

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

$$\begin{aligned} &\text{Field Strength at 3 m (dBuV/m)} \\ &= \text{Receiver Reading (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} \end{aligned}$$

$$\begin{aligned} &\text{Field Strength at 300m (uV/m)} \\ &= K * 10^{\frac{\text{Field Strength at 3 m (dBuV/m)}}{20}} \end{aligned}$$

K : Conversion Factor for 3 m to 300 m

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Conv. Factor 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

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

Exhibit Test Equipment List

Name / Model No.	S / No.	Manufacturer	Last Calibrated
Field Strength Meter Model EMC - 50	175	Electro Metrics	05 / 16 / 02
Microwave Survey Meter 8110B	20915	Narda	09 / 26 / 01
Ridged Guide Antenna RGA - 180	2455	Electro Metrics	08 / 20 / 88
Network Analyzer 8410B	1647A00704	Hewlett Packard	06 / 17 / 88
Reflection Unit 8743A	1330A01358	Hewlett Packard	06 / 17 / 88
Sweep Oscillator 8620C	1645A00827	Hewlett Packard	06 / 17 / 88
Frequency Meter 536A	1441A00695	Hewlett Packard	09 / 17 / 88
Power Meter 436A	1629A1172	Hewlett Packard	08 / 05 / 89
Spectrum Analyzer 8555A	1642A06830	Hewlett Packard	08 / 21 / 88
