

## 5. RADIATED EMISSION MEASUREMENT

### 5.1. Test Procedure

|                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(1)</p> <p>(2)</p> <p>(3)</p> <p>(4)</p> <p>(5)</p> <p>(6)</p> <p>(7)</p> <p>(8)</p> | <p>Configure the EUT System in accordance with ANSI C63.4-1992 section 8.<br/> <input checked="" type="checkbox"/>: without deviation, <input type="checkbox"/>: with deviation(details are found below)<br/>           See also the block diagram and the photographs of EUT System configuration in this report.</p> <p>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.</p> <p>Warm up the EUT System.</p> <p>Activate the EUT System and run the prepared software for the test, if necessary.</p> <p>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.<br/>           In the frequency above 1 GHz, it is performed using the spectrum analyzer (*2) and the horn antenna.</p> <p>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.</p> <p>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.</p> <p>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).<br/>           In the frequency above 1 GHz, the measurements are performed by the horn antenna and<br/> <input checked="" type="checkbox"/> the test receiver (*4).<br/> <input type="checkbox"/> the spectrum analyzer(*2).</p> |
|                                                                                         | <p>[Note]</p> <p>(*1) Spectrum Analyzer Set Up Conditions<br/>               Frequency range : 30 - 1000 MHz<br/>               Resolution bandwidth : 100 kHz<br/>               Detector function : Peak mode</p> <p>(*2) Spectrum Analyzer Set Up Conditions<br/>               Frequency range : 1 GHz - Upper frequency of measurement range<br/>               Resolution bandwidth : 1 MHz<br/>               Video bandwidth : 1 MHz<br/>               Attenuator : 10 dB<br/>               Detector function : Peak mode</p> <p>(*3) Test Receiver Set Up Conditions<br/>               Detector function : Quasi-Peak<br/>               IF bandwidth : 120 kHz</p> <p>(*4) Test Receiver Set Up Conditions<br/>               Detector function : Average<br/>               IF bandwidth : 1 MHz</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 5.2. Test Results

(1) DVD-RAM operation mode

Measurement Distance ☒: 3m ☐: 10m

| Measured Frequency | Antenna Factor | Meter Reading |          | Maximum Field Strength | Limits     | Margin for Limits |
|--------------------|----------------|---------------|----------|------------------------|------------|-------------------|
|                    |                | Horizontal    | Vertical |                        |            |                   |
| ( MHz )            | ( dB )         | ( dBuV )      | ( dBuV ) | ( dBuV/m )             | ( dBuV/m ) | ( dB )            |
| 35.35              | 16.6           | 6.0           | 13.4     | 30.0                   | 40.0       | 10.0              |
| 36.47              | 16.1           | 5.4           | 14.4     | 30.5                   | 40.0       | 9.5               |
| 106.89             | 12.9           | 8.1           | 13.2     | 26.1                   | 43.5       | 17.4              |
| 159.76             | 17.1           | 12.4          | 10.1     | 29.5                   | 43.5       | 14.0              |
| 196.61             | 18.7           | 16.5          | 12.6     | 35.2                   | 43.5       | 8.3               |
| 239.97             | 19.7           | 14.4          | 7.6      | 34.1                   | 46.0       | 11.9              |
| * 314.48           | 21.6           | 21.0          | 11.6     | 42.6                   | 46.0       | 3.4               |
| 368.66             | 18.4           | 17.5          | 14.0     | 35.9                   | 46.0       | 10.1              |
| 425.01             | 19.7           | 15.3          | 9.7      | 35.0                   | 46.0       | 11.0              |
| 576.90             | 23.3           | 10.8          | 9.0      | 34.1                   | 46.0       | 11.9              |
| 720.18             | 25.5           | 7.4           | 4.5      | 32.9                   | 46.0       | 13.1              |
| 943.66             | 28.0           | 10.1          | 9.0      | 38.1                   | 46.0       | 7.9               |
| 1032.35            | -11.8          | 42.8          | 44.3     | 32.5                   | 54.0       | 21.5              |
| 1265.54            | -12.9          | 40.0          | 40.4     | 27.5                   | 54.0       | 26.5              |
| 1465.56            | -13.3          | 34.1          | 39.0     | 25.7                   | 54.0       | 28.3              |

## [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 1000 MHz, the antenna factor is includes both of a cable loss and pre-amplifier gain.

## [Calculation method]

Maximum Field Strength (dBuV/m)

= Meter Reading (at maximum level of Horizontal or Vertical) (dBuV) + Antenna Factor (dB)

## [Environment]

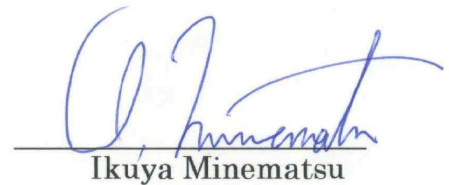
Temperature: 17

Humidity: 75%

## [Tested Date/ Tester]

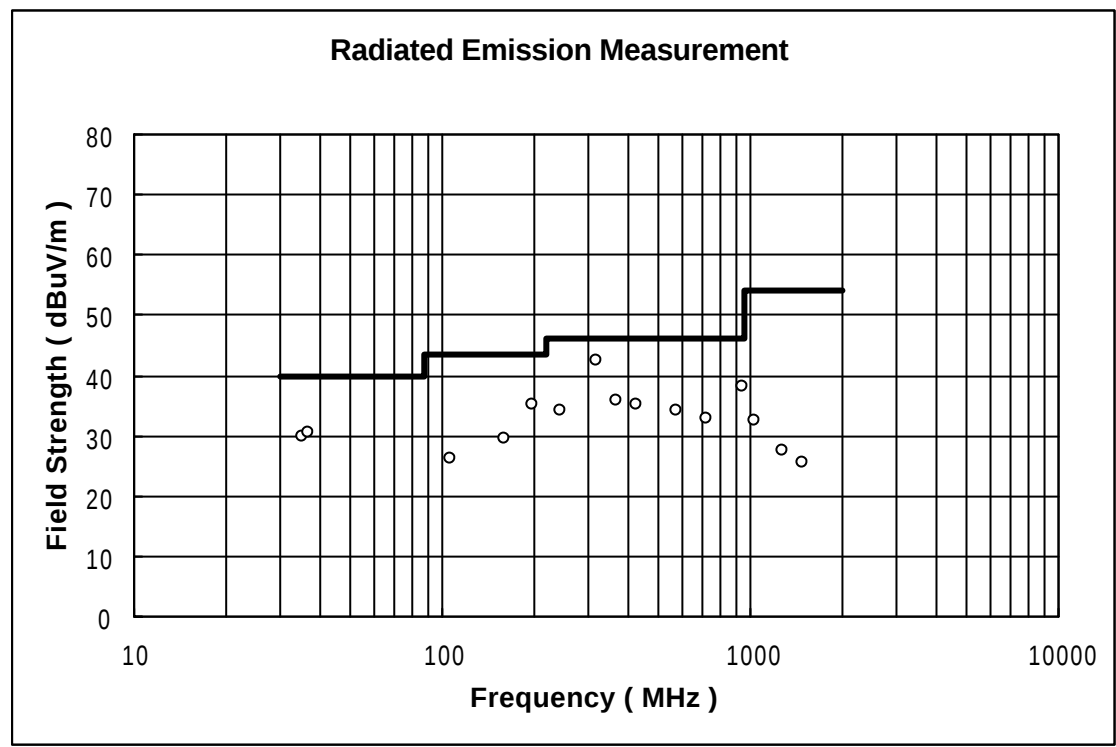
18 October 1999

Signature


  
Ikuya Minematsu

Test Results in Graph

(1) DVD-RAM operation mode



[Note]

○ : Maximum Field Strength  
— : Limit Line

(2)CD-ROM operation mode

Measurement Distance ☒: 3m ☐: 10m

| Measured Frequency | Antenna Factor | Meter Reading |          | Maximum Field Strength | Limits     | Margin for Limits |
|--------------------|----------------|---------------|----------|------------------------|------------|-------------------|
|                    |                | Horizontal    | Vertical |                        |            |                   |
| ( MHz )            | ( dB )         | ( dBuV )      | ( dBuV ) | ( dBuV/m )             | ( dBuV/m ) | ( dB )            |
| 35.35              | 16.6           | 4.6           | 13.6     | 30.2                   | 40.0       | 9.8               |
| 36.47              | 16.1           | 2.0           | 13.1     | 29.2                   | 40.0       | 10.8              |
| 159.72             | 17.1           | 13.5          | 9.5      | 30.6                   | 43.5       | 12.9              |
| 196.61             | 18.7           | 16.4          | 12.6     | 35.1                   | 43.5       | 8.4               |
| 199.42             | 18.8           | 10.0          | 7.7      | 28.8                   | 43.5       | 14.7              |
| 239.97             | 19.7           | 13.6          | 7.3      | 33.3                   | 46.0       | 12.7              |
| 368.63             | 18.4           | 15.0          | 11.7     | 33.4                   | 46.0       | 12.6              |
| 380.93             | 18.7           | 16.4          | 10.0     | 35.1                   | 46.0       | 10.9              |
| 542.96             | 22.5           | 6.2           | 14.0     | 36.5                   | 46.0       | 9.5               |
| 576.88             | 23.3           | 7.8           | 13.8     | 37.1                   | 46.0       | 8.9               |
| 742.05             | 25.9           | 4.1           | 7.6      | 33.5                   | 46.0       | 12.5              |
| 911.99             | 28.1           | 3.4           | 4.8      | 32.9                   | 46.0       | 13.1              |
| 1032.40            | -11.8          | 39.4          | 42.5     | 30.7                   | 54.0       | 23.3              |
| 1250.88            | -12.7          | 37.3          | 37.5     | 24.8                   | 54.0       | 29.2              |

## [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 1000 MHz, the antenna factor is includes both of a cable loss and pre-amplifier gain.

## [Calculation method]

Maximum Field Strength (dBuV/m)  
= Meter Reading (at maximum level of Horizontal or Vertical) (dBuV) + Antenna Factor (dB)

## [Environment]

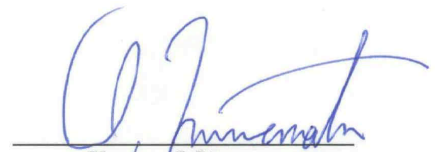
Temperature: 17

Humidity: 75%

## [Tested Date/ Tester]

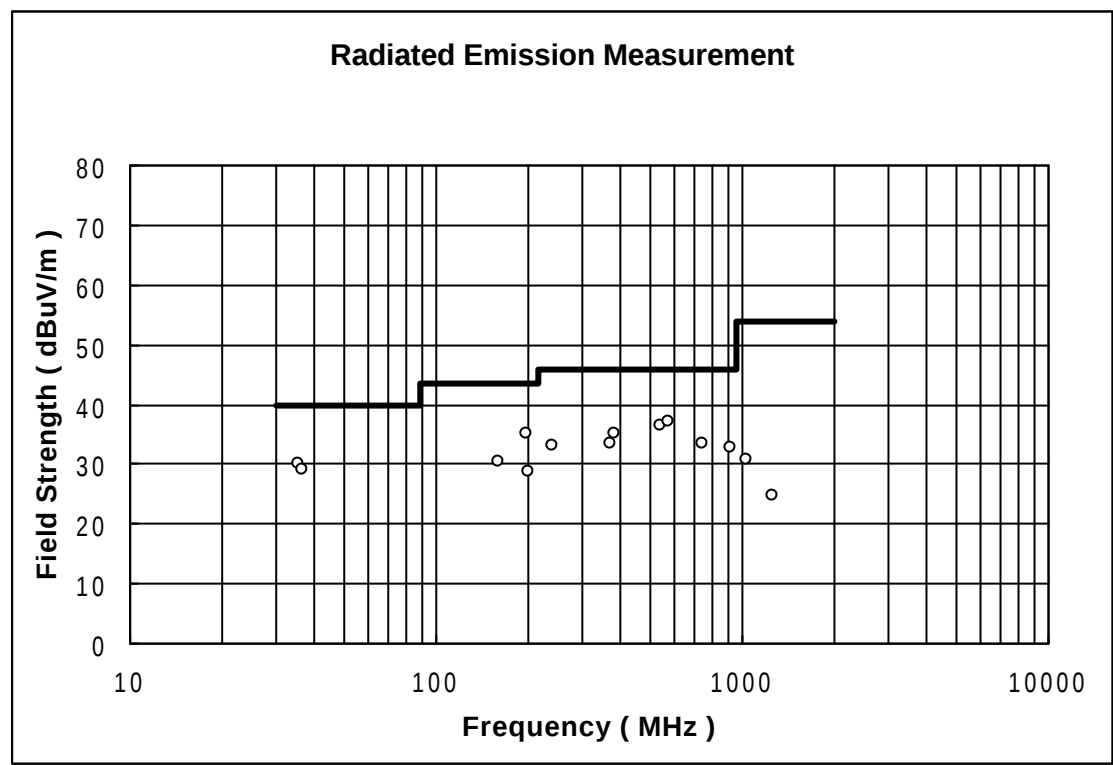
18 October 1999

Signature

  
Ikuya Minematsu

Test Results in Graph

(2) CD-ROM operation mode



[Note]

○ : Maximum Field Strength  
— : Limit Line