

## Description of Instrumentation and calculation

## (1) Measurement equipment

a. Field Strength Meter : Electro-Metrics Model EMC-50

Bandwidth Setting : 1 MHz

Detector Function : Linear Average Detection

b. Receiving Antenna : Electro-Metrics Model RGA-180

Frequency Range : 1 - 18 GHz

c. Microwave Survey Meter : Narda Model 8110B

## (2) Test Condition

a. Antenna Height Variation : 1.0 - 1.5 m

b. Distance of Antenna to Test unit : 3.0 m

c. Test Unit Height : 1.0 m

## (3) Calculation Formula

Field Strength at 3 m (dBuV/m)

$$= \text{Receiver Reading (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)}$$

Field Strength at 300m (uV/m)

$$= K * 10^{\frac{\text{Field Strength at 3 m (dBuV/m)}}{20}}$$

K : Conversion Factor for 3 m to 300 m

| Frequency<br>(MHz) | Antenna Factor<br>(dB/m) | Cable Loss<br>(dB) | Conv. Factor<br>K |
|--------------------|--------------------------|--------------------|-------------------|
| 2400               | 29                       | 0.7                | 0.0061            |
| Fundamental        | 29.3                     | 0.7                | 0.0062            |
| 2500               | 29.5                     | 0.7                | 0.0063            |
| 4900               | 33.4                     | 0.9                | 0.01              |
| 7350               | 36.5                     | 1.2                | 0.01              |
| 9800               | 38.2                     | 1.4                | 0.01              |

Example : 2nd Harmonics

Receiver Reading = 20 dB @ 3 m

$$\text{FIS} = 0.01 * 10^{\frac{20 + 33.4 + 0.9}{20}} = 5.19 \text{ (uV/m)} \\ \text{@300 m}$$

## Exhibit 1      Test Equipment List

| Name / Model No.                       | S / No.    | Manufacturer    | Last<br>Calibrated |
|----------------------------------------|------------|-----------------|--------------------|
| Field Strength Meter<br>Model EMC - 50 | 175        | Electro Metrics | 05 / 29 / 03       |
| Microwave Survey<br>Meter 8110B        | 20915      | Narda           | 07 / 08 / 03       |
| Ridged Guide Antenna<br>RGA - 180      | 2455       | Electro Metrics | 08 / 20 / 88       |
| Network Analyzer<br>8410B              | 1647A00704 | Hewlett Packard | 06 / 17 / 88       |
| Reflection Unit<br>8743A               | 1330A01358 | Hewlett Packard | 06 / 17 / 88       |
| Sweep Oscillator<br>8620C              | 1645A00827 | Hewlett Packard | 06 / 17 / 88       |
| Frequency Meter<br>536A                | 1441A00695 | Hewlett Packard | 09 / 17 / 88       |
| Power Meter<br>436A                    | 1629A1172  | Hewlett Packard | 08 / 05 / 89       |
| Spectrum Analyzer<br>8555A             | 1642A06830 | Hewlett Packard | 08 / 21 / 88       |