT KEPT

Min. limit margin

More than +24.4 dB at 288.280 MHz

Max. limit exceeding

_____ dB at _____ MHz

Uncertainty of measurement results 30 MHz - 1 GHz

+ 4.1 dB(2 σ) - 4.2 dB(2 σ)

Remarks: _____

SUMMARY

GENERAL REMARKS :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A, B and C (April 17, 1997) under the test configuration, as shown in page 17.

The conclusion for the test items of which are required by the applied regulation is indicated under the final judgement.

FINAL JUDGEMENT :

The "as received" sample;

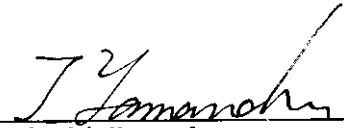
- - fulfill the test requirements of the regulation mentioned on page 3.
- - fulfill the test requirements of the regulation mentioned on page 3, but with certain qualifications.
- - doesn't fulfill the test regulation mentioned on page 3.

Begin of testing : January 5, 1999

End of testing : January 13, 1999

- JAPAN QUALITY ASSURANCE ORGANIZATION -

Approved Signatory :


Takashi Yamanaka
Manager
EMC Div.
JQA KITA-KANSAI Testing Center

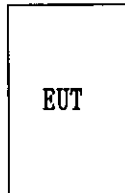

Akio Hosoda
Project Manager
EMC Div.
JQA KITA-KANSAI Testing Center

JQA Application No. : KL8080650
Model No. : KX-TC1000B
FCC ID : ACJ96NKX-TC1000

Regulation : CFR 47 FCC Rules Part 15
Issue Date : January 25, 1999

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Test System-Arrangement (Drawings)



Power Supply : DC 2.7V(Ni-Cd Battery Pack P-P305)

Preliminary Test and Test-setup(Drawings)

Radiated Emission (Magnetic Field) 9 kHz - 30 MHz:

The preliminary test was performed according to the description of ANSI C63.4-1992 Sec.13.1.4.1 (Preliminary Radiated Emissions Tests) and Sec.13.1.2 (Equipment Configurations), the preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.

Step 1: One operation mode of the test system was setting.

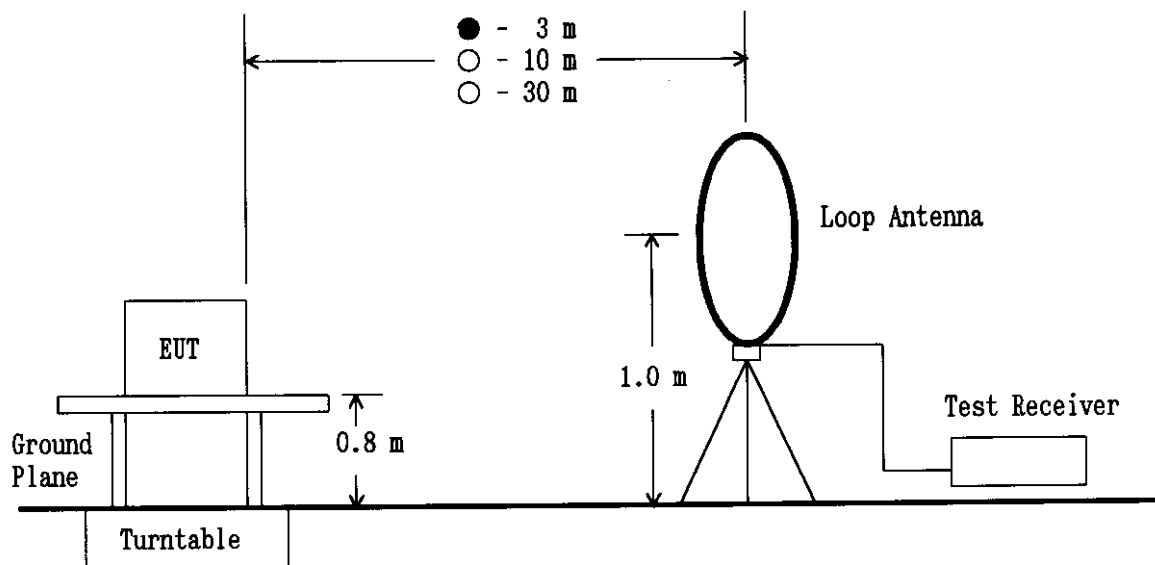
Step 2: In order to investigate the frequencies of maximum emissions, the loop antenna position was approached to the EUT and the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded in the specified frequency band (9 kHz - 30 MHz).

Step 3: Using a test receiver and a loop antenna, the emission's circumstance from the test system was measured in according with ANSI C63.4-1992 Sec.13.1.4.2 (Final Radiated Emissions Tests) at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the loop antenna. The maximum emission was found by rotating three orthogonal axes under a typical system configuration.

Step 4: Return to step 1, if the other operation mode was possible to be setting.

Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.

At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the the worst point were taken and recorded.



Radiated Emission (Electric Field) 30 MHz - 1000 MHz:

The preliminary test was performed according to the description of ANSI C63.4-1992 Sec.13.1.4.1 (or Sec.8.3.1.1) and Sec.13.1.2 (or Sec.11.2), the preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions, and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.

Step 1: One operation mode of the test system was setting.

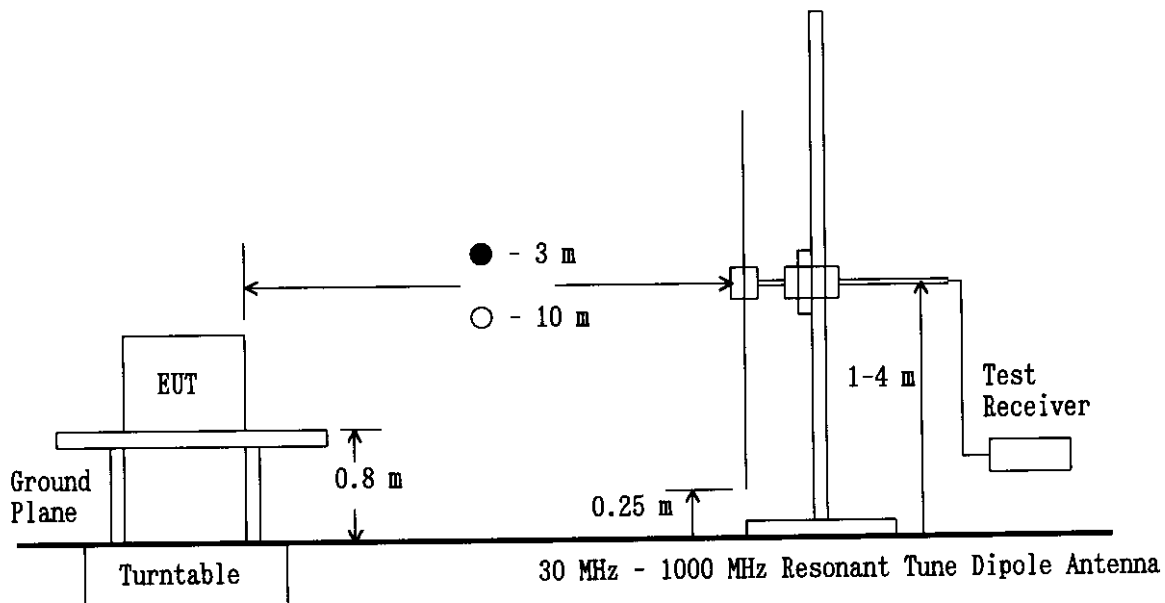
Step 2: Using a test receiver and a test antenna probe, the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded every one of 22 divided bands in the specified frequency band (30 MHz - 1000 MHz).

Step 3: Using a test receiver and a resonant tuned dipole antenna, the emission's circumstance from the test system was measured in according with ANSI C63.4-1992 Sec.13.1.4.2 (or Sec.8.3.1.2) at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the resonant tuned dipole antenna. The maximum emission was found by rotating three orthogonal axes under a typical system configuration.

Step 4: Return to step 1, if the other operation mode was possible to be setting.

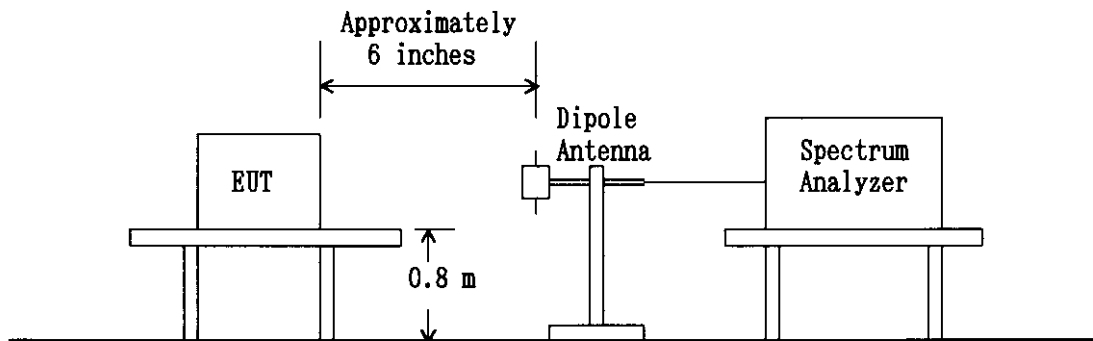
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.

At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



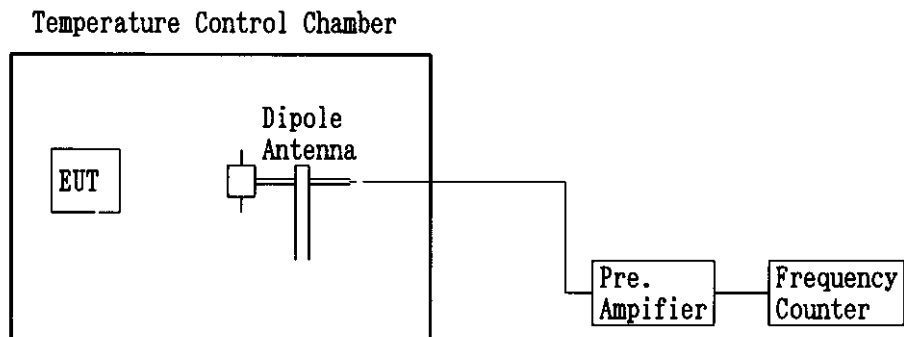
Occupied Bandwidth:

The measurement of the occupied bandwidth were made by a spectrum analyzer with a resonant tuned dipole antenna.



Operating Frequency:

By using a frequency counter with a suitable pre-amplifier, the carrier frequency of the transmitter frequency was measuring with a temperature variation of -20°C to $+50^{\circ}\text{C}$ at the normal supply voltage.



Electromagnetic Radiation Disturbance Measurement

Intentional Radiator

Based on the test result of every test mode, the mode of operation that produce the radiated emission that has the highest amplitude is shown as follows:

Operating Frequency : 49.100 MHz Test Date: January 7, 1998
Temp.: 15 °C ; Humi.: 23 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits* dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
Fundamental									
49.100	2.7	1.4	64.0	67.0	80.0	68.1	71.1	+ 8.9	C
Harmonics									
98.200	8.7	1.9	< 18.0	8.0	43.5	< 28.6	18.6	>+14.9	A
147.300	12.3	2.3	0.0	0.0	43.5	14.6	14.6	+28.9	A
196.400	14.8	2.8	5.0	< 0.0	43.5	22.6	< 17.6	+20.9	A
245.500	16.7	3.2	10.0	5.0	46.0	29.9	24.9	+16.1	A
294.600	18.3	3.5	5.0	0.0	46.0	26.8	21.8	+19.2	A
343.700	19.7	3.8	0.0	< -5.0	46.0	23.5	< 18.5	+22.5	A
392.800	21.0	4.1	<-5.0	< -5.0	46.0	< 20.1	< 20.1	>+25.9	A
441.900	22.1	4.4	<-5.0	< -5.0	46.0	< 21.5	< 21.5	>+24.5	A
491.000	23.1	4.7	<-5.0	< -5.0	46.0	< 22.8	< 22.8	>+23.2	A

Operating Frequency : 49.875 MHz Test Date: January 7, 1998
Temp.: 15 °C ; Humi.: 23 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits* dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
Fundamental									
49.875	2.9	1.4	67.0	69.0	80.0	71.3	73.3	+ 6.7	C
Harmonics									
99.750	8.9	1.9	<14.0	< 3.0	43.5	< 24.8	< 13.8	>+18.7	A
149.625	12.4	2.4	0.0	0.0	43.5	14.8	14.8	+28.7	A
199.500	14.9	2.8	3.0	< 0.0	43.5	20.7	< 17.7	+22.8	A
249.375	16.8	3.2	11.0	5.0	46.0	31.0	25.0	+15.0	A
299.250	18.4	3.5	7.0	0.0	46.0	28.9	21.9	+17.1	A
349.125	19.8	3.9	0.0	< -5.0	46.0	23.7	< 18.7	+22.3	A
399.000	21.1	4.2	<-5.0	< -5.0	46.0	< 20.3	< 20.3	>+25.7	A
448.875	22.2	4.5	<-5.0	< -5.0	46.0	< 21.7	< 21.7	>+24.3	A
498.750	23.3	4.7	<-5.0	< -5.0	46.0	< 23.0	< 23.0	>+23.0	A

Sample of calculated result at 49.875 MHz, as the Minimum Margin point:

Antenna Factor = 2.9 dB(1/m)

Corr. Factor = 1.4 dB

+) Meter Reading = 69.0 dB(μ V/m)

Result = 73.3 dB(μ V/m)

Minimum Margin : 80.0 - 73.3 = 6.7(dB)

The point shown on "____" is the Minimum Margin Point.

Note 1:

1)The highest frequency generated or used in the EUT: 49.990 MHz

2)The upper frequency of measurement range : 1000 MHz

3)The spectrum was scanned 9 kHz to 1000 MHz and all emissions not reported were more than 20dB below the applied limits.

4)Corr. Factor (30 MHz - 1 GHz) : Cable Loss(dB)

5)* Fundamental Limits : Average(80dB(μ V/m)),Peak(100dB(μ V/m))

Harmonics Limits : CISPR QP(Refer to §15.209)

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	120 kHz
B	Average	120 kHz
C	Peak	120 kHz
D	Average	12 kHz
E	Average	7.5 kHz

Tester Signature : A. Hosoda

Type Name : Akio Hosoda

Occupied Bandwidth Measurement
Intentional Radiator

The measurement of the occupied bandwidth were made under the following modulation conditions of the transmitter under test.

Modulation Signal:

1) Internal Signal

The transmitter under test was modulated with all internal signal with pushing the keys.

2) External Sine Signal

The transmitter under test was modulated by 2.5 kHz tone at an input level 16dB greater than necessary to produce 50% modulation. The input level was established at the frequency of the maximum response of the audio modulating circuit.

Input terminal : Microphone

Input level : -27.0 dBV + 16.0 dB

Measurement Results: Refer to pages 26 - 32.

The graphs are the worst result in each of 2 signal types.

The Worst Occupied Bandwidth : 17.30 kHz at pushing the key Dial #4

Tester Signature :

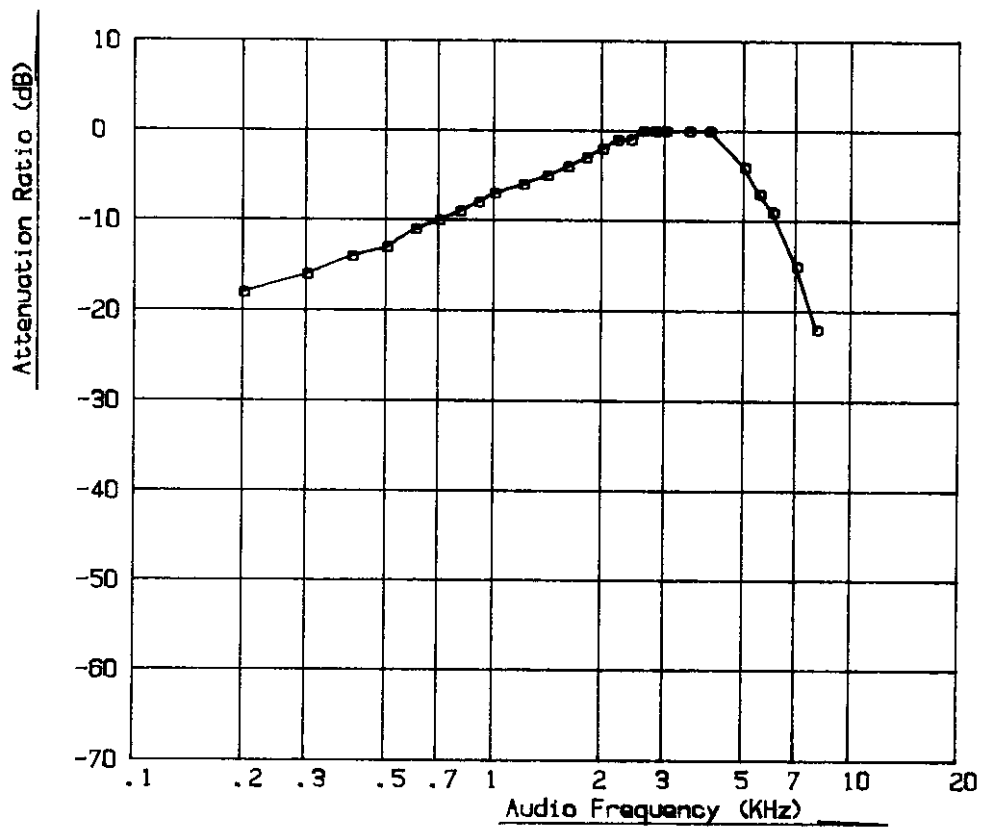
A. Hosoda

Type Name

: Akio Hosoda

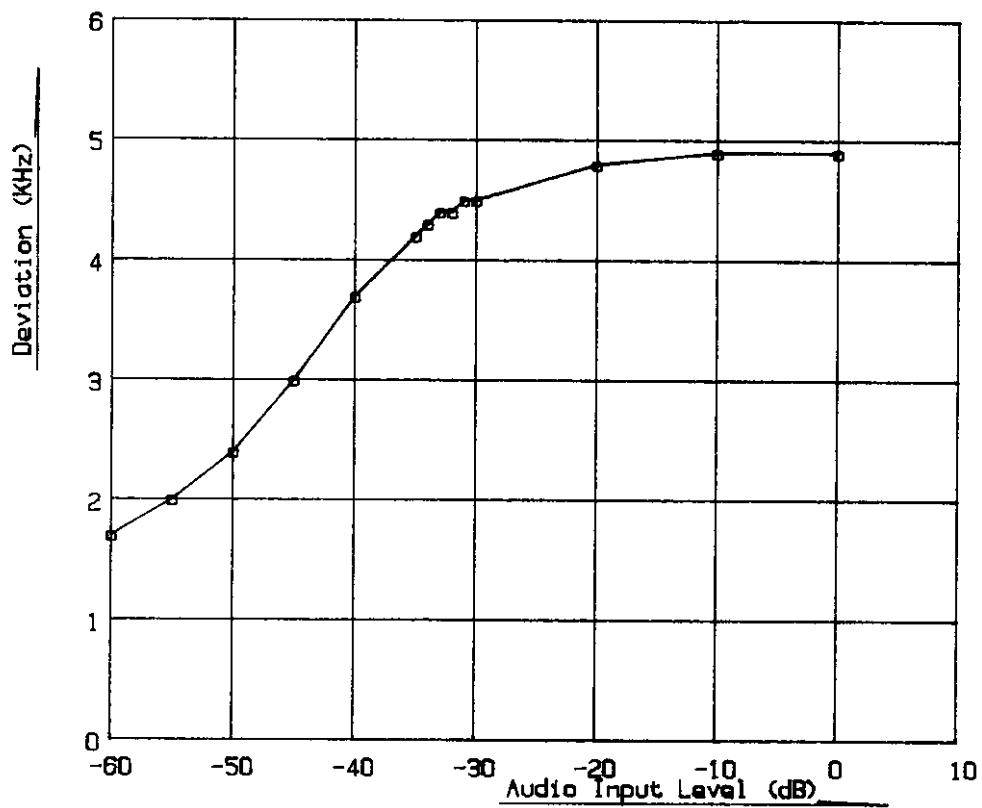
Audio Frequency Response

Model No. : KX-TC1000B 0dB= 1000mV



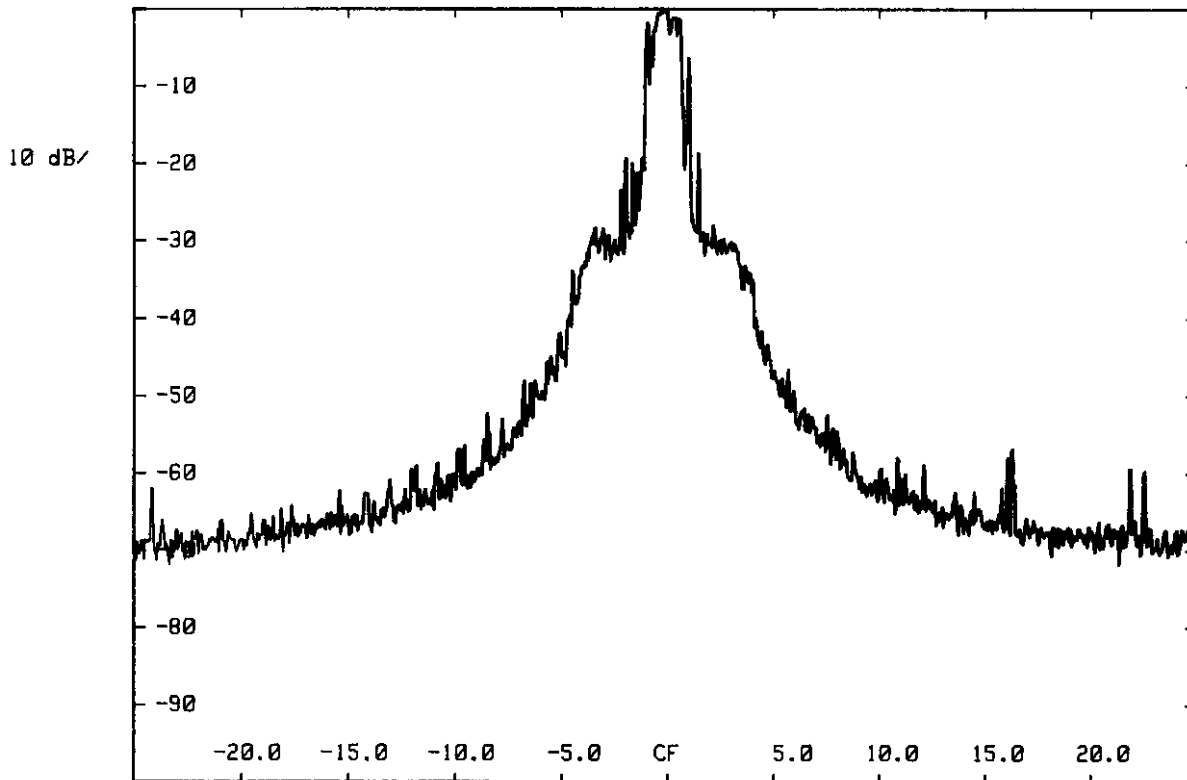
Modulation Characteristics

Model No. : KX-TC1000B 1V=0dB
at 3KHz



EMISSION LIMITATION

REF 78.5 dBuV



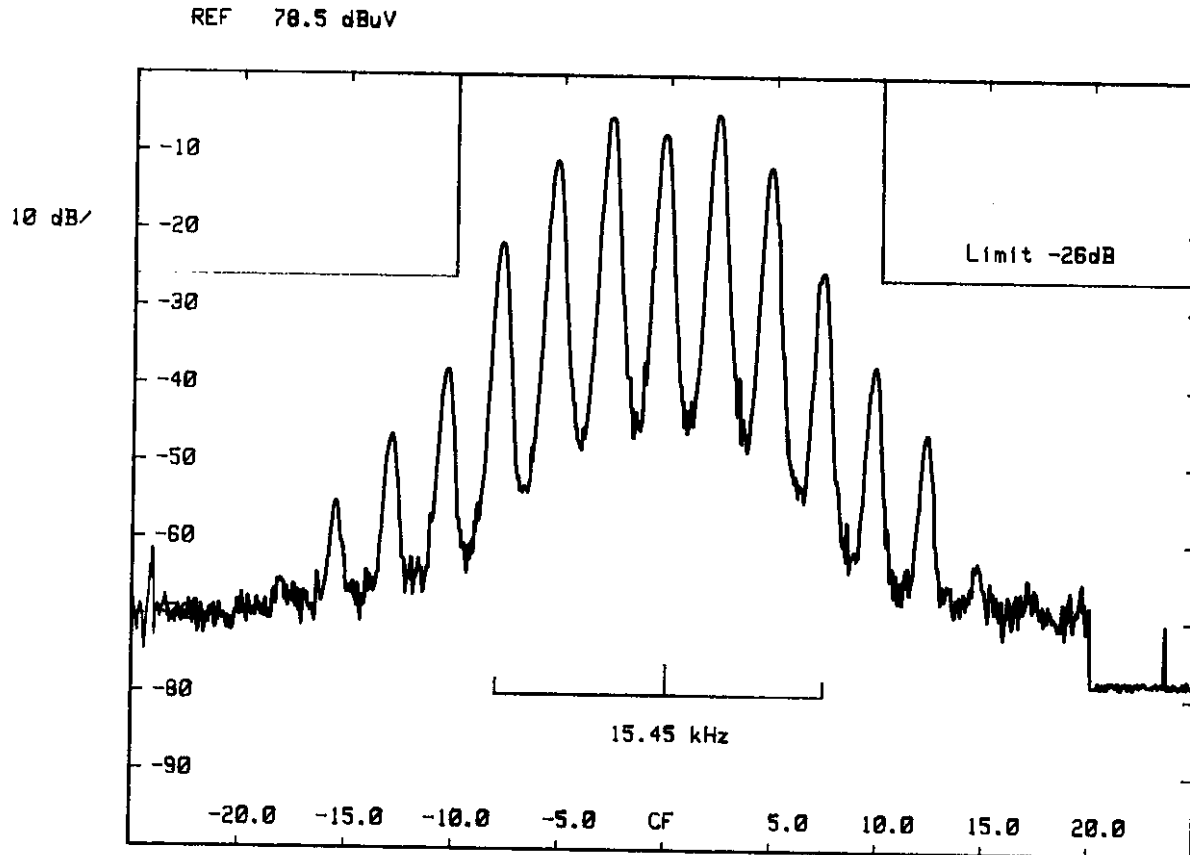
CENTER 49.8750 MHz
RES BW .3 kHz

VBW 1 kHz

SPAN 50.0 kHz
SWP 10.0 sec

Reference Carrier Level

EMISSION LIMITATION



CENTER 49.8750 MHz

RES BW .3 kHz

VBW 1 kHz

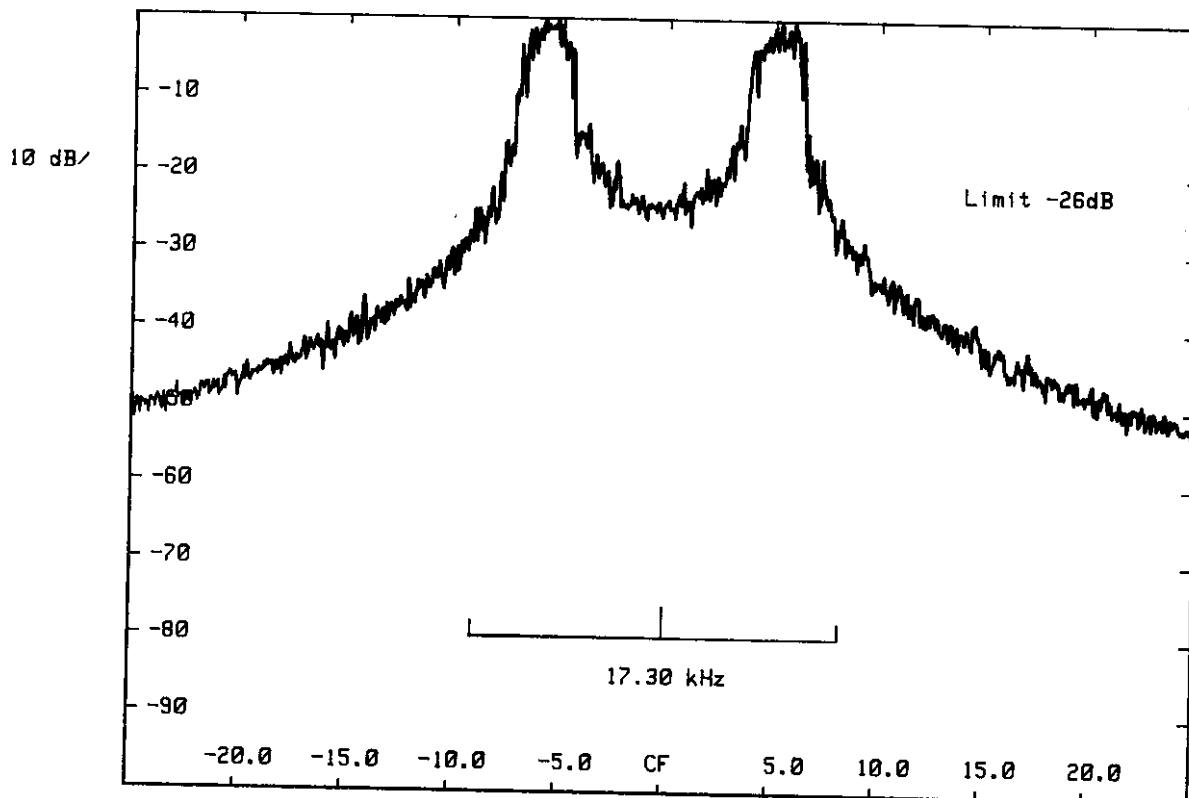
SPAN 50.0 kHz

SWP 10.0 sec

Modulation: 2.5kHz TONE

EMISSION LIMITATION

REF 78.5 dBuV



CENTER 49.8750 MHz
RES BW .3 kHz

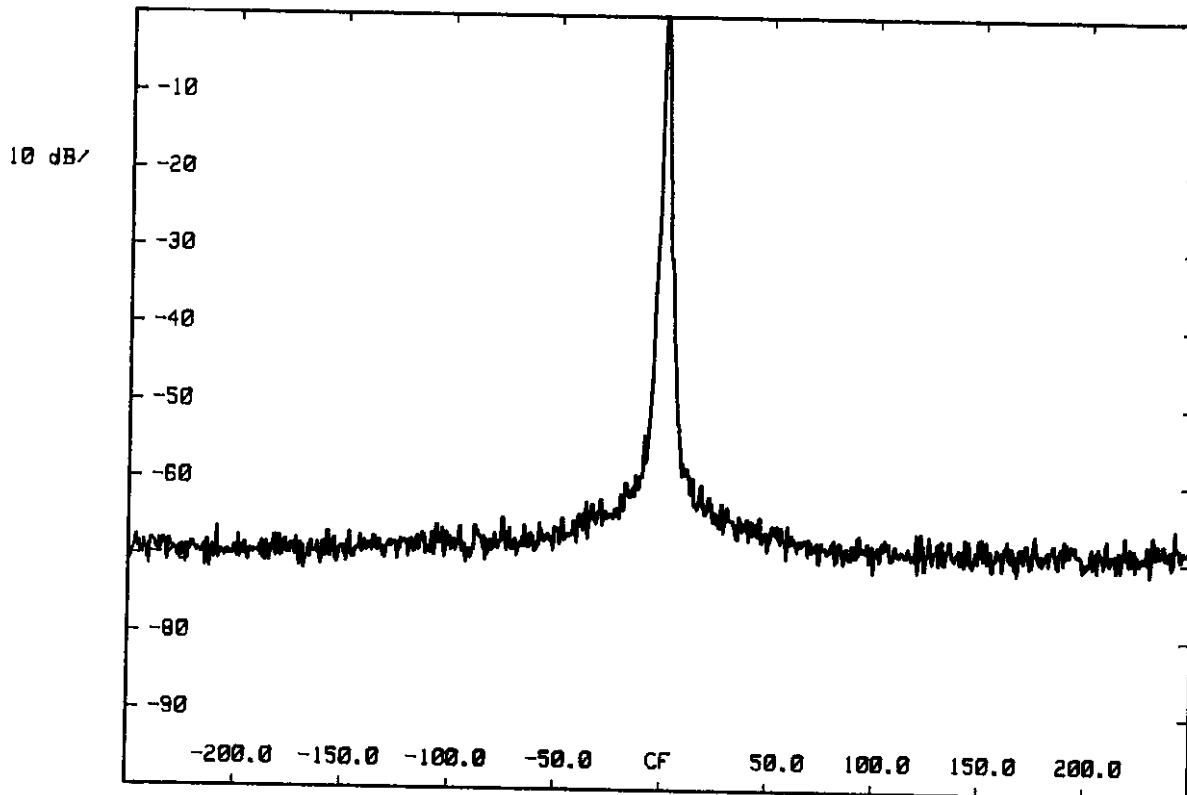
VBW 1 kHz

SPAN 50.0 kHz
SWP 10.0 sec

Mode: Dial #4

EMISSION LIMITATION

REF 70.5 dBuV



CENTER 49.8750 MHz

RES BW 1.0 kHz

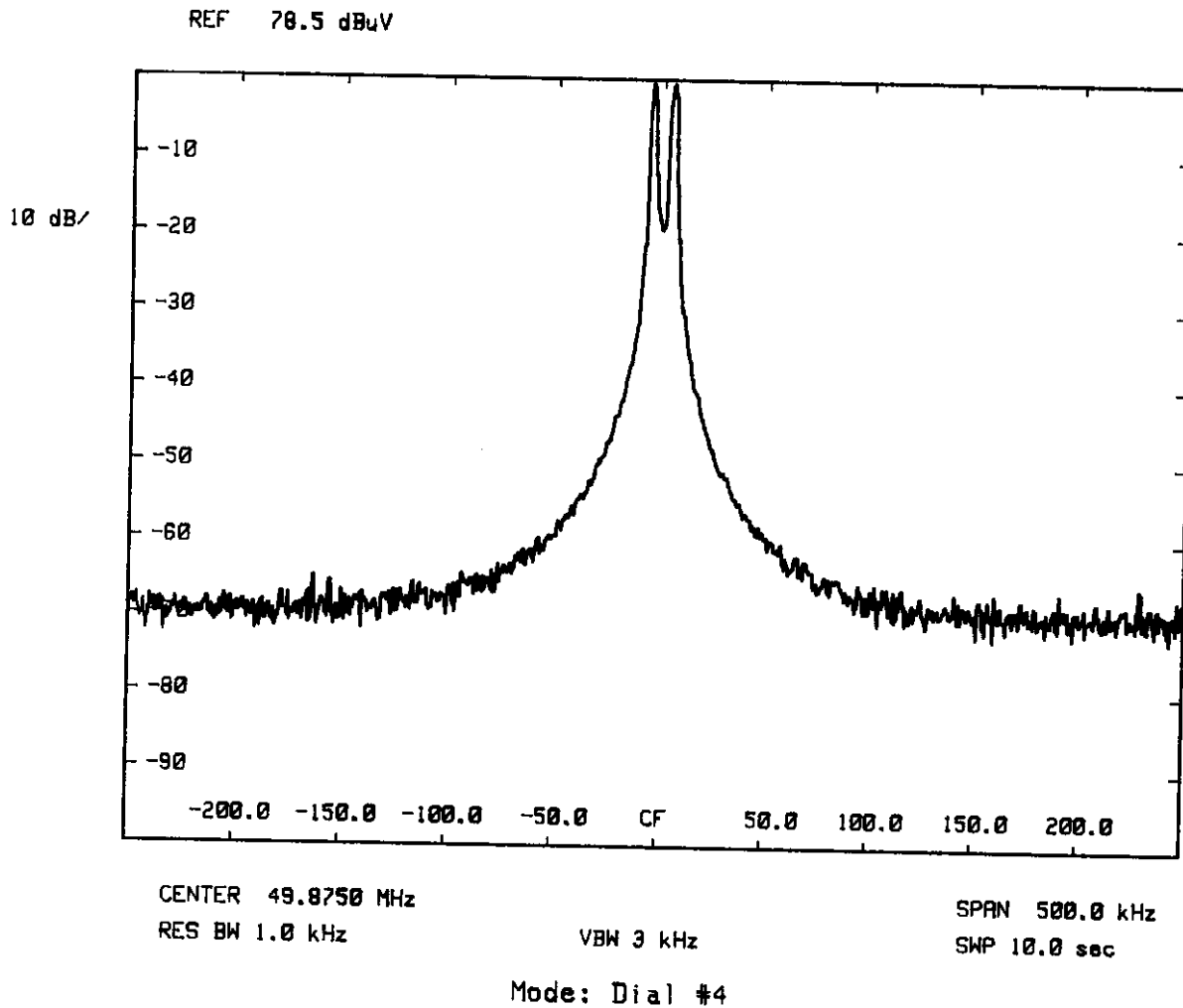
VBW 3 kHz

SPAN 500.0 kHz

SWP 10.0 sec

Reference Carrier Level

EMISSION LIMITATION



Operating Frequency Measurement
Intentional Radiator

Measurement Results:

1) Operating Frequency: 49.100 MHz(Specified for Handset)

Ambient Temperature (°C)	Frequency Tolerance with Time elapse (%)			
	Start up	2 minutes	5 minutes	10 minutes
-20	-0.00101	-0.00100	-0.00095	-0.00097
+20	-0.00057	-0.00058	-0.00057	-0.00056
-50	-0.00018	-0.00013	-0.00020	-0.00050

2) Operating Frequency: 49.875 MHz(Specified for Handset)

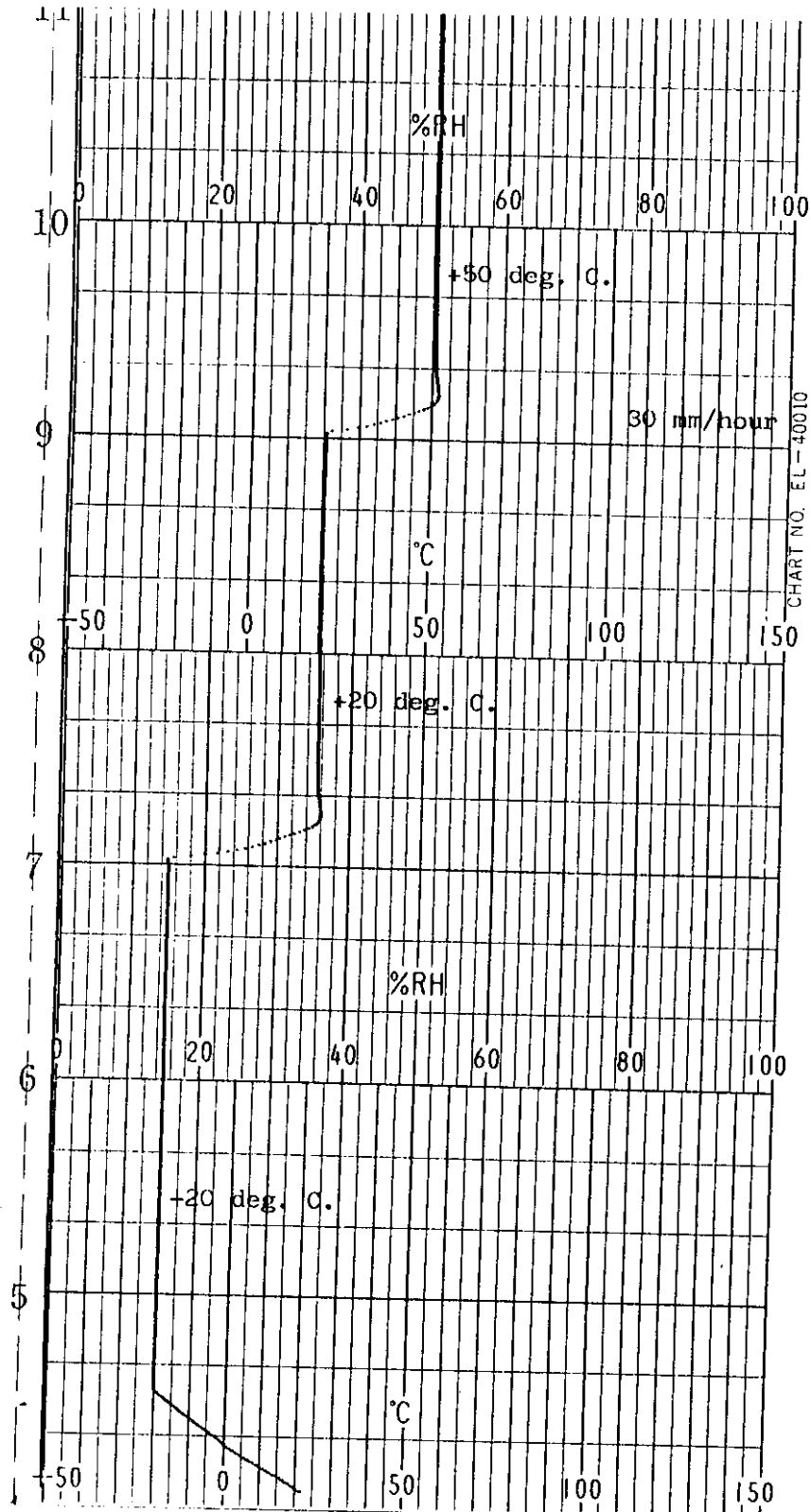
Ambient Temperature (°C)	Frequency Tolerance with Time elapse (%)			
	Start up	2 minutes	5 minutes	10 minutes
-20	-0.00107	-0.00104	-0.00096	-0.00093
+20	-0.00053	-0.00050	-0.00046	-0.00048
-50	-0.00048	-0.00049	-0.00042	-0.00031

Note: 1. Time elapse vs. temperature setting : Refer to page 34.

2. The measurements were made after all of components of the oscillator sufficiently stabilized at each temperature.

Tester Signature : A. Hosoda
Type Name : Akio Hosoda

Time elapse vs. temperature



Electromagnetic Radiation Disturbance Measurement

Receiver (employing superheterodyne techniques)

Based on the test result of every test mode, the mode of operation that produce the radiated emission that has the highest amplitude is shown as follows:

Tuning Frequency : 44.120 MHz

Test Date: January 7, 1998
 Temp.: 15 °C ; Humi.: 23 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
33.425	-0.2	1.2	< 0.0	< 0.0	40.0	< 1.0	< 1.0	>+39.0	A
66.850	5.4	1.6	< 0.0	< 0.0	40.0	< 7.0	< 7.0	>+33.0	A
100.275	8.9	1.9	< 0.0	< 0.0	43.5	< 10.8	< 10.8	>+32.7	A
133.700	11.4	2.2	< 0.0	< 0.0	43.5	< 13.6	< 13.6	>+29.9	A
167.125	13.4	2.5	< 0.0	< 0.0	43.5	< 15.9	< 15.9	>+27.6	A
200.550	14.9	2.8	< 0.0	< 0.0	46.0	< 17.7	< 17.7	>+25.8	A
233.975	16.3	3.1	< 0.0	< 0.0	46.0	< 19.4	< 19.4	>+26.6	A
267.400	17.4	3.3	< 0.0	< 0.0	46.0	< 20.7	< 20.7	>+25.3	A
300.825	18.4	3.6	< -5.0	< -5.0	46.0	< 17.0	< 17.0	>+29.0	A
334.250	19.4	3.8	< -5.0	< -5.0	46.0	< 18.2	< 18.2	>+27.8	A

Tuning Frequency : 46.730 MHz

Test Date: January 7, 1998
 Temp.: 15 °C ; Humi.: 23 %

Frequency [MHz]	Antenna Factor dB(1/m)	Corr. Factor [dB]	Meter Readings dB(μV)		Limits dB(μV/m)	Results dB(μV/m)		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.		Hori.	Vert.		
36.035	0.2	1.2	< 0.0	< 0.0	40.0	< 1.4	< 1.4	>+38.6	A
72.070	6.1	1.6	< 0.0	< 0.0	40.0	< 7.7	< 7.7	>+32.3	A
108.105	9.6	2.0	< 0.0	< 0.0	43.5	< 11.6	< 11.6	>+31.9	A
144.140	12.1	2.3	< 0.0	< 0.0	43.5	< 14.4	< 14.4	>+29.1	A
180.175	14.0	2.6	< 0.0	< 0.0	43.5	< 16.6	< 16.6	>+26.9	A
216.210	15.6	2.9	< 0.0	< 0.0	46.0	< 18.5	< 18.5	>+27.5	A
252.245	16.9	3.2	< 0.0	< 0.0	46.0	< 20.1	< 20.1	>+25.9	A
288.280	18.1	3.5	< 0.0	< 0.0	46.0	< 21.6	< 21.6	>+24.4	A
324.315	19.1	3.7	< -5.0	< -5.0	46.0	< 17.8	< 17.8	>+28.2	A
360.350	20.1	3.9	< -5.0	< -5.0	46.0	< 19.0	< 19.0	>+27.0	A

Sample of calculated result at 288.280 MHz, as the Minimum Margin point:

Antenna Factor = 18.1 dB(1/m)

Corr. Factor = 3.5 dB

+) Meter Reading = < 0.0 dB(μ V/m)

Result = < 21.6 dB(μ V/m)

Minimum Margin : 46.0 - < 21.6 = > 24.4(dB)

The point shown on "___" is the Minimum Margin Point.

Note 1:

1)The highest frequency generated or used in the EUT: 49.990 MHz

2)The upper frequency of measurement range : 1000 MHz

3)The spectrum was scanned 9 kHz to 1000 MHz and all emissions not reported were more than 20dB below the applied limits.

4)Corr. Factor (30 MHz - 1 GHz) : Cable Loss(dB)

Remarks:

Note 2	Detector Function	IF Bandwidth
A	CISPR QP	120 kHz
B	Average	120 kHz
C	Peak	120 kHz
D	Average	12 kHz
E	Average	7.5 kHz

Tester Signature : A. Hosoda

Type Name : Akio Hosoda