TOTAL RADIATION SOLUTIONS

RF EME MEASUREMENT OFFICER TRAINING COURSE

RF EME Measurement Officer Course Synopsis

This course is held over a four day period and covers the following:

1. Understand the regulators and regulations applicable to RF EME
2. Know the history associated with EMR protection
3. Understand the main biological effects of RF EME
4. Be able to apply the ARPANSA RPS S-1 standard
5. Be able to apply AS/NZS2772.2 for measurements
6. Undertake RF EME measurements safely
7. Production of suitable measurement reports

Course Objectives

This course is designed for persons who, in the course of and intrinsic to the nature of their work, are expected to undertake measurements of Radio Frequency Electromagnetic Energy (RF EME).

This course is aimed at ensuring that participants will have a comprehensive understanding of the principles applying to the practical measurement of complex RF EME. They will gain a deep understanding of the following:

1. the RF EME measurement techniques described in AS/NZS 2772.2 and their application when conducting measurements. The issues of safety during the measurement process and accounting for the various uncertainties inherent in the RF EME measurement process are also included. The preparation of suitable report formats is also covered.
2. The applicable limits in ARPANSA RPS S-1.

Course Duration

The course is run over 4 consecutive days with the typical hours of attendance being 08:30am to 12:30pm and 13:15pm to 16:30pm.

PO Box 680
Claremont, WA 6910
Phone: +61 8 9381 7199
email: info@t-r-s.com.au
Web: www.t-r-s.com.au

Course Outline

Day 1 - RF EME Theory

Module 1 – Introduction
Standards and Regulators of RF EME
Background to EMR Protection
Biological Effects of RF EME
Coupling of RF EME
Absorption of Energy from EME Fields

Module 2 – RF Basics
Antenna Launch Theory and Propagation
Frequency, Wavelength and Polarisation
Power Density
Antenna Types and their Properties
Regions Surrounding Antennas
Antenna Field Calculations

Module 3 – The RPS3 Standard
Purpose and Structure of the RPS S-1 Standard
Basic Restrictions and Reference Levels for Exposure
Simultaneous Exposure to Multiple Frequency Fields
Verification of Compliance
Occupational and General Public Limit Protection
Records Required
Post Incident Management

Module 4 – Narrowband Measurements
Environmental RF Field Strength Measurement Theory
Antenna Factor
Narrowband Survey Techniques
Traditional Spectrum Analysis Measurements
Measurements Using the NARDA SRM-3006

Day 2 - RF EME Measurement Techniques

Module 1 – Introduction
Use and Scope of AS2772.2

Module 2 – Near Field Considerations
The Near Field
Radiation Leakage
Reactive Near Field

Module 3 – Instrumentation
General Instrumentation Requirements
Meaningful Measurements
Performance Characteristics
Types of Instrumentation

Module 4 – Measurement Procedure
Pre-measurement Process
Precautions in the Survey Process
Process of Measurement
Reporting of Measurement Results

Module 5 – TEM Cells
Calibration of Equipment
Equipment Checks
TEM Cell Test
Field Checks

Module 6 – Safety
Safety in Measurement
Surveying RF Generating Equipment
Other Potential Hazards

Module 7 – Uncertainty
Measurement Uncertainty
Instrument Uncertainty
Environmental Uncertainty
Managing Measurement Uncertainty

Day 3 - RF EME Practices

Module 1 – Introduction
RF EME Report Format
CSD31211 - ISO 17020
CSD16570 - ISO 17025

Module 2 – RF EME Measurement Equipment
Types of RF EME Measurement Equipment
EMR-300
Narda Meters
SRM-3006
Test Sources

Module 3 – Plan and Prepare for Measurement
Measurement Appraisal
Sourcing of Data
Determination of Limits
Equipment Selection
Equipment Checks
Administrative Requirements

Module 4 – Conducting RF EME Measurements
On Site Checking of Equipment
Site Configuration for Measurement
Conducting Measurements
Recording Measurement Data
Safety During Measurement

Module 5 – Analysis of Measurement Results
Interpretation of Measurement Results
Boundary Definition

Module 6 – Documentation of Measurement Results
Preparation of an RF EME Measurement Report
Report Verification
Accessing Measurement Reports
Quality Systems

Day 4 - RF EME Measurement

The final day is devoted to a practical exercise where participants are required to prepare, plan and undertake a range of practical measurements of different RF transmitting sources and prepare the associated RF EME measurement reports by utilising the knowledge and skills they have acquired over the last three days.

Course Assessment

There is an assessment at the end of each day of the course requiring a minimum pass of 80% to be able to proceed to the next day/stage of the course.

Course Schedule

Due to the nature of the RF EME measurement industry, this course will only be offered if and when sufficient demand exists to schedule a course. Course venues can be negotiated depending clients' individual requirements.