Frequency Planning and Spectrum Management

23rd, 24th, 25th & 26th January, 2019 Muscat-Oman

Intellectual Events And Conferences Private Limited

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Course Leader

Dr. John Andrew Mpapalika

Doctor of Philosophy (PhD) in Telecommunications Engineering; London Metropolitan University, United Kingdom (U.K).
Bachelor of Science (Hons) in Electronic and Communications Engineering

Trainer Profile: Dr. John Andrew Mpapalika is a competent registered and professional telecommunication engineer with both international and domestic work of experiences in the field of telecommunications and ICT sector of over 30 years. He graduated his Doctor of Philosophy (PhD) in Telecommunications Engineering at the London Metropolitan University in the United Kingdom (U.K). He also graduated Bachelor of Science (Hons) in Electronic and Communications Engineering specializing in Microwave Engineering at the same university in the U.K.

He joined and worked with the incumbent fixed telecommunications network operator; namely, the Tanzania Telecommunications Company Limited (TTCL), as a professional telecommunication engineer in the field of Telecommunications Network Planning and Design for 17 years from 1980 to 1996. He also joined and worked with the communications regulator of Tanzania called the Tanzania Communications Regulatory Authority (TCRA) as the professional telecommunications engineer in the departments of Spectrum Management, ICT Development and Economic Regulations dealing with competition and tariff regulations for another 17 years from 1998 to September 2015.

From 8th May 2011 to 30th September 2012 Dr. Mpapalika worked with the International Telecommunication Union (ITU) as an ITU Area Representative for Southern Africa (based in Harare, Zimbabwe) on Contract Term basis to support Member States in the Southern Africa Development Community (SADC) in the telecommunication/ICT development programs and projects.

Dr. Mpapalika has been conducting several communications courses on Radio Frequency (RF) Spectrum Management, Digital Broadcasting, and Economic Regulations at the African Advanced Level Telecommunications Institute (AFRALTI), in Nairobi, Kenya. Currently, Dr. Mpapalika is a Chief Executive Officer of the TROCA International Limited dealing with Training, Research Operations and Consultancy Services and a Lecturer of the ITU's Online Master of Science (MSC) course on Spectrum Management Training Program (SMTP).

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About the Course

The Frequency Planning and Spectrum Management Training Course is designed for anyone working in spectrum management and frequency planning related fields. The training course presents a wide range of material to familiarize those new to the spectrum management and frequency planning arena with the latest tools, techniques, methods, trends and issues related to spectrum and frequency planning.

Topics Covered

This four-day training program covers the following topics in detail:
Frequency Planning and Spectrum Management Training course addresses the various processes of the Spectrum Management such as Radio Frequency Planning and Allocation; Radio Frequency Spectrum Monitoring; Radio Frequency Spectrum Coordination and Notification; Radio Frequency Spectrum Engineering; Radio Frequency Spectrum Licensing, Assignment and Billing; Radio Frequency Spectrum Legislations, Regulations, Rules, Guidelines and associated Standards; and Inspection of Radio equipment Installation.
Attendees will learn the key concepts and technologies requiring spectrum, frequency planning, spectrum management principles applied to all wireless communications technologies including mobile and cellular, LTE, LTE-A, 5G, Wi-Fi, SATCOM, military and government, spectrum planning, analysis, design engineering, and computer-aided techniques. In addition, the course will introduce technological and regulatory changes that affect spectrum management, such as digital broadcasting. Frequency assignment methods are emphasized and new market-place forces, such as spectrum fees and charges will also be presented.

- Policy options for frequency planning spectrum management
- Technologies utilizing frequency planning, spectrums and their roles in the development priorities
- Efficient implementation of new technologies
- Emerging technologies and policy options
- Principles of Electromagnetic energy and RF
- Electromagnetic compatibility regulations
- Principles of interferences, electromagnetic interference (EMI) and electromagnetic compatibility (EMC)
- Economic importance of electromagnetic compatibility
- Key optimization of frequency and spectrum assignment
- Formulation and solution of frequency assignment and spectrum management

Who should attend?

The course is designed for engineers, managers, analysts, individuals with both technical and non-technical backgrounds whose job requires a basic understanding of the frequency planning and spectrum management processes. Primarily individuals who work as planners, radio network engineers or radio optimization engineers, or staff working on performance measurement disciplines.

The course introduces national and international spectrum management frameworks, policies, practices and processes including: basic frequency planning, spectrum management concepts and terminologies along with a basic technical overview of spectrum principles and characteristics, frequency assignment processes and procedures.

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Agenda

INTRODUCTION TO RADIO FREQUENCY SPECTRUM MANAGEMENT

- Fundamentals of Radio Frequency (RF) Spectrum;
- Definition of Spectrum Management;
- Overview of Spectrum Management Process;
- Functions of Spectrum Management
- (RF) Planning and Spectrum Management
- Objectives of this National (RF) Spectrum Plan
- Structure of the Global and National (RF) Spectrum Plan
- Standardized Definitions of Terms and Services
- Licensing Requirements Electronic Communications Services
- Classification of Radio Frequency Spectrum
- Key Statistical Highlights

THE FRAMEWORK FOR THE RADIO FREQUENCY PLANNING AND SPECTRUM MANAGEMENT

- The Communications Act (Comms Act);
- The RF Spectrum Regulations;
- The RF Spectrum Guidelines and Rules;
- Electronic Communications Sector Policy (ECSP)
- Key frameworks and models
- Frequency spectrum utilization

SPECTRUM PLANNING

- Radio Frequency Spectrum
- Policy Objectives of Spectrum Management
- Scope of the Plan
- Radio Spectrum Management Strategy

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SPECTRUM ALLOCATION

- Definition of Radio Frequency Allocation
- Introduction to Spectrum Allocation
- Regional Allocation
- Frequency Allocation Table
- SPECTRUM BAND PLANNING AND MANAGEMENT
- Spectrum Band Plan
- Policies in Spectrum Band Planning
- New Spectrums Bands
- Differences between Premium and Standard Spectrum
- Related Technical Standards

REFRAMING OF SPECTRUM

- Basics of Reframing
- Mobile radio communications analog systems
- More robust GSM/GPRS voice systems, enabling the boom in text messaging,
- Latest advances in mobile broadband brought by UMTS, HSDPA, LTE, LTE-A, LTE_A Pro and 5G
- GSM bands in 800 – 900 MHz and 1800 – 1900 Mhz
- UMTS bands are typically within the 1900/2100 MHz frequencies
- LTE 700/1900/2100/2400 MHz in the spectrum
- 5G GHz bands

SPECTRUM PRICING AND VALUATION CONCEPTS

- Spectrum Pricing
- Common Methods and Strategies of Spectrum Pricing
- Market-Based Spectrum Value vs. Administered Incentive Pricing (AIP)

SPECTRUM AUTHORIZATION

- Spectrum Licenses
- Individual vs. Special Spectrum License
- Class Licenses
- Spectrum Exemptions
- Spectrum Swapping

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CONTROL, MONITORING AND COMPLIANCE ENFORCEMENT

- Interference
- License Conditions
- Spectrum Monitoring and Policy Enforcement
- Inspections and Investigations
- Equipment Seizure and other Enforcement Actions
- Tools and Techniques

RADIO FREQUENCY COORDINATION

1 Definition of Radio Frequency Coordination
2 Over view of the ITU Radio Regulations Related to Issues of Radio Frequency Coordination
3 Radio Frequency Coordination Procedures
    - Basic Radio Frequency Coordination
    - Interference Analysis
    - Coordination Notification
    - Coordination Response
4 Computer Application in Radio Frequency Coordination
    - Interference Analysis programs
    - Interference Data Base
    - Support Programs and Files
5 Types of Radio Systems Requiring Radio Frequency Coordination
    - Point to Point Microwave Radio
    - Satellite Communications
    - Public Land Mobile Network
    - Private Microwave Radio

SPECTRUM VALUATION

- The use of the Discounted Cash Flow (DCF) Valuation Models to estimate the maximum spectrum value, which is the full Enterprise Values (ENV);
- The use of the Market Transaction and Capitalization Multiple Valuation Models to estimate the minimum spectrum value, which is the Reserve Price

EXAMINATION

The Final exam will consist of Multi Choice Questions over 2 Hours based on the content of the course. All participants will receive certificate accredited by CPD (United Kingdom).

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