

Advanced RF

A 3 day **Hands on** training course



Description

This course provides a follow on to our popular RF fundamentals course for those that need to know more.



Key outcomes

By the end of the course delegates will be able to:

- ✓ Explain RF propagation.
- ✓ Describe the importance of transmission lines in RF systems.
- ✓ Recognise the issues in RF systems.
- ✓ Describe transmission measurements.



Training approach

This structured course uses Instructor Led Training to provide the best possible learning experience. Small class sizes ensure students benefit from our engaging and interactive style of teaching with delegates encouraged to ask questions throughout the course. Quizzes follow each major section allowing checking of learning. Hands on sessions are used throughout to allow delegates to consolidate their new skills.



Details

Who will benefit?

Those working with RF systems.

Prerequisites

RF fundamentals.

Duration: 3 days

Customer rating: ★★★★★

Generic training



Generic training compliments product specific courses covering the complete picture of all relevant devices including the protocols "on the wire".

"Friendly environment with expert teaching that teaches the why before the how."
G.C. Fasthosts

Small class sizes



We limit our maximum class size to 8 delegates; often we have less than this. This ensures optimal interactivity between delegates and instructor.

"Excellent course. The small class size was a great benefit..."
M.B. IBM

Hands On training



The majority of our courses use hands on sessions to reinforce the theory.

"Not many courses have practice added to it. Normally just the theoretical stuff is covered."
J.W. Vodafone

Our courseware



We write our own courses; courseware does not just consist of slides and our slides are diagrams not bullet point text.

"Comprehensive materials that made the course easy to follow and will be used as a reference point."
V.B. Rockwell Collins

Customise your course



Please contact us if you would like a course to be customised to meet your specific requirements. Have the course your way.

"I was very impressed by the combination of practical and theory. Very informative. Friendly approachable environment, lots of hands on."
S.R. Qinetiq

Advanced RF

Course content

RF propagation

The Electromagnetic Spectrum, Electromagnetic Radiation, Spherical Wave Front, The Space Wave, Receive Antenna below the Horizon, Bending the Space Wave, Surface Wave Path, Tilting of Surface Wave, Conductivity, Layers of the Atmosphere, Variations of the Ionosphere, Variations caused by Solar Activity, Multi Hop Transmission, Classification of Radio Waves, Fading, Fading Reduction, Free Space Path Loss, Shadowing of Radio Wave, Signal Levels after Shadowing, Radio Waves as Wavelets, Fresnel Zone.

Transmission Lines

Transmission Line Construction, Primary Line Constants, 'T' Networks, Input Impedence, Lossless Unbalanced Line, Standing Waves, Open Circuit / Short Circuit Termination, Short Circuit Standing Waves, Open Circuit Standing Waves, Voltage Standing Wave Pattern, Short Circuit Termination, Open Circuit Termination, The Directional Coupler, Effect of E and M Coupling, Practical Reflectometer.

Antennae Theory

The Open Circuit Line, Dipole V/I Distribution, Polar Diagram, Power Pattern $\frac{1}{2}$ Wave Dipole, Half Wave Dipole, Vehicle Mount, Centre Fed Whip Antenna, Antenna Beamwidth, The Yagi Array, Uda Yagi array, Antenna Characteristics, 6 Element Yagi Polar Diagram, Log Periodic Antenna, Helical Antenna. Microwave Dish Array, Typical Microwave Dish Antenna.

Transmission Measurements

Transmission Measurements, Effective Isotropic Radiated Power, Fade Margin.

Noise

Noise in Communications, Noise Voltage Equivalent Circuit.

Satellite Communications

Satellite Communications, Large Earth Station, The Satellite Payload, Geo Stationary Orbit, Basic Orbits, VSAT Terminal, Iridium Phone, The Space Segment, Satellite Footprint, Typical System Hardware.

Mobile Communications

Mobile Evolution, The Path to UMTS, Technologies Bit Rate and Mobility, Systems and Specifications, Wireless Networks, Diffraction, Multi Path Propagation, Loss Models, GSM Architecture, OSI Model – GSM, OSI Reference Model, OSI Layers.

