Introduction to RF Propagation

Course Syllabus Overview

Duration – 4 days

01. Foundations

- Vector Notation
- Newton's Laws
- Simple Harmonic Motion
- Damped Harmonic Motion
- Forced Oscillation and Resonance
- Fourier Series
- Decibels

02. Concepts

- Waves
- Charge
- Electric Field
- Electric Current
- Magnetism and Electric Charges

03. Module

- Electromagnetic Waves
- Electromagnetic Spectrum

04. Dipole Radiation

- Dipole
- Dipole antenna
- Gain
- Attenuation
- Resonant length
- Bandwidth
- Dipole Feed
- Proximity effects

05. Feeding Antennas

- Transmission Lines
- Transmission Line Types
- Open Wire Lines
- Coaxial Cable Waveguide
- Microstrip Lines
- Optical Fibres

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06. Propagation in the Upper and Lower Atmosphere

- High Frequency Propagation
- Propagation in the Lower Atmosphere

07. Propagation Modifiers

- Multipath Interference
- Radio Horizon
- Hills and Mountains
- Urban Propagation
- Cross-Polarisation
- Trees and Vegetation
- Heavy Rain, Snow, and Fog

08. Antennas

- Rhombic
- Vivaldi
- Yagi
- Log-Periodic Dipole Array
- Slot Antenna
- Circularly Polarised Antenna
- Patch Antennas

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