

Training Program Summaries

General Telecommunications Appreciation

A General Overview
The Frequency Spectrum
Understanding Frequency and Wavelength
Audio Spectrum, Hearing and Loudness
Low Frequency (LF), Medium Frequency (MF) & High Frequency (HF) applications
Very High Frequency (VHF), Ultra High Frequency (UHF) applications
Super High Frequency (SHF) and its applications
Satellite Communications – GPS, TV, Communications & Inmarsat
Global Marine Distress and Safety System (GMDSS)
Fibre Optics

Single Channel Radio Systems

The Single Channel Frequency Spectrum
Frequency Planning
Propagation Mechanisms
Line of Sight, Free Space Loss and its Calculation
The Decibel (dB) and dB Calculations
Radio Links – Gains and Losses and Fade Margin
Amplitude, Frequency and Digital Modulation
P25 and Tetra Trunked Radio Systems
Base Station, Handportable and Repeater Characteristics
Telemetry and Polled Radio Systems

Public Address and General Alarm PA/GA Systems

PA/GA Primary Functions
PA/GA design Fundamentals
Ambient Noise and Sound Levels
Intelligibility and Audibility
Operational Areas and Broadcast Zones
Microphones and their Characteristics
Amplifier Design and Class
Central Control Equipment
Loudspeakers, Characteristics and Sound Pressure Level
Load Calculation, Audio Distribution and Cables

Satellite Communications

A brief History of Satellite Communications
Satellite Orbits – Geostationary, Low Earth and Medium Earth
Satellite Operating Frequency Bands
Basic Ground Station Design
Antenna Design, Gain and Characteristics
Modulation Schemes
The Space Segment
Link Budgets and Eb/No
Vsat terminals - Hubs and Remotes
Satellite Broadcast – DVBS and DVBS2

Global Marine Distress and Safety System (GMDSS)

GMDSS – the Concept
Sea Area Classifications
Definition of Sea Area Classifications
Inmarsat Satellite System coverage
Basic Equipment Provision requirements
GMDSS System Availability and Duplication
The GPS system
Automatic Interrogation System – AIS
GMDSS Power Supplies
GMDSS Certification and Operator Qualifications

Digital Microwave

Great Circle Distance and Bearing Calculation
Free Space Path Loss
Propagation Mechanisms
Gains and Losses
Antenna performance calculation
EIRP – Effective Isotropic Radiated Power calculation
Receiver sensitivity and Signal to Noise Link Performance
Calculations and Bit Error Rate (BER)
Modulation schemes
Error Detection and Correction (FEC)