



REPORT OF MEASUREMENT

Date: February 15, 1999  
Issued in: Tokyo, Japan

JQA APPLICATION NO.: 80-80824

Applicant : TOSHIBA CORPORATION HINO WORKS  
: 1-1 Asahigaoka 3-chome, Hino City  
: Tokyo 191-8555, Japan

Manufacturer : TOSHIBA CORPORATION HINO WORKS  
: 1-1 Asahigaoka 3-chome, Hino City  
: Tokyo 191-8555, Japan

Description of Device : Handheld Portable Telephone Transmitter  
: for Cellular Radio Telephone System

Trade Name : TOSHIBA CORPORATION

Model No. : CDM-4000 (Analogue Mode)

FCC ID : CJ6DCE34608A

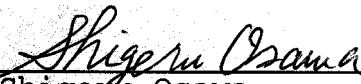
Serial No. : 1280000005

Measurement Procedure

Radiated Spurious Emissions generated from  
transmitter part of the device  
: Based on section 2.993(a) & 22.907(f)  
of the Commission's Rules and Regulations

Place of Measurement : JQA EMC Engineering Department

Measurement Results : The measurement results are given  
in the attached sheets.

  
Shigeru Osawa  
Assistant Manager  
Testing Division  
EMC Engineering Department

## REPORT OF MEASUREMENT

Manufacturer : TOSHIBA CORPORATION HINO WORKS  
Trade Name : TOSHIBA CORPORATION  
Model No. : CDM-4000 (Analogue Mode) FCC ID : CJ6DCE34608A  
Operating Range : 824.040 MHz to 848.970 MHz

## Radiated Spurious Emissions

## a) Measurement Procedure:

A receiving antenna was located at the distance of 3 meters and the interference signal derived from the antenna was fed to a spectrum analyzer. The measurement was carried out in accordance with TIA/EIA-603. The fixed antenna of the transmitter under test was pulled out for its length.

It specifies the use of a half-wavedipole antenna in order to determine ERP of the transmitter under test, a log-periodic antenna as a radiation antenna was used and the difference between the gains of the log-periodic antenna and a half-wave dipole antenna was taken into consideration.

(Refer to a document CISPR/B (Secretariat) 25)

## b) Measurement Results:

Refer to the following pages.

| Operating Frequency (MHz) | Reference Carrier Power (W) * | ERP Frequency (MHz) | Substituted Power (dBm) |        | Attenuation Ratio (dBm) |        |
|---------------------------|-------------------------------|---------------------|-------------------------|--------|-------------------------|--------|
|                           |                               |                     | Horiz.                  | Vert.  | Horiz.                  | Vert.  |
| 824.040                   | 0.378                         | 1648.080            | -55.8                   | -54.5  | 81.6,                   | 80.3   |
|                           |                               | 2472.120            | -32.0                   | -38.0  | 57.8                    | 63.8   |
|                           |                               | 3296.160            | -52.8                   | -54.4  | 78.5                    | 80.1   |
|                           |                               | 4120.200            | <-53.1                  | c-53.1 | > 78.9                  | > 78.9 |
|                           |                               | 4944.240            | C-58.7                  | <-58.7 | > 84.4                  | > 84.4 |
|                           |                               | 5768.280            | -51.2                   | -49.3  | 76.9                    | 75.0   |
|                           |                               | 6592.320            | c-57.9                  | <-57.9 | > 83.6                  | > 83.6 |
|                           |                               | 7416.360            | -54.4                   | -53.6  | 80.2                    | 79.4   |
|                           |                               | 8240,400            | -57.1                   | -53.0  | 82.9                    | 78.8   |

Notes, : 1. "\*" Actually measured.

2. Specified Limits:

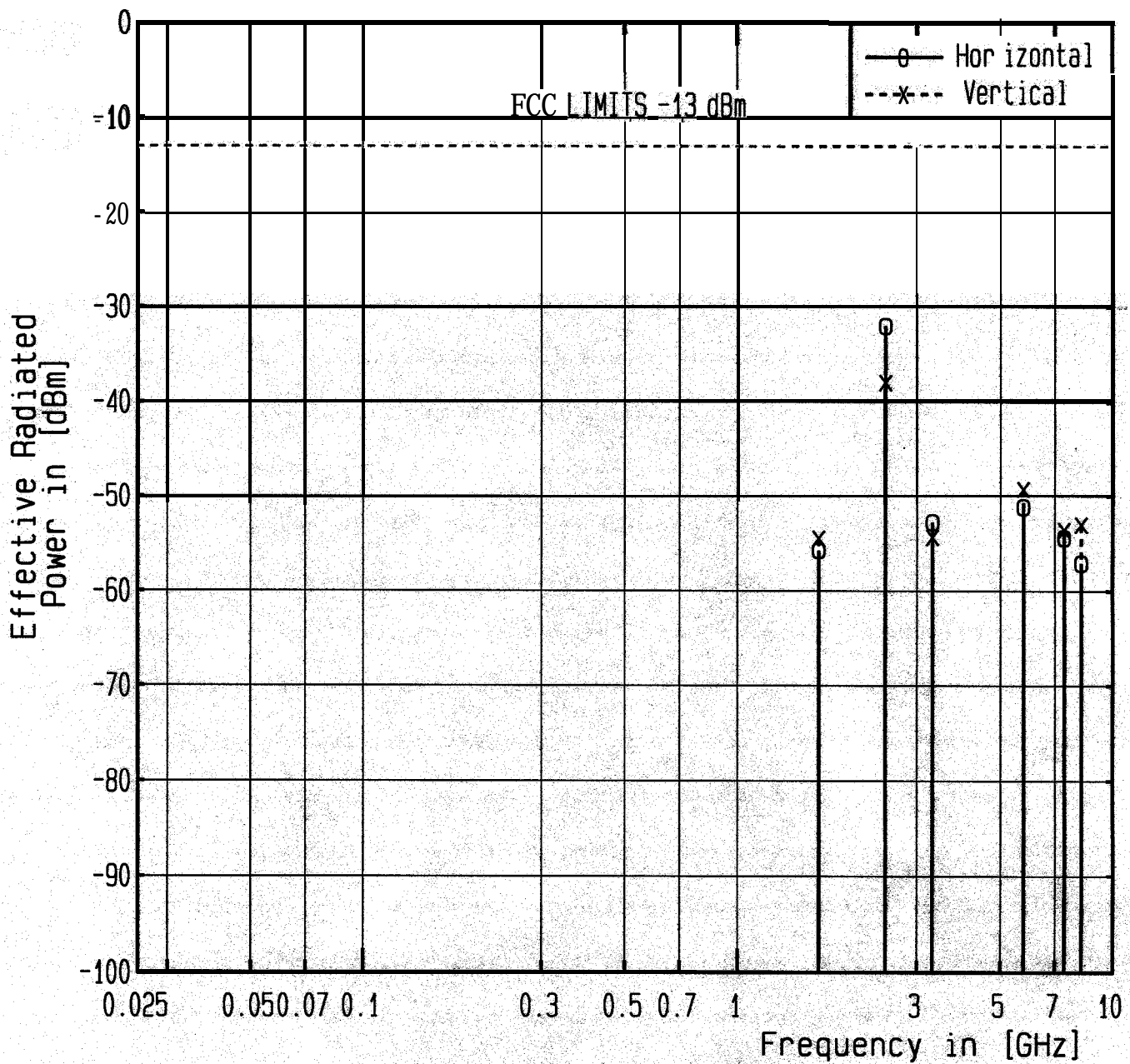
$$43 + 10 \log_{10}(0.378) = 38.8 \text{ dB for "824.040 MHz"}$$

3. The spectrum was checked from 25 MHz up to the tenth harmonic frequency.

4. All emissions not listed were found to be more than 20 dB below the limit..

## Radiated Spurious Emissions

FCC ID : CJ6DCE34608A  
Serial No. : 1280000005  
Carrier : 0.378 [W] at 824.640 [MHz]



| Operating Frequency (MHz) | Reference Carrier Power (W)* | ERP | Frequency (MHz) | Substituted Power (dBm) |        | Attenuation Ratio (dBm) |        |
|---------------------------|------------------------------|-----|-----------------|-------------------------|--------|-------------------------|--------|
|                           |                              |     |                 | Horiz.                  | Vert.  | Horiz.                  | Vert.  |
| 836.490                   | 0.448                        |     | 1672.980        | -53.7                   | -54.8  | 80.2                    | 81.3   |
|                           |                              |     | 2509.470        | -29.7                   | -38.2  | 56.2                    | 64.7   |
|                           |                              |     | 3345.960        | c-54.6                  | c-54.6 | > 81.1                  | > 81.1 |
|                           |                              |     | 4182.450        | e-52.9                  | c-52.9 | > 79.5                  | > 79.5 |
|                           |                              |     | 5018.940        | c-58.6                  | c-58.6 | > 85.1                  | > 85.1 |
|                           |                              |     | 5855.430        | -55.0                   | -51.6  | 81.5                    | 78.1   |
|                           |                              |     | 6691.920        | c-57.9                  | c-57.9 | > 84.4                  | > 84.4 |
|                           |                              |     | 7528.410        | -59.3                   | -52.4  | 85.9                    | 79.0   |
|                           |                              |     | 8364.900        | -55.3                   | -53.2  | 81.8                    | 79.7   |

Notes: 1. "\*" Actually measured.

2. Specified Limits:

$$43 + 10 \log_{10}(0.448) = 39.5 \text{ dB for "836.490 MHz"}$$

3. The spectrum was checked from 25: MHz up to the tenth harmonic frequency.

4. All emissions not listed were found to be more than 20 dB below the limit.

| Operating Frequency (MHz) | Reference Carrier Power (W)* | Frequency (MHz)     | Substituted Power (dBm) |                  | Attenuation Ratio (dBm) |                 |
|---------------------------|------------------------------|---------------------|-------------------------|------------------|-------------------------|-----------------|
|                           |                              |                     | Horiz.                  | Vert.            | Horiz.                  | Vert.           |
| 836.490                   | 0.448                        | 1672.980            | -53.7                   | -54.8            | 80.2                    | 81.3            |
|                           |                              | 2509.470            | -29.7                   | -38.2            | 56.2                    | 64.7            |
|                           |                              | 33415.960           | <-54.6                  | <-54.6           | > 81.1                  | > 81.1          |
|                           |                              | 4182.450            | <-52.9                  | <-52.9           | > 79.5                  | > 79.5          |
|                           |                              | 5018.940            | <-58.6                  | <-58.6           | > 85.1                  | > 85.1          |
|                           |                              | 5855.430            | -55.0                   | -51.6            | 81.5                    | 78.1            |
|                           |                              | 6691.920            | c-57.9                  | c-57.9           | > 84.4                  | > 84.4          |
|                           |                              | <del>8364.900</del> | <del>=59.3</del>        | <del>=52.2</del> | <del>85.8</del>         | <del>79.7</del> |

Notes: 1. "\*" Actually measured.

2. Specified Limits:

$$43 + 10 \log_{10} (0.448) = 39.5 \text{ dB for "836.490 MHz"}$$

3. The spectrum was checked from 25 MHz up to the tenth harmonic frequency..

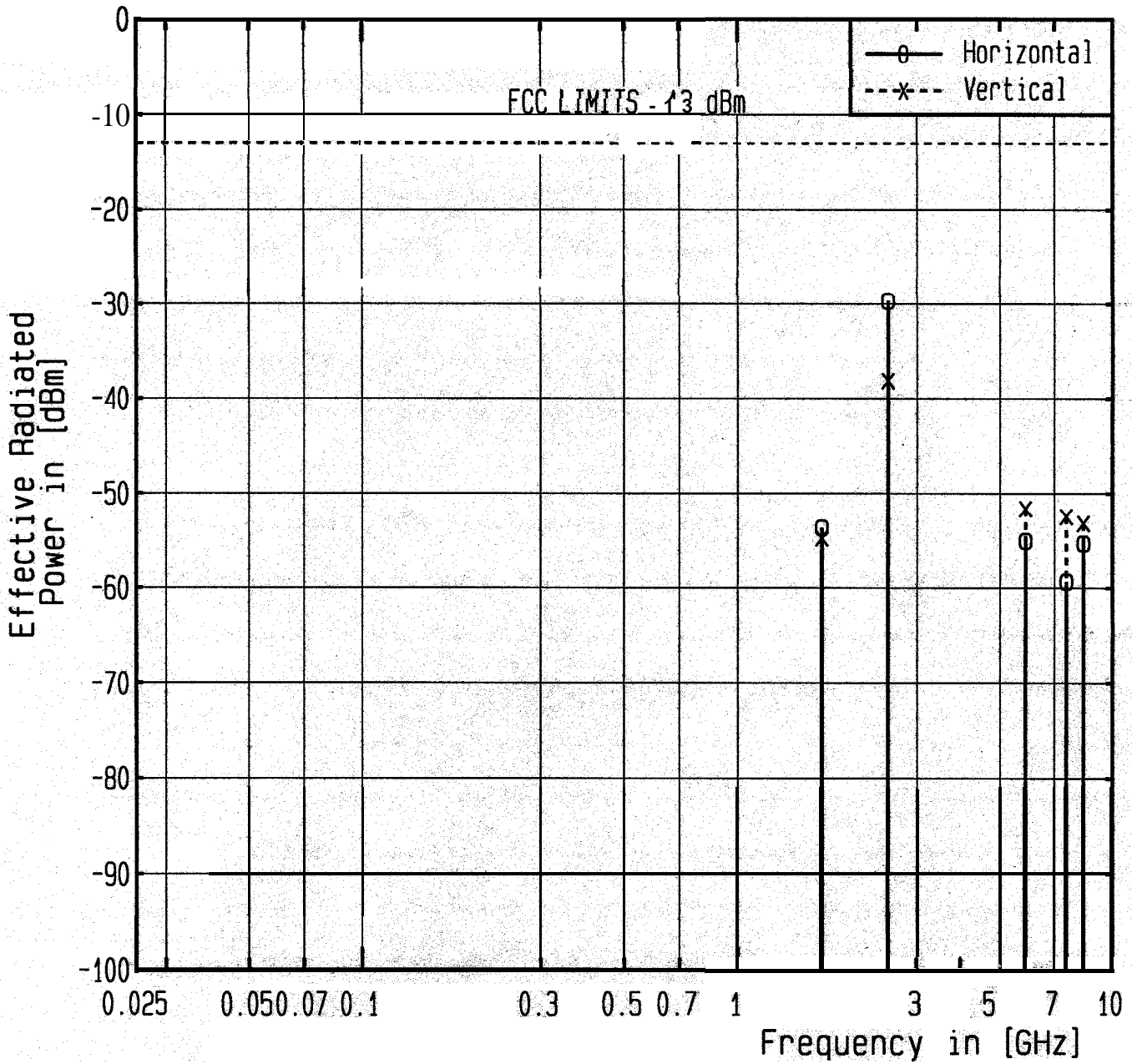
4. All emissions not listed were found to be more than 20 dB below the limit.

## Radiated Spurious Emissions

FCC ID : CJ6DCE34608A

Serial No. : 1280000005

Carrier : 0.448 [W] at 836.490 [MHz]



| Operating Frequency (MHz) | Reference Carrier Power (W) * | ERP Frequency (MHz) | Substituted Power (dBm) |        | Attenuation Ratio (dBm) |        |
|---------------------------|-------------------------------|---------------------|-------------------------|--------|-------------------------|--------|
|                           |                               |                     | Horiz.                  | Vert.  | Horiz,                  | Vert.  |
| 848.970                   | 0.359                         | 1697.940            | -52.2                   | -52.5  | 77.8                    | 78.1   |
|                           |                               | 2546.910            | -33.8                   | -37.1  | 59.4                    | 62.7   |
|                           |                               | 3395.880            | e-54.5                  | ~-54.5 | > 80.0                  | > 80.0 |
|                           |                               | 4244.850            | <-52.9                  | <-52.9 | > 78.5                  | > 78.5 |
|                           |                               | 5093.820            | c-58.6                  | c-58.6 | > 84.1                  | > 84.1 |
|                           |                               | 5942.790            | -51.6                   | -49.4  | 77.1                    | 74.9   |
|                           |                               | 6791.760            | <-58.1                  | <-58.1 | > 83.6                  | > 83.6 |
|                           |                               | 7640.730            | -57.7                   | -52.6  | 83.2                    | 78.1   |
|                           |                               | 8489.700            | -51.8                   | -51.6  | 77.4                    | 77.2   |

Notes: 1. "\*" Actually measured,,

2. Specified Limits:

$$43 + 10 \log_{10}(0.359) = 38.6 \text{ dB for "848.970 MHz"}$$

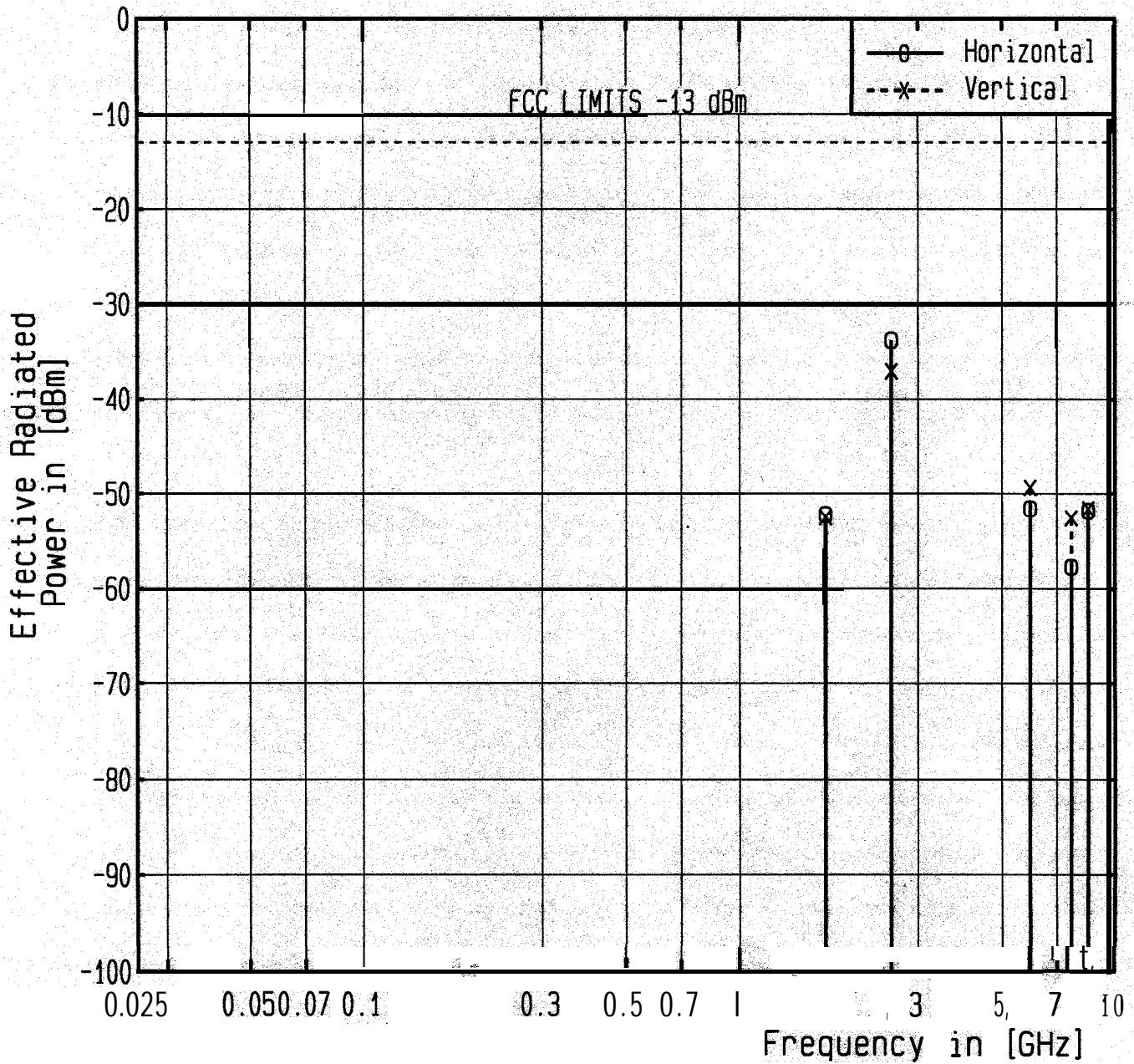
3. The spectrum was checked from 25 MHz up to the-tenth harmonic, frequency:

4. All emissions not listed were found to be more than 20 dB below the limit.



## Radiated Spurious Emissions

FCC ID : CJ6DCE34608A  
Serial No. : 1280000005  
Carrier : 0.359 [W] at 848.970 [MHz]



The emission appearing in the base station frequency range 869.040 - 893.070 MHz [Section 22.907(f)]

| Operating Frequency (MHz) | Frequency (MHz) | Substituted Power (dBm) |          |
|---------------------------|-----------------|-------------------------|----------|
|                           |                 | Horizontal              | Vertical |
| 824.040                   | 869.040         | < -95.2                 | < -95.3  |
|                           | 881.490         | < -95.4                 | < -96.3  |
|                           | 893.970         | < -95.1                 | < -95.0  |
| 836.490                   | 869.040         | < -95.2                 | < -95.3  |
|                           | 881.490         | < -95.4                 | < -96.3  |
|                           | 893.970         | < -95.1                 | < -95.0  |
| 848.970                   | 869.040         | < -95.2                 | < -95.3  |
|                           | 881.490         | < -95.4                 | < -96.3  |
|                           | 893.970         | < -95.1                 | < -95.0  |

- Note: 1. To confirm these level are more than 20 dB below the specified limits, DUT were re-tested at 1 m distance.
2. The symbol of "<" means "or less".
3. The specified limit is -81 dBm.

## Measuring Equipment List

| <u>Equipment</u>             | <u>Manufacturer</u>                  | <u>Model No.</u>  |
|------------------------------|--------------------------------------|---|
| 1. Spectrum Analyzer         | Hewlett Packard                      | 8566B   |
| 2. Field Strength Meter      | Rohde & Schwarz                      | ESVP  |
| 3. Signal Generator          | Hewlett Packard                      | 8662A   |
| 4. Signal Generator          | Hewlett Packard                      | 8673D   |
| 5. Horn Antenna              | , Singer                             | 1010 (1-2.5 GHz)<br>1020 (2.4-4.4 GHz)<br>1030 (4.4-7.3 GHz)<br>1040 (7.2-10 GHz)               |
| 6. Log-periodic Antenna      | 'Rohde & Schwarz                     | HL 025  |
| 7. DC Power Supply           | Kikusui Electronics Corp.            | PAD35-50L   |
| 8. High Pass Filter          | Tamagawa Electronics Co., Ltd.       | UHP-128<br>(fc=1200 MHz)  |
| 9. Low Pass Filter.          | Daden Associates Inc.                | LC-1000-8MHN  |
| 10. Directional Coupler      | Hewlett Packard                      | 778D(0.1 - 2 GHz)<br>3292-1(1 - 18 GHz)   |
| 11. Attenuator               | Weinschel Engineering<br><br>Philico | 40-20-33 (20 dB)<br>26-10-33 (10 dB)<br>49-30-43 (30 dB)<br>49-20-43 (20 dB)<br>661A-20 (20 dB) |
| 12. Power Meter              | Hewlett Packard                      | 436A  |
| 13. Half-wave Dipole Antenna | Anritsu                              |   |
|                              | Tuning Range : 25 - 500 MHz          | MP534A  |
|                              | Tuning Range : 470 - 1000 MHz        | MP651A  |
|                              | Kyoritsu                             |   |
|                              | Tuning Range : 25 - 500 MHz          | KBA-511A  |
|                              | Tuning Range : 470 - 1000 MHz        | KBA-611   |