



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 3 standard
5. Be able to apply AS2772.2 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) fields.

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 fields. They will gain a deep understanding of the applicable limits and techniques, as detailed in ARPANSA RPS3, and will be able to apply those techniques and their limitations, as set out in AS2772.2, whilst undertaking RF EME 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 as is the preparation of suitable report formats.

Course Duration

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



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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 RPS3 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 SRM3000



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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



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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
Raham Meters
Holaday Meters
Narda Meters
SRM3000
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



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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 Certification

This course has been externally accredited by the ACRBR and has been licensed by Telstra Pty Ltd to be able to be presented by Total Radiation Solutions Pty Ltd. Upon successful completion of the course a certificate will be issued. (See <http://www.acrbr.org.au/> for more detail).

Course Cost

The cost of attending the four-day course is \$5,000.00 + GST per participant. The course requires a minimum of 6 participants, and a maximum of 8 participants.

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.