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TETRAcomplete Course

TETRAcomplete is a two day course that is the definitive TETRA course. It is aimed at delegates who already have a good understanding of mobile radio networks and it provides an ideal way for those attendees who have completed the TETRAfirst course to get a fuller and more technical understanding of TETRA.

It has been designed to provide a more in-depth knowledge of the TETRA air interfaces (protocol stack architecture and radio aspects) and their operations, as well as issues relevant to the TETRA network planning and capacity dimensioning. In contrast to vendor-specific training courses, this course provides vendor-independent information.

The course is grouped into nine modules. The content of each module is as follows:

- **Module 1 (TETRA Introduction)**
 - TETRA standardisation process
 - TETRA key features
 - TETRA services
 - Basic services
 - Essential services
 - Supplementary services
 - TETRA security
 - TETRA evolution

- **Module 2 (TETRA V+D Radio Interface)**
 - High level overview
 - Network architecture
 - Protocol structure
 - Logical channels
 - Radio aspects (Physical layer)
 - Frame, slot, burst structure
 - Physical channels
 - Transceiver performance requirement
 - Cell range limitation
 - Basic system procedures
 - Cell search, random access, power control procedures
 - Cell selection and reselection procedures
 - Basic call set-up procedures
 - System operation modes
- **Module 3 (Radio Propagation at TETRA frequency)**
 - Free space propagation
 - Reflection and diffraction
 - Common propagation models
 - Slow fading and fast fading models

- **Module 4 (Tele-traffic modelling)**
 - Tele-traffic basics
 - System capacity
 - Traffic load
 - Grade of service
 - Tele-traffic modelling
 - Trunking efficiency
 - Erlang tables
 - Consideration for group calls

- **Module 5 (TETRA Network planning)**
 - Coverage planning
 - Coverage requirement
 - Link budget
 - Capacity planning
 - Grade of service requirements
 - Traffic load prediction
 - Frequency planning
 - C/I requirement
 - Network infrastructure planning consideration
 - BS connection topology
 - Control room connection
 - Availability and reliability

- **Module 6 (TETRA Direct Mode Operation)**
 - Why direct mode operation (DMO)?
 - DMO configurations
 - Normal DMO
 - Managed DMO
 - Dual watch DMO
 - DMO repeater/gateway
 - DMO services
 - DMO security
- **Module 7 (TEDS)**
 - Channel bandwidth and modulation
 - Link adaptation
 - Example user data rates and applications
- **Module 8 (Regulatory Issues)**
 - Type approval
 - CE marking
 - Spectrum regulations
 - Site acquisition
 - Interoperability

- **Module 9 (Migration to TETRA system)**
 - Fleet mapping
 - Appreciating the trade-offs of different talk group sizes
 - Transition from Analogue to TETRA
 - Training of key personal and users

Who should attendee this course?

Engineers, technical professionals, project managers and, in general, anyone responsible for:

- Specifying or designing a TETRA network solution (for purchasing purposes)
- Planning a TETRA network
- Implementing a TETRA network
- Optimising a TETRA network
- Evaluating a TETRA network
- Maintaining or supporting TETRA networks or equipments

Managers and customers' own trainers would also benefit from this course

Prerequisites for the course

A good understanding of radio and mobile network fundamentals is required to fully benefit from this course. Ideally delegates should have completed the TETRAfirst course.