LS telcom
Smart Spectrum Solutions

LS telcom Training Academy

Training Calendar 2026

Global Spectrum Experience

Online Training
Classroom Training
Live Web-Seminars
E-Learning Sessions

	Training Course	Page	Duration (days)	Price (€)	Date	Type
	Radio Communications					
	Spectrum Matters for 5G/6G	5	2	1,695	23 - 24.11.2026	Classroom
	Evolution of Cellular Network Deployment	6	1	895	25.11.2026	Classroom
	Wireless Connectivity for the Internet of Things (IoT)	6	1	895	26.11.2026	Classroom
	From the 4G/LTE to the 5G-NR Air Interface	7	3	2,995	10. - 12.11.2026	Classroom
	Digital Terrain Data – Requirements, Production and Usage	8	1	on request	on demand	Classroom
	In-Building Wireless Network Design	8	2	on request	on demand	Classroom
	Radio Networks for Critical Communications	9	2	1,695	20. - 21.04.2026	Classroom
	Radio Network Planning for Critical Communications Networks	9	2.5	2,095	22. - 24.04.2026	Classroom
	Planning and Coordination of Microwave Links (PtP/PtMP)	10	2	1,695	18. - 19.05.2026	Classroom
	Radio Link Calculation and Coordination Tool – CHIRplus_TC	10	3	2,495	20. - 22.05.2026	Classroom
	Wireless Systems for Industrial Applications – Industry 4.0	11	1	895	05.05.2026	Classroom
	Wireless Networks Calculation Tool – CHIRplus_TC incl. Net Module	11	2	1,695	29. - 30.09.2026	Classroom
NEW	5G Next Generation Mobile Communication (German Language)	12	2	1,490	16. - 17.11.2026	Classroom
NEW	Satellite and Non-Terrestrial Communications in the 5G+ Era	13	4 Half Days	1,815 £	26. - 29.01.2026	Online
NEW	5G Advanced and Evolution Towards 6G	13	2 Half Days	1,336 £	12. - 13.01.2026	Online
	FRMCS Overview	14	2 Half Days	1,336 £	12. - 13.01.2026	Online
	FRMCS Engineering	14	4 Half Days	2,516 £	19. - 22.01.2026	Online
NEW	5G Optimization Overview	15	1 Day	on request	on demand	Online
NEW	5G Radio Planning for Railways	15	4 Half Days	1,815 £	26. - 29.01.2026	Online

	Training Course	Page	Duration (days)	Price (€)	Date	Type
	Spectrum Management					
	Managing and Regulating the Radio Spectrum: A Policy Perspective	16	2	1,695	15. - 16.09.2026	Classroom
	Sharing and Dynamic Spectrum Access – Hidden Spectrum Resources?	17	2	1,695	17. - 18.09.2026	Classroom
	Approaches to Satellite Compatibility	17	2	1,695	06. - 07.05.2026	Classroom
	Technical Issues in Radio Spectrum Management	18	4.5	3,395	12. - 16.10.2026	Classroom
	Spectrum Matters for 5G/6G	18	2	1,695	23. - 24.11.2026	Classroom
NEW ⚙	SPECTRAemo: Tactical Radio Planning for Defense	19	2	1,695	on demand	Classroom
⚙	SPECTRAplan S	20	3-5	on request	on demand	Classroom
⚙	SPECTRAemc Workflow Wizards Configuration	20	3	on request	on demand	Classroom
⚙	SPECTRAemc Framework Functionalities	21	3	on request	on demand	Classroom
⚙	SPECTRAemc Radio Calculation Functionalities	21	5	on request	on demand	Classroom
⚙	SPECTRAemc Coordination AddOns	22	3	on request	on demand	Classroom
⚙	IT Architecture, Implementation & Maintenance for mySPECTRA Solutions	22	3-5	on request	on demand	Classroom
⚙	mySPECTRAcloud Report Management	23	3	on request	on demand	Classroom
⚙	mySPECTRAcloud Configuration Management	23	3-5	on request	on demand	Classroom
⚙	(Telephone) Number Management	24	3	on request	on demand	Classroom
⚙	Special Event Management	24	3	on request	on demand	Classroom
	Monitoring & Measurements					
⚙	LS OBSERVER – Sensor-based Monitoring and Direction Finding	25	3	2,495	06. - 08.10.2026	Classroom
	Spectrum Monitoring - Measurements and Techniques	26	2	1,695	11. - 12.05.2026 / 16. - 17.11.2026	Classroom
	Practical Spectrum Monitoring Measurements	26	3	2,950	13. - 15.05.2026 / 18. - 20.11.2026	Classroom
	Measurements of Human Exposure to RF Electromagnetic Fields	27	3	3,095	21. - 23.09.2026	Classroom
	Measurements of Human Exposure to RF Electromagnetic Fields at 5G NR Base Stations	27	1	1,095	26.02.2026 / 24.09.2026	Classroom
	Broadcast					
	FM, DAB, TV and 5G Broadcast Antennas	28	1	895	02.11.2026	Classroom
	DVB-T2 – 2nd Generation Digital Video Broadcast	29	2.5	2,095	03. - 05.11.2026	Classroom
	DVB-T2 – Measurement Technology in Theory and Practice	29	1.5	1,750	05. - 06.11.2026	Classroom
	FeMBMS – 4G/5G-based Broadcast	30	2	2,195	16. - 17.06.2026	Classroom
⚙	Broadcast Planning Tool CHIRplus_BC (LF/MF)	30	2	on request	on demand	Classroom
⚙	Broadcast Planning Tool CHIRplus_BC (Radio/TV, Analog/Digital)	31	3	2,495	13. - 15.04.2026	Classroom
⚙	Broadcast Planning Exercises using CHIRplus_BC	31	2	1,695	16. - 17.04.2026	Classroom

⚙ = Tool Training

Welcome to the
LS telcom Training Academy!

Dear participants, dear partners,

Since 2003, the LS telcom Training Academy has stood for excellence in knowledge transfer and professional development. Over the years, we have built strong partnerships with leading institutions such as Wray Castle, and we are delighted to welcome our new partner, the Carl-Cranz-Gesellschaft, whose expertise further enriches our training portfolio.

Our courses span a wide range of domains:

- **Broadcast Technologies**
- **Radio Communications**
- **Spectrum Management & Monitoring**
- **Radio Network Planning**
- **Electromagnetic Spectrum Operations**
- **Software training on LS telcom tools**

To best serve your needs, we offer diverse training formats: in-person seminars at our headquarters in Lichtenau, set in the beautiful Schwarzwald (Black Forest) region, virtual live classes that connect you from anywhere in the world, and fully personalized programs designed to your requirements and delivered either on-site or online. We are, of course, happy to take your specific wishes into account as well.

Our academy combines top-level trainers with real-world industry experience, up-to-date content, and an environment that encourages active exchange and collaboration. Above all, our goal is to empower you with the knowledge and tools to advance your professional journey.
Together with the entire Training Academy team, I look forward to welcoming you to our courses. Let us continue to learn, share, and shape the future of Spectrum Management and Communications.

Roland Götz
Chief Operating Officer

Radio Communications - Overview

Spectrum Matters for 5G/6G

2 Days

Training Focus
5G is driven both by the need for mobile operators to continuously strive to satisfy the growing and unquestionable demand for mobile data, and to support new use cases and services. Regulators and governments have been involved in establishing policies and approaches to award spectrum, so that new 5G services can be rolled out to consumers, enterprises, public sector and government agencies alike. Questions remain about how much more spectrum is needed for 5G but also for what spectrum is needed for 6G which is due for commercialization in the early 2030's.
When it comes to the question of spectrum however, there are many different views about how growth in data traffic impacts upon demand for radio spectrum. It is also evident that below 6 GHz there is very little spectrum remaining that can be re-farmed for mobile services and much of the focus for new spectrum for future mobile (6G) services is concentrated above 6 GHz. How feasible is it to deliver mobile services at such high frequencies? Are there ways to use existing spectrum more efficiently, or are technologies such as LTE and 5G Advanced already very close to the limit of what is achievable?

Course Objectives
After completing the course, participants will have an understanding of how the evolution towards new standard cellular technologies 5G and 6G has meant identifying new spectrum, or at least one new band. Participants will also understand the practical utilization of ever increasing frequencies in a mobile environment, and whether 6G might mark the end to the hunger of mobile operators for more spectrum.

Intended for
those who need to better understand the spectrum implications of 5G and 6G technologies, whether from a regulatory, commercial or technical perspective.

Contents
- Forecasts of demand for data services
- Realistically forecasting spectrum demand
- Bands capabilities and issues with existing IMT bands
- New bands being considered for 5G and 6G services
- Propagation and coverage of bands above 6 GHz
- The spectrum efficiency of existing IMT technologies
- The 5G ecosystem
- A roadmap for the evolution of 5G services towards 6G
- Authorization of mobile spectrum

Date
23. - 24.11.2026

Course Fee
1,695 € (excluding VAT)

Evolution of Cellular Network Deployment | *1 Day*

Training Focus
5G is now widely deployed across the world initially using the non-standalone configuration, meaning the traffic is being carried over the 5G radio network, but it is passed on to a 4G evolved packet core network. Operators are migrating to a standalone configuration and this evolution will have an impact on the range of features that can be offered to users. One of the main features of 5G is enhanced mobile broadband, but in standalone mode enhancements will instantly become available such as industrial automation, network slicing and much lower latency. This course not only examines the regulatory, operational and commercial challenges of 5G networks migrating from non-standalone to standalone, but also provides a detailed view of how operators have deployed 5G within the range of different spectrum bands and configurations. It explores how improvements can be made as network technologies evolve. It provides examples and exercises which untangle these challenges of 5G network deployment for all the parties involved, and it will enable informed business decisions, and help those involved in 5G to continually benefit from future use and roll-out strategies.

Course Objectives
After completing the course, participants will have a solid grounding in the challenges facing 5G network roll-out and deployment across a range of different scenarios, and will understand the challenges and benefits compared to historical wireless technologies.

Intended for
those who wish to strengthen their knowledge of 5G technology, or will be involved in deployment, roll-out or use, and who need to understand the challenges and implications of 5G roll-out on their businesses or organizations. This includes governments, local authorities, vertical industries (e.g. energy, transport, education, healthcare, manufacturing or utilities), operators and vendors.

Contents
- Understand the complexities of 5G roll out and the roadmap over longer-term deployment
- Identify the key challenges in deploying 5G infrastructure and evolutions towards new features in Standalone mode
- Examine the likely upgrade costs moving from Non-Standalone to Standalone of 5G
- Discover how to achieve positive benefits from 5G technology deployment

Date
25.11.2026

Course Fee
895 € (excluding VAT)

Wireless Connectivity for the Internet of Things (IoT) | *1 Day*

Training Focus
The Internet of Things (IoT) covers a huge range of use cases and applications and scales from single devices to massive systems with various elements connecting in real time. Wireless connectivity is an integral part of IoT. Depending on the application, factors such as range, data requirements, security, power requirements and battery life will dictate the choice of one or some form of combination of wireless technologies. Traditional cellular mobile networks based on 2G/3G/4G have almost ubiquitous coverage and high data rates but at cost of high power requirements at end user devices. Low Power Wide Area Networks (LPWAN) based on standards like LoRaWAN, Ultra Narrow Band (UNB) or NB-IoT, complement traditional connectivity solutions for long range communication. Short range technologies such as Bluetooth, BLE, ZigBee, WiFi or RFID will provide connectivity over short distances. And, of course, 5G presents another set of opportunities for IoT connectivity.
This course explores radio technologies for IoT applications; discusses the underlying concepts and the resulting advantages and limitations. An analysis of spectrum requirements and availability complements the training.

Course Objectives
After completing the training, participants will be familiar with most recent radio technologies available to power IoT applications. They will understand the differences between the technologies, and the benefits and compromises of each.

Intended for
This course is intended for those who have basic knowledge in radio communication systems, who are interested in wireless systems for IoT applications and who may be responsible for implementing radio systems in industry.

Contents
- IoT applications and communication requirements
- Overview on wireless technologies and approaches for IoT applications
- Spectrum requirements and availability
- Radio systems for Low Power Wide Area Networks
- Radio systems for Low Power Personal Area Networks
- 3GPP systems and the role of 5G for IoT

Date
26.11.2026

Course Fee
895 € (excluding VAT)

From the 4G/LTE to the 5G-NR Air Interface

3 Days

Training Focus
This training course is aimed at those people working within the wireless communication business or broadcast business. Participants will get an overview on the 4G/LTE and 5G-NR physical layer. First of all wireless communication basics like OFDMA, DFTs-OFDMA, Forward Error Correction and MIMO will be discussed followed by an in-depth overview of 4G and 5G technology and standards. The training is presented in cooperation with Rohde & Schwarz.

Course Objectives
After completing this course, delegates will understand the technology behind 4G and 5G. Focus is on the physical layer not on the protocol level. Several practical demonstrations will solidify the theoretical knowledge.

Intended for
This course is intended for those who have a basic knowledge in information technology, who may be employed in network operators or regulators.

Contents

a) Wireless Communication Basics
- Introduction and overview, physical layers mobile communication standards (2G to 5G)
- From single-carrier to multicarrier (OFDM)
- OFDM, OFDMA, SC-FDMA, DFTs-OFDMA basics
- Forward Error Correction (FEC) in mobile communication (2G, 3G, 4G, 5G)
- Shannon, SISO/MISO/MIMO/Alamouti principle, multi-antenna systems

b) 4G/LTE Standard
- Introduction to 4G/LTE
- 4G/LTE air interface
- LTE spectrum, 4G bandwidths, LTE OFDM parameter
- LTE radio frame structure
- LTE downlink and uplink – physical layer overview
- PDSCH, PDCCH, PUSH PUCCH, etc.
- MCS, modulation pattern, FEC
- Reference signals
- FDD and TDD
- LTE performance

c) 5G Standard
- Introduction to 5G-NR
- FR1 and FR2
- 5G usage scenarios
- 5G-NR air interface
- 5G spectrum, 5G OFDM parameter, BWP, CA
- FDD and TDD
- 5G architecture options (NSA; SA)
- 5G radio frame structure, slot, subframe, radio frame, SSB
- 5G downlink and uplink – physical layer overview
- PDSCH, PDCCH, PUSH PUCCH, etc.
- MCS, modulation pattern, FEC
- Reference signals
- 5G multi-antenna systems, massive MIMO, massive beam forming
- 5G performance (data rates, spectral efficiency, …)
- 4G MBSFN and 5G, DSS
- Examples for current spectral occupation in mobile communication (2G, 3G, 4G and 5G)
- Practical 5G demonstrations using a signal generator and a spectrum analyzer with vector signal analysis

Date
10. - 12.11.2026

Course Fee
2,995 € (excluding VAT)

Digital Terrain Data – Requirements, Production and Usage | *1 Day*

Training Focus
This course will give an introduction into the world of digital terrain data as used in radio planning tools. Lessons inform about basic map production, coordinate systems and storing of information in vector or raster format. The different terrain data types used in radio planning tools will be explained, further, the most common data sources, production processes, and quality criteria will be discussed. Finally, recommendations regarding the suitability of using terrain data for different radio communication services will be given.

Course Objectives
After completing the course, participants will be able to compare terrain data by data type, file format, resolution, coordinate system, accuracy, and source in order to specify the optimum data set for their tasks.

Intended for
This course is intended for those who have basic knowledge in GIS software, who are interested in digital terrain data and who may be employed as radio planners or system administrators for radio network planning and spectrum management tools.

Contents
- Overview of terrain data types
- Coordinate system, projection and data
- Comparison vector versus raster data
- Elevation and land use data
- Maps for visualization
- Population data
- Conductivity data

Date
on demand

Course Fee
on request

In-Building Wireless Network Design
2 Days

Training Focus
Users of wireless networks expect ubiquitous coverage that includes indoor areas such as subway stations and tunnels, shopping malls and high-rise buildings. These environments require specific in-building distribution networks as signals from outdoor base stations are often unavailable due to the shadowing effects of metallic surfaces and solidly constructed buildings.
The planning of in-building networks requires fundamental understanding of the relevant issues and approaches to extend coverage into buildings.
This course discusses the relevant questions in relation to design and dimensioning of such systems. The training introduces different concepts to achieve indoor coverage and discusses pros and cons of available technologies like leaky feeder cable, distributed antenna systems (DAS), use of base stations or optical repeater systems. Delegates will learn about in-building wave propagation, network architecture, and the typical technologies for in-building wireless networks deployed today. The classroom training is complemented with practical demonstrations of scenarios with a specific tool for in-building wireless network design.

Course Objectives
After completing the course, delegates will understand the approaches, procedures and requirements for in-building wireless network design and will be familiar with the technical and economic constraints of indoor networks.

Intended for
This course is intended for those who have a general knowledge in radio network planning and who are interested in technical and practical aspects of in-building wireless network design and who may be employed in telecoms regulators, telecoms operators, and utility and transportation companies.

Contents
- Introduction to in-building wireless network design
- Requirements on indoor network design
- Elements of wireless indoor networks
- Radio wave propagation in indoor environments
- Planning of in-building wireless networks
  - Leaky feeder cabling
  - Passive distribution components
  - Antennas
  - Optical distribution systems
- 2G/3G/4G/5G/TETRA/WiFi
- Practical demonstration of in-building wireless network design with indoor planning tool

Date
on demand

Course Fee
on request

Radio Networks for Critical Communications | *2 Days*

Training Focus
Professional users in public safety, PPDR, transportation, utilities and industry must rely on efficient radio systems to provide wireless communication for support of their daily operation. Implemented radio technology, network design and user requirements must be carefully matched against each other. A solid understanding of users' requirements and the possibilities and limitations of technologies is therefore essential.
This course discusses issues which need to be considered when a radio system for critical communications shall be introduced or existing systems shall be replaced: Is it better to use services from an existing operator or to build and operate a dedicated network? Which deployment concept should be selected? How to define coverage and capacity? Which technology can provide the required services? These and other questions related to the design and introduction of RF networks for critical communications will be discussed. Starting with specific requirements, the course introduces services specific to critical communications, explains typical planning approaches and highlights possible implementation scenarios. A comparison of recent and upcoming radio technologies like TETRA, DMR, LTE as well as 5G for broadband applications and Mission Critical Services / MCX completes the training.

Course Objectives
After completing the course, delegates will understand users' requirements and limitations of current radio technologies like TETRA, DMR, LTE, 5G etc. They will know the technical and economic constraints of radio systems for critical communications and will be able to realistically assess the promises of system vendors and service providers.

Intended for
This course is intended for those who have basic knowledge in radio communication systems, who are interested in technical aspects for critical communications networks and who may be employed in telecoms regulators, organizations for public security and utility and transportation companies.

Contents
- Introduction to radio networks for critical communications
- Requirements on communication services and applications
- Mobile broadband for PPDR
- Elements of a radio network for critical communications
- Planning and operation of a radio network
- Radio systems for critical communications (DMR, TETRA, LTE, 5G)

Date
20. - 21.04.2026

Course Fee
1,695 € (excluding VAT)

Radio Network Planning for Critical Communications Networks | *2.5 Days*

Training Focus
Radio networks for professional use in public safety, transportation, utilities, and industry must provide reliable communication for mission critical applications. The use of appropriate design parameter and planning procedures is crucial to achieve the required network performance.
This course provides a solid understanding of how to design and plan networks for critical communications using digital radio technologies like TETRA, DMR or LTE/5G.
The course follows the typical steps of radio network planning from definition of coverage thresholds, over first network design and coverage planning to the development and analysis of frequency plans. Practical considerations and tasks including site selection and antenna configurations are discussed by means of photos and documents originating from real-life networks. Live calculations with a planning tool are used to illustrate effects of site selection and site and network configuration. Supporting the practical exercises, theoretical elements of the course include the principles of radio propagation, link budgets, the determination of coverage thresholds and capacity considerations. The course will be presented as classroom training with slides, interactive tool calculations and exercises to be done by the participants.

Course Objectives
After completing the course, delegates will be familiar with the typical procedures for RF network planning for radio technologies like TETRA, DMR and LTE/5G. They know how to define planning criteria for RF networks and understand the underlying technical and theoretical approaches.

Intended for
This course is intended for those who have basic knowledge in radio network planning, who are interested in radio network planning for critical communications networks and who may be employed in telecoms regulators, telecoms operators, and utility and transportation companies.

Contents
- Targets and procedures for radio network planning
- System parameter and architecture of critical communication networks
- Definition of coverage and capacity targets
- Antenna configurations, site selection and coverage planning
- Capacity considerations
- Frequency planning

Date
22. - 24.04.2026

Course Fee
2,095 € (excluding VAT)

Planning and Coordination of Microwave Links (PtP/PtMP) | *2 Days*

Training Focus
Modern transmission networks require communication links with high link capacity and availability. Microwave Point-to-Point (PtP) and Point-to-Multipoint (PtMP) systems can provide the required performance if the links are designed appropriate. Theoretical know-how combined with best practice for link engineering and design ensures that the possibilities of modern link technology will be fully available after implementation.
The course introduces both theoretical and practical knowledge in planning of microwave links. Topics touched cover wave propagation, link budget and availability calculations as well as technical parameters of antennas and microwave devices. Best practice for the analysis of path profiles including line of sight aspects, selection of antenna, modulations scheme and frequency band is provided. Availability engineering of links is discussed as well as frequency and capacity planning for complex transmission networks. This includes the effective use of frequency raster and the analysis of network interference to achieve low interference and high frequency reuse.

Course Objectives
After completing the course, delegates will be familiar with the principles of microwave radio link planning and will be in the position to design individual microwave links as well as complete PtP and PtMP networks.

Intended for
This course is intended for those who have basic knowledge in radio communications and microwave link technology, who are interested in microwave link planning and who may be employed in regulators, telecoms operators and utility or transportation companies.

Contents
- Spectrum regulation and licensing aspects
- Relevant ITU recommendations
- Wave propagation and effects
- ITU propagation models
- Path profile analysis
- Microwave devices and antennas
- Availability and error performance
- Link budget calculation
- Frequency planning and channel assignment
- Interference analysis and network optimization

Date
18. - 19.05.2026

Course Fee
1,695 € (excluding VAT)

Radio Link Calculation and Coordination Tool – CHIRplus_TC | *3 Days*

Training Focus
The design of microwave links requires complex calculations to dimension link capacity and availability or to assign frequencies. The planning tool CHIRplus_TC provides the required functionality in a user-friendly way and is essential for proper link design. The seminar introduces essential features to perform link engineering and planning tasks for Point-to-Point and Point-to-Multipoint systems. The first day is dedicated to the general tool handling. The different database functions and configurations are presented and discussed with the delegates. The following days will cover the necessary steps to perform typical link calculations - from data input over the setting of required parameters to the calculations analyses. Finally, reports and data export options will be presented. The entire workflow that is required to execute microwave radio link planning tasks as well as the Point-to-Multipoint network planning process is covered. Additionally, an overview of further network technologies included in the Net Module will be introduced.

Course Objectives
After the training the delegates will be able to efficiently solve link planning and coordination tasks using CHIRplus_TC and to interpret the calculation results for microwave links and Point-to-Multipoint networks.

Intended for
This course is intended for those who have basic knowledge in radio communication and microwave link design and who are interested in the functionality provided by CHIRplus_TC.

Contents
- Setup and configuration of CHIRplus_TC
- Interaction with the Graphical User Interface (GUI)
- Usage of databases and spreadsheets (especially filtering)
- Point-to-Point microwave link design
- Path profile and link budget
- Reliability/availability analyses
- Frequency planning and network optimization
- Interference calculation and complete network analyses
- Point-to-Multipoint network planning
- Net Module: Overview of network technologies
- Data import and export, reports and documentation

Date
20. - 22.05.2026

Course Fee
2,495 € (excluding VAT)

Wireless Systems for Industrial Applications – Industry 4.0 | *1 Day*

Training Focus
In nearly every factory floor and industrial setting, communication links are used to carry vital information between machinery and to control and monitor devices. From periodic updates to ongoing process and manufacturing management timely delivery without failure is critical to operations.
Cabled systems can be very expensive and tether equipment to fixed locations, reducing flexibility in equipment placement and reorganization. Turning to wireless technology addresses the cabling drawbacks but requires careful examination of transmission, operational and propagation characteristics to achieve the required performance.
A solid understanding of the possibilities and limitations of current radio technologies (including 5G), deployment scenarios and spectrum availability is therefore essential for the successful introduction of wireless systems for automation.
This course describes technologies and concepts for wireless communication for industrial applications. It considers the operational requirements, specific RF propagation characteristics, available frequency bands, compatibility issues and develops appropriate design strategies. An overview and comparison of appropriate wireless technologies for industrial applications will complete the training.

Course Objectives
After completing the course, delegates will understand the requirements and limitations of radio systems for industrial applications. They will know the physical and regulatory constraints of the radio environment and understand the procedures for system planning.

Intended for
This course is intended for those who have basic knowledge in radio communication systems, who are interested in wireless systems for industrial applications and who may be responsible for radio systems in industry.

Contents
- Introduction: the wireless landscape
- Industrial requirements
- Spectrum for wireless automation
- Radio propagation in industrial environment
- Wireless network system design criteria and system selection
- Radio systems for wireless automation
- Compatibility issues

Date
05.05.2026

Course Fee
895 € (excluding VAT)

Wireless Networks Calculation Tool – CHIRplus_TC incl. Net Module | *2 Days*

Training Focus
The design of wireless networks considering mobile technologies such as mobile, TETRA, DMR, PMR or wireless IoT (Internet of Things) technologies (e.g. LoRa™) requires complex calculations to dimension link capacity and link availability and to perform frequency assignment. Planning software like LS telcom's CHIRplus_TC provides the required functionality in a user-friendly way and are essential for proper network design.
A thorough knowledge of the available functionality and understanding of calculation results considerable shortens planning time and results in optimized network performance.
The seminar introduces essential features to perform planning tasks for wireless networks systems. The first day is dedicated to the general tool handling. The different database functions and configurations are presented and discussed with the delegates. The following day will cover the necessary steps to perform typical wireless network calculations - from data input over the setting of required parameters to the calculations analyses. Finally, reports and data export options will be presented. An overview of the network technologies included in the Net Module will be introduced.
The course is presented as classroom training with tool-based exercises to be done by the delegates. After a very short introduction with a few theory slides, the seminar will mostly focus on the topics by corresponding examples shown by the trainer and following dedicated exercises that are carried out by the delegates.

Course Objectives
After the training the delegates will be able to efficiently perform advanced network design and planning tasks using CHIRplus_TC. They will learn how to get best use on well-established engineering procedures and algorithms for wireless networks.

Intended for
This course is intended for those who have a basic knowledge in radio communication, who are interested in the functionality provided by CHIRplus_TC and who may be employed in telecoms regulators, telecoms operators, and utility and transportation companies.

Contents
- Setup and configuration of CHIRplus_TC
- Interaction with the Graphical User Interface (GUI)
- Usage of databases and spreadsheets (especially filtering)
- Path profile and line of sight
- Net Module: Overview of network technologies
- Standardized data import and export
- Reports and documentation

Date
29. - 30.09.2026

Course Fee
1,695 € (excluding VAT)

LS telcom Partners with Wray Castle and Carl-Cranz-Gesellschaft (CCG)!

We have strategic partnerships with **Wray Castle** and the **Carl-Cranz-Gesellschaft (CCG),** two globally respected leaders in telecoms and technical training. These collaborations bring together the combined expertise of three industry pioneers to offer innovative and comprehensive training programs for professionals in telecommunications, spectrum management, and wireless communications.
With tailored courses, deep technical knowledge, and advanced virtual lab solutions, we aim to empower engineers, managers, and newcomers to the industry with the skills they need to excel. Discover a new level of technology, innovation, and leadership training through these powerful partnerships!

5G Next Generation Mobile Communication | *2 Tage*

CCG Carl-Cranz-Gesellschaft e.V. Gesellschaft für technisch-wissenschaftliche Weiterbildung

NEW

****This course is conducted exclusively in German.****
**** Dieser Kurs findet ausschließlich auf Deutsch statt.****

Seminarinhalte
Im Seminar wird die 5G Technologie vom RAN bis zum CORE erklärt. Alle Aspekte von 5G (Physik, Architektur (NSA, SA), Frequenzbänder, Netzkomponenten (gNB, AMF, UPF, SMF), Protokolle, Network Slicing, Mobile Edge Computing, QoS, Security, Massive MIMO, Location Services sowie Voice und Video über 5G werden behandelt. Dabei werden auch Branchenszenarien für vertikale Industrien sowie der Aufbau und Betrieb von Campusnetzen und privaten 5G-Lösungen kompakt vermittelt.

Teilnehmer
Ingenieure aus Entwicklung, Support, Planung und Systemarchitektur, Netzbetreiber, Hersteller und Forschung aus den Fachrichtungen Telekommunikation, Automotive (V2X), Public Safety, M2M, IoT.

Veranstaltungsort
Oberpfaffenhofen bei München

Datum
16. - 17.11.2026

Gebühr
1,490 € (ohne MwSt.)

Satellite and Non-Terrestrial Communications in the 5G+ Era | *4 Half Days*

Training Focus
This program explores modern satellite communications and Non-Terrestrial Networks (NTN). It covers key principles, challenges, and technical limitations, including a look at different satellite orbits, as well as HAPS, HIBS, balloons, and drones.
The program then explores key use cases and their suitability for satellite and NTN. It surveys existing and emerging proprietary satellite systems and focuses on integrating 5G satellite systems into modern networks.
The program also covers different architectures, access technologies (5G New Radio, NB-IoT, and eMTC), and Direct-to-Device (D2D) services. Finally, it explores key challenges and their standardized (3GPP) solutions, such as doppler compensation, latency, and security.

Intended for
This course caters to telecom professionals, engineers, and decision-makers seeking a foundational understanding - ideal for those involved in network planning, technology strategy, and service development.

Prerequisites
A foundational knowledge of telecommunications would be beneficial. Some familiarity with 5G technology and networking principles will also enhance comprehension.

Contents
- Introduction to satellite communication
- Introduction to Non-Terrestrial Networks (NTN)
- Market and technology development
- 5G satellite – deployment and operational requirements
- 5G satellite integration and architectures
- Key deployment challenges and standardized solutions

Date
Online: 26. - 29.01.2026

Course Fee
£ 1,815 (excluding VAT)

5G Advanced and Evolution Towards 6G | *2 Half Days*

Training Focus
This 5G Advanced and Evolution Towards 6G course delves into 5G Advanced and its role as a stepping stone to the groundbreaking 6G era. You'll explore how 5G is being enhanced to deliver even higher speeds, lower latency, and greater capacity. We'll dissect key features and advancements that are laying the groundwork for the future of connectivity. Beyond 5G, the course will provide a glimpse into the potential of 6G, examining emerging technologies and their implications for industries and society.
The course provides a holistic overview of the current (relatively early) state of play of 6G development. We develop crucial insights into 6G design, performance objectives, and its intersection with the metaverse and AI, ensuring participants are well-prepared for the future of wireless communication.
By the end of this course, you'll gain a comprehensive understanding of the latest developments in mobile network technology and the exciting possibilities they hold.

Contents
- 5G advanced - base capabilities improvements
- Specific 5G advanced features
- 6G – a look ahead

Date
Online: 12. - 13.01.2026

Course Fee
£ 1,336 (excluding VAT)

FRMCS Overview

2 Half Days

wray castle empowering the telecoms world

Training Focus

This course is aimed at non-technical people or those in management roles that need an introduction to FRMCS. It outlines the need for FRMCS and introduces the standards that are required. The course also discusses the issues with the current radio spectrum allocations and how FRMCS and GSM-R may co-exist in the rollout phase. Also discussed the technology known as 5G that will be an integral part of FRMCS.

Contents

- FRMCS – an introduction
- FRMCS reference architecture
- 5G
- Mission critical architecture and procedures
- Radio planning and migration
- MCVideo

Date
Online: 12. - 13.01.2026

Course Fee
£ 1,336 (excluding VAT)

** We can also offer this course as a one-day classroom course in German upon request.**

FRMCS Engineering

4 Half Days

wray castle empowering the telecoms world

Training Focus

GSM-R end of life is anticipated to be around 2030 which only leaves a few years to find a replacement system. The International Union of Railways (UIC) have published a document called FRMCS- Future Railway Mobile Communications System which outlines what will be required of a future system. The railway community have detailed the communications requirements of the future railway networks and are looking for telecommunications manufacturers and standards bodies to provide a suitable solution.
This technical course is aimed at engineers planning to deploy FRMCS as a successor to GSM-R. It identifies the specifications for FRMCS, the design aims, architecture of the On-Board systems, trackside systems and the transport network. Additionally, the course details the capabilities of FRMCS, operational procedures and looks at possible migration scenarios with GSM-R.

Contents

- FRMCS – an introduction
- FRMCS reference architecture
- FRMCS on-board architecture
- FRMCS trackside components
- Voice application subsystem
- FRMCS location and positioning system
- 5G
- FRMCS addressing
- The SIP core
- Mission critical architecture and procedures
- FRMCS operation
- Radio planning and migration
- MCVideo

Date
Online: 19. - 22.01.2026

Course Fee
£ 2,516 (excluding VAT)

** We can also offer this course as a one-day classroom course in German upon request.**

5G Optimization Overview
1 Day

wray castle
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Training Focus
An introduction to the principles of parameter setting and optimization in the Next Generation Radio Access Network (NG-RAN). The material covered includes cell configuration, signal measurements, and parameters in idle and connected mode.

Intended for
This course is intended for experienced radio access optimizers, and for those involved with device development or functionality testing in 5G systems.

Prerequisites
The course assumes an engineering background, with some knowledge of digital radio systems in general and the 5G air interface in particular. Experience of parameter tuning and optimization for LTE would be useful.

Contents
- Fundamentals of the 5G air interface
- RSRP, RSRQ and SINR
- Parameter setting

Date
on request

Course Fee
on demand

5G Radio Planning for Railways | *4 Half Days*

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Training Focus
The heart of any cell planning process begins with coverage and capacity estimations, this 5G Cell Planning for Railways training course will guide you through the variables that impact both coverage and capacity and provides practical worked examples for a variety of scenarios.
As well as the planning process it is also important to understand the RF KPIs and measurements that determine link performance, the essential signals and measurement techniques of the NR are covered in this training as well as a detailed look at parameters that affect the random access process, location management and PCI planning.
At the conclusion of this training the student will be well versed in the theory and practice of 5G cell planning with a good understanding of both the principles and application of planning techniques.
With the emergence of FRMCS our 5G Rail portfolio addresses the technical requirements of FRMCS.

Intended for
This course is intended for network planning engineers working in the rail industry, who wish to learn about the issues that are involved when planning radio access networks for 5G FRMCS

Prerequisites
The course assumes familiarity with telecommunication systems and with the principles of radio network planning gained from planning GSM-R networks. Otherwise, experience gained in network planning for LTE, and knowledge of the 5G air interface, would be beneficial

Contents
- Fundamentals of the 5G air interface
- Link budget estimation
- Coverage estimation
- Capacity estimation
- RSRP, RSRQ and SINR
- Parameter setting

Date
Online: 26. - 29.01.2026

Course Fee
£ 1,815 (excluding VAT)

Spectrum Management - Overview

Managing and Regulating the Radio Spectrum: A Policy Perspective | *2 Days*

Training Focus
The radio spectrum is a limited resource that has to be shared between different services, technologies, users and countries. It is the task of regulatory authorities to manage the resource and to optimize its use. International frameworks provide the basis for spectrum management, however knowledge of the characteristics of the radio spectrum and technologies that use it are necessary for these frameworks to be translated into realizable policies and practices at a national and regional level. This course provides an overview of the goals of spectrum management as well as delivering an understanding of the specific characteristics of different parts of the radio spectrum and how this impacts its utility and value. The use of different spectrum bands is discussed, together with a consideration of the way in which historic and new radio technologies use spectrum and the techniques being considered to maximize efficiency and sharing. Different facets of spectrum management and regulation are explained. The course explores assignment and planning methods from the classical command and control techniques to developments in economic techniques such as pricing, trading and auctions. It takes a look at techniques such as spectrum sharing and dynamic access and licensed shared access to help understand what failings of existing techniques they are seeking to redress.

Course Objectives
After completion of the course, participants will understand how the radio spectrum is used, and approaches to its management and regulation with respect to setting certain policies. They will have extended their knowledge of spectrum management and will have been updated on the latest techniques and processes being employed.

Intended for
This course is ideal for those working in a policy development and technical/non-technical positions within a spectrum regulator or regulatory body. It is useful for those who wish to deepen their knowledge of the toolkit for spectrum regulation and management including consultants, investors, manufacturers, major spectrum users and those for whom managing the spectrum is a part of their daily job.

Contents
- Characteristics of radio spectrum and radio technologies
- The international framework and processes for spectrum management
- Translating spectrum characteristics into policy levers
- Evolution of spectrum assignment approaches
- Spectrum sharing; a paradigm to innovative spectrum management

Date
15. - 16.09.2026

Course Fee
1,695 € (excluding VAT)

Sharing and Dynamic Spectrum Access – Hidden Spectrum Resources? | *2 Days*

Training Focus
The planning rules for radio services often leave small gaps which cannot be used or the scattered use of spectrum by a primary user leaves larger opportunities. Such spectrum might be accessible for different or additional radio services, typically ones with very low power which will not cause undue interference to the primary users. These opportunities were referred to as 'whitespaces' but the focus more recently considers methods such as dynamic spectrum assignment. In addition, regulatory techniques are trying to find ways to make sharing spectrum a more common practice for use across a myriad of spectrum services. This course examines the background to whitespaces, considering how and where they arise and looks at a range of sharing opportunities. It then focuses on how spectrum might be made available to additional parties, and what kind of communications it might support. Finally, the various regulatory methods and technologies (including DSA/LSA and the role of databases) being considered will be examined.

Course Objectives
After completing the course, delegates will understand the history of whitespaces, and the more recent opportunities for sharing together with methods to regulate usage. Current developments and case studies will also be provided.

Intended for
those who need to understand the regulation and practical application of advanced sharing techniques, whether from a regulatory or commercial perspective.

Contents
- The possible applications for more advanced spectrum sharing methods
- Technologies being developed for the exploitation spectrum sharing
- Where are there opportunities for more advanced sharing?
- How is interference dealt with
- The regulatory processes and procedures being applied
- Geographic databases and dynamic spectrum access
- Licensed shared access and similar regulatory tools

Date
17. - 18.09.2026

Course Fee
1,695 € (excluding VAT)

Approaches to Satellite Compatibility
2 Days

Training Focus
The increase in new Low Earth Orbit satellite constellations has resulted in a surge of compatibility studies being carried out to understand how Non-Geosynchronous Orbit (NGSO) and Geosynchronous Orbit satellites (GSO) can coexist. The issue has arisen from the demand in new high speed broadband services but also the cost of producing and launching satellites into orbit reducing greatly in recent years.
There are many complexities in solving the compatibility between NGSO and GSO systems due to the muti-dimensional and highly dynamic nature of both systems. We will focus on the main technical parameters and calculations that are used to determine the unacceptable levels of interference. The course will look across the different services including MSS, FSS (BSS) but also protection of EESS in a range of frequency bands.
This course will also touch upon the two approaches to Direct to Device services. This is the use of Mobile Satellite Service spectrum but also Mobile Service spectrum bands. We will cover the implications and challenges of adopting each approach and how regulations will need to evolve to support these approaches.

Course Objectives
After completing the course, participants will be aware of the technical complexities of conducting compatibility studies that take place within the ITU. It will provide participants with the knowledge of the main technical parameters and calculations needed to determine interference levels. Participants will have an understanding how NGSO and GSO will be able to coexist.

Intended for
people working at regulators, satellite operators and vendors with some technical knowledge of satellite technologies and radio regulations and some knowledge of the ITU-R processes. The course is also suitable for non-technical people within government departments and ministries who wish to understand all the relevant complexities of compatibility studies and processes for updating the regulations.

Contents
- Introduction to satellite technologies and deployments including definition of GSO and NGSO satellites
- Technical parameters used for compatibility studies
- Analysis of interference calculations for compatibility
- Overview of ITU working party study practices and example compatibility exercise basic interference and compatibility calculations
- Overview of D2D spectrum approaches

Date
06. - 07.05.2026

Course Fee
1,695 € (excluding VAT)

Technical Issues in Radio Spectrum Management | *4.5 Days*

Training Focus
At its heart, radio spectrum management is essentially a technical discipline, overlaid by strategic and economic considerations. One of the main technical goals of spectrum management is to control interference between radio users so as to optimize the use of the spectrum. Controlling interference is not straightforward and requires the balancing of many factors and undertaking this balancing act requires expert skills. This course describes the necessary theoretical, practical and physical qualities of the radio spectrum including the specifics of wave propagation. Following a review of technical fundamentals such as modulation, antennas and propagation modeling, the course considers the characteristics of different parts of the radio spectrum, and examines in detail the different uses to which it is put. The course then discusses why specific uses are often associated with particular radio frequencies and reviews the technical capabilities and limitations of today's RF technologies. Interference mechanisms and coordination procedures are explored, together with an understanding of how the performance of radio equipment affects interference and coverage. Finally, detailed explanations of the specifics of the most common radio communication services including broadcast, land mobile, fixed and satellite services are given.

Course Objectives
After completing the course, participants will have a full understanding of the technical and physical issues which impact spectrum management. In addition, they will have deepened their technical knowledge of different radio services and will understand the principles behind controlling interference and the coordination procedures.

Intended for
This course is intended for those interested in the technical aspects of spectrum management. This includes those working in a technical function at regulators as well as in telecommunications and broadcasting companies and in organizations with a need for strong technical knowledge.

Contents
- Communication principles, modulation techniques and antennas
- Radio wave propagation, terrain data and propagation calculations
- Characteristics and use of the radio spectrum from ELF to EHF
- Detailed exploration of a range of radio communication services:
  - Technical characteristics, service planning
  - Frequency assignment, coordination procedures

Date
12. - 16.10.2026

Course Fee
3,395 € (excluding VAT)

Spectrum Matters for 5G/6G

2 Days

Training Focus
5G is driven both by the need for mobile operators to continuously strive to satisfy the growing and unquestionable demand for mobile data, and to support new use cases and services. Regulators and governments have been involved in establishing policies and approaches to award spectrum, so that new 5G services can be rolled out to consumers, enterprises, public sector and government agencies alike. Questions remain about how much more spectrum is needed for 5G but also for what spectrum is needed for 6G which is due for commercialization in the early 2030's.
When it comes to the question of spectrum however, there are many different views about how growth in data traffic impacts upon demand for radio spectrum. It is also evident that below 6 GHz there is very little spectrum remaining that can be re-farmed for mobile services and much of the focus for new spectrum for future mobile (6G) services is concentrated above 6 GHz. How feasible is it to deliver mobile services at such high frequencies? Are there ways to use existing spectrum more efficiently, or are technologies such as LTE and 5G Advanced already very close to the limit of what is achievable?

Course Objectives
After completing the course, participants will have an understanding of how the evolution towards new standard cellular technologies 5G and 6G has meant identifying new spectrum, or at least one new band. Participants will also understand the practical utilization of ever increasing frequencies in a mobile environment, and whether 6G might mark the end to the hunger of mobile operators for more spectrum.

Intended for
those who need to better understand the spectrum implications of 5G and 6G technologies, whether from a regulatory, commercial or technical perspective.

Contents
- Forecasts of demand for data services
- Realistically forecasting spectrum demand
- Bands capabilities and issues with existing IMT bands
- New bands being considered for 5G and 6G services
- Propagation and coverage of bands above 6 GHz
- The spectrum efficiency of existing IMT technologies
- The 5G ecosystem
- A roadmap for the evolution of 5G services towards 6G
- Authorization of mobile spectrum

Date
23. - 24.11.2026

Course Fee
1,695 € (excluding VAT)

SPECTRAemo: Tactical Radio Planning for Defense | *2 Days*

Training Focus

Modern military operations require efficient planning and analysis of communication structures and electronic warfare (EW). The electromagnetic domain has become a decisive factor for operational superiority. LS telcom's SPECTRAemo is a specialized planning tool designed to support mission-critical tasks such as coverage assessment, interference analysis, frequency assignment, radar simulation, HF, MANET and UAV planning, and electronic warfare operations.
A thorough knowledge of the available functionality and an understanding of calculation results significantly reduces planning time and improves operational effectiveness. The seminar introduces the essential features of SPECTRAemo for tactical and strategic planning tasks. The first part of the course is dedicated to general tool handling, databases, and project configuration. Subsequent modules guide delegates through typical operational use cases including communication network planning, interference management, radar calculations, and UAV/flight path simulations. The course will also cover advanced features such as automatic channel assignment, co-site (intermodulation) analysis, and MANET planning. The training combines short theoretical introductions with practical, tool-based exercises. Delegates will follow the trainer's demonstrations and complete dedicated exercises, ensuring direct transfer of knowledge to operational tasks.

Course Objectives

After the training, participants will be able to:

- Efficiently perform planning and analysis tasks for communication networks and EW operations using SPECTRAemo.
- Apply well-established models, standards, and engineering procedures in military contexts.
- Confidently analyze calculation results and generate reports to support mission planning and decision-making.

Intended for

This course is designed for military users involved in:

- Communication structure planning
- Electronic warfare planning and operations
- Spectrum management in tactical and strategic environments

Contents

- Setup and configuration of SPECTRAemo
- Interaction with the graphical user interface (GUI)
- Usage of databases and project management functions
- Coverage, interference, and path profile analysis
- Automatic frequency and channel assignment
- Co-site and intermodulation analysis
- Radar simulations (mono- and bistatic)
- HF network and MANET planning and calculations
- UAV flight path simulation and analysis
- Standardized data import/export and reporting

Date
on demand

Course Fee
1,695 € (excluding VAT)

SPECTRAplan S

3 - 5 Days

Training Focus
SPECTRAplan S is providing 2 modules:

1. SPECTRAplan S which is dedicated for the administration of important data for spectrum planning on various levels in the SPECTRA system
2. Vector Management which provides tools for the creation, import and management of various kinds of vectors for the usage in the SPECTRA system

Course Objectives
After the training the participants will be able to understand and apply the methods for frequency plan administration with SPECTRAplan S and the Vector Management very well.

Intended for
This course is intended for users that have to work with SPECTRAplan S and the Vector Management.

Contents SPECTRAplan S Module

- Getting started with the new GUI concepts
- Master data management
- Administration of frequency allocation tables
- EFIS interface
- Administration of frequency assignment plans

Contents Vector Management Module

- Getting started with the new GUI concepts
- Import of vectors from file
- Upload of vectors from Working to Live DB
- Display of selected vectors on map

Date
on demand

Course Fee
on request

SPECTRAemc Workflow Wizards Configuration | *3 Days*

Training Focus
This training course is dedicated to the workflow automation capabilities of SPECTRAemc in order to let the trainees understand how SPECTRAemc can be configured via the Wizard Workflow Configurator tool to the requirements of the customer. The training involves the usage of SPECTRAemc and the Wizard Workflow Configurator tool.

Course Objectives
After the training the participants will be able to create/configure wizard workflows and are familiar with the standard reports for SPECTRAemc. In addition, the participants will be also able to maintain and further develop existing wizard workflows for SPECTRAemc.

Intended for
This course is intended for those who are interested to learn about the very comprehensive configuration capabilities of SPECTRAemc in terms of wizard. The training course will be useful both for new users but also for experienced users of the tool to learn about the new features. The attendees should already have participated in a SPECTRemc basic/fundamental course as some knowledge of SPECTRAemc core functionalities and Radio Engineering is required in advance.

Contents

- Overview wizard workflows in SPECTRAemc
- Overview Wizard Workflow Configurator tool
- Detailed discussion of important wizard commands/statements
- Tasks and deadlines

Date
on demand

Course Fee
on request

SPECTRAemc Framework Functionalities

3 Days

Training Focus
The training is dedicated to the general SPECTRAemc handling (GUI), simple and complex database queries, data grid functions and general functions in order to let the trainees find the best way to understand the tools philosophy. The training involves the usage of SPECTRAemc.

Course Objectives
After the training the participants will be able to understand the main framework methods of SPECTRAemc very well. This is the absolutely necessary basis for the other more advanced training courses on radio calculations, wizards and AddOns.

Intended for
This course is intended for those who need to use SPECTRAemc in their daily work or those who want to learn about the SPECTRAemc framework capabilities. The training course will be useful both for new users but also for experienced users of the tool to learn about the new features.

Contents
- Display and GIS functions
- Database selection functionalities
- Creation of objects in SPECTRAemc
- Working with data grids
- Working with SPECTRAemc scenario files
- SPECTRAemc supporting tools
- Basic calculations

Date
on demand

Course Fee
on request

SPECTRAemc Radio Calculation Functionalities | *5 Days*

Training Focus
This training course is dedicated to the radio engineering part of SPECTRAemc in order to let the trainees understand the comprehensive calculation capabilities of tool. The training involves the usage of SPECTRAemc.

Course Objectives
After the training the participants will be able to understand how the comprehensive calculation capabilities of SPECTRAemc can be applied to solve practical problems.

Intended for
This course is intended for those who need to use SPECTRAemc in their daily work. This course can be also useful for advanced SPECTRAemc users working in one particular radio service to learn how SPECTRAemc can be applied in other areas.

Contents
- Overview radio propagation models
- Basic calculations using radio propagation models
- Advanced interference calculations using radio propagation models
- Frequency assignment calculations (based on interference analysis)

Date
on demand

Course Fee
on request

SPECTRAemc Coordination AddOns

3 Days

Training Focus
This training course is dedicated to the question how SPECTRAemc with its various AddOns can be applied for the international coordination processes. This will let the trainees understand the calculation and the administrative capabilities of the tool for various standardized international coordination procedures like for example HCM. The training involves the usage of SPECTRAemc.

Course Objectives
After the training the participants will be able to understand which standardized international coordination procedures are available in SPECTRAemc and how to use the tool to solve practical problems.

Intended for
This course will be also useful for those who are interested first to learn about the comprehensive capabilities of SPECTRAemc in terms of international coordination to decide how the module can be applied in their environment to solve practical problems. The training course will be useful both for new users but also for experienced users of the tool to learn about the new features.

Contents
- Overview available AddOns for international coordination
- Coordination checks during frequency assignment
- Administrative functionalities for international coordination (example HCM FX)

Note:
The above training content is mainly for providing overview on the SPECTRAemc capabilities in terms of international coordination. The HCM FX coordination process will be used as example to illustrate these capabilities. It is not possible to cover completely all international coordination capabilities of SPECTRAemc within one training course.

But it is possible to arrange additional detailed training courses on specific topics like:
- HCM FX coordination process
- HCM LM coordination process
- ITU coordination and notification process for terrestrial services
- ITU coordination and notification process for space services
- FACSMAB coordination for Asian regions

These additional training courses can be scheduled in addition to the standard training courses case of sufficient number of participants is interested.

Date
on demand

Course Fee
on request

IT Architecture, Implementation & Maintenance for mySPECTRA Solutions | *3-5 Days*

Training Focus
This course provides profound knowledge on how to conceive and build a server and network infrastructure to operate mySPECTRA solutions. After presenting the general architectural options, the training will focus on how to set up and configure the environments. Furthermore, maintenance and troubleshooting competence will be trained. Extended concepts in terms of security, backup, disaster recovery, third party licensing, and virtualization will expand the course. The training will be held in LS telcom training facilities and involves some hands-on activities.

Course Objectives
After completing the training, delegates will be able to understand the architectural options for mySPECTRA solutions and will be able to set up and maintain the environments in their day-to-day work.

Intended for
This course is intended for ICT staff dedicated to the initial set-up, configuration, administration, maintenance and troubleshooting of an IT infrastructure for mySPECTRA solutions (not for users of SPECTRA for licensing/planning purposes). A good knowledge in several of the following areas is mandatory to be able to follow the training: server and data base (e.g. ORACLE©) administration, virtualization (e.g. VMware®), server/client architecture (CITRIX™).

Contents
- Server/client architecture for mySPECTRA solutions
- VMware based Virtualization solutions
- Backup concepts
- Security aspects
- Initial system installation
- System administration/mySPECTRA updates
- Preventive maintenance and troubleshooting

Date
on demand

Course Fee
on request

mySPECTRAcloud Report Management | *3 Days*

Training Focus
mySPECTRAcloud is delivered with a comprehensive and practice proven set of report templates that are filled in an automated manner. This course will enable you to maintain, adjust and create new report templates. You will learn how to retrieve data from the various microservices APIs and data warehouse and utilize them in your templates. The templates are built based on "Jasper Reports®", so the training also includes instructions and guidance for the related editor.

Course Objectives
After completing the training, you will be able to maintain the report templates provided in line with the mySPECTRAcloud system. You will be able to modify and adjust static and dynamic content or even create new templates.

Intended for
This course is intended for users that are familiar with the structure and architecture of mySPECTRAcloud. A basic understanding of the system's database structure, the microservices and the related API's is helpful for the design of the corresponding reports.

Contents
- Overview about mySPECTRAcloud architecture and structure
- Interaction with mySPECTRA document service
- Utilize Jasper Reports® Editor
- Manage report templates (create, upload, download, delete)

Date
on demand

Course Fee
on request

mySPECTRAcloud Configuration Management | *3 - 5 Days*

Training Focus
mySPECTRAcloud is a highly configurable system that allows its administrators to manage and maintain the system largely at runtime. This training course will allow you to manage and maintain the spectrum products that are available in your system. Configurable items are data entry forms, lists of values (LOVs), patterns for unique identifiers/invoice numbers/etc., BPMN workflows, user right and team management, fee definitions and many more.

Course Objectives
After completing the training course, you will be able to maintain and configure the mySPECTRAcloud system independently. This ranges from small adaptations of the available webforms to the introduction of completely new spectrum products.

Intended for
This course is intended for system administrators and configurators of mySPECTRAcloud. As all actions will be done via the systems front-end, programming skills are not required.

Contents
- Webform configuration (visibility, mandatory fields, validation rules, adaptation of labels)
- List of values management (introduction of new and management of existing LOVs)
- Pattern management
- Workflow adaptations using BPMN editors, templates and decision tables (DMN)
- User management controlled by configurable rights and roles concept
- Team and task management
- Text management (definition of the naming of menu items, buttons, commands)
- Fee schedules and discount settings

Date
on demand

Course Fee
on request

(Telephone) Number Management

3 Days

Training Focus
The mySPECTRA NMS (Numbering Management System) offers a comprehensive solution for the efficient management of numbering resources by delivering a powerful toolkit for streamlining administrative processes, intelligent number allocation, and fostering collaborative resource management. This course enables you to create numbering pools, categorize them, link them to specific areas and customers, etc.

Course Objectives
After completing the training, participants will be able to efficiently use the Numbering Management Module.

Intended for
This course is intended for new and existing mySPECTRA customers that need to handle and manage numbering resources efficiently.

Contents
- Number pool creation (ranges and individual numbers)
- Number categorization
- Number reservation and allocation
- Importing numbers from standard formats
- Master data management and filtering
- Messaging, document generation and invoicing

Date
on demand

Course Fee
on request

Special Event Management

3 Days

Training Focus
The Special Events Module offers a comprehensive solution for the planning and management of special events. This encompasses private gatherings, public festivals and fairs, major sporting events, and other events hat take place outside of a host or sponsor's typical business operations. This course enables you to efficiently use LS telcom's special event module and covers topics like participant management, equipment registration end complaint management.

Course Objectives
After completing the training, participants will be able to efficiently use the Special Events Module.

Intended for
This course is intended for new and existing mySPECTRA customers that need to handle and manage a special event effectively.

Contents
- Participant management
- Venue management
- Spectrum license management
- Equipment management (incl. possible solutions for testing and tagging)
- Complaint handling
- Task management

Date
on demand

Course Fee
on request

Monitoring & Measurements - Overview

LS OBSERVER – Sensor-based Monitoring and Direction Finding | *3 Days*

Training Focus
The LS OBSERVER system training introduces the features of the LS OBSERVER based monitoring units and the principles of operation as sensor-based systems. The course contains the detailed description of the operation of all features and allows the participants to perform practical tasks with the LS OBSERVER system. The service-oriented system configuration and architecture, the remote control of measurement units, the measurement data download, multiple geolocation methods, the analysis of measurement results and direction finding techniques will be presented. The participants will have the possibility to use the equipment for practical tasks during the training. Information about maintenance requirements and configuration of the system are also covered by the training.

Course Objectives
The training enables the participants to become familiar with the LS OBSERVER monitoring units and the associated software module LS OBSERVER CMS. They will understand the functionalities, handling the GUI and learn how to perform measurements and analysis with the focus on remote controlled monitoring, geolocation and direction finding. Finally, they will see how a fully integrated spectrum management (e.g. SPECTRAplus) and monitoring system can be managed and be used for combined tasks (e.g. automatic violation detection).

Intended for
This course is intended for monitoring personal who have a basic knowledge of radio monitoring and geolocation methods and who need to operate LS OBSERVER units for measurement, direction finding and analysis tasks.

Contents
- Global overview of the LS OBSERVER service-oriented architecture
- Typical system and network setup and configuration
- GUI concept and handling
- Wide-band measurements
- Fixed frequency measurements
- Recording of the measurement results
- Direction Finding AoA measurements
- Geolocation with TDoA and GROA+®
- DF Time Travel® AoA combination of TDoA, GROA+® and AoA results
- Data handling, download from remote monitoring units

Date
06. - 08.10.2026

Course Fee
2,495 € (excluding VAT)

Spectrum Monitoring - Measurements and Techniques | *2 Days*

Training Focus
This course is based on the latest ITU-R and CEPT recommendations, reports and handbooks and provides an introduction into the most common spectrum monitoring and measurements techniques. It is also presented theoretical background and practical examples that help in understanding specifics of administrative radio monitoring. The training concludes with number of practical examples.

Course Objectives
After the training, the participants will be able to understand standards, the procedures and methods of the most common monitoring measurements, to distinguish between different measurements technologies, to respect technical limitations of measurement equipment, to present results to different user groups on a simple way.

Intended for
This course is intended for those who have a basic knowledge of radio communications and electromagnetic wave propagation, who are interested in spectrum monitoring measurement and techniques and who may be employed in regulatory authorities that supposed to execute spectrum monitoring measurements, reporting and providing early warnings to policy makers.

Contents
- General expectations of spectrum monitoring
- Utilization of radio monitoring results
- Manual monitoring (ITU/ECC references, proposed procedure)
- Channel & band occupancy (ITU R1, ERO/ECC)
- Monitoring of broadcast and digitally modulated signals
- Interference description, detection, reporting
- Analysis of results and reporting
- Automated monitoring
- Detection of regulatory unauthorized utilizations
- Inspection/certification/technical acceptance
- Real time radio occupancy monitoring (for utilizing of whitespace)
- General license compatibility monitoring (like SRD/ISM/WiFi)
- Monitoring of assignments (like cellular access systems or MMDS)
- Areal monitoring (geolocation of low power sources)
- Interpretation of results and publishing (what, why and when to publish)

Date
11. - 12.05.2026
16. - 17.11.2026

Course Fee
1,695 € (excluding VAT)

Practical Spectrum Monitoring Measurements | *3 Days*

Training Focus
This course gives an introduction to practical spectrum monitoring measurements. Delegates will follow practical examples to illustrate the limitations of spectrum monitoring measurements. During hands-on measurements of the RF environment around our Training Academy in Lichtenau/Germany the delegates will put the learned techniques into practice.

Course Objectives
After completing the training delegates will be able to perform practical spectrum monitoring measurements under real-life conditions and understand the limitations in the RF field. They will also be able to make estimations of expected measurement results, judging the quality of the measurements performed and planning measurement campaigns.

Intended for
Regulatory authorities' staff members supposed to execute spectrum monitoring measurements.

Contents
- Overview of spectrum monitoring tasks
- Selecting equipment according to the actual task
- Distinguishing between real signals and intermodulation products
- Limitations due to the real-life environment
- Basic measurements
- Practical measurement on FM broadcast-/DVB-T-transmitters
- Basic signal analysis
- Automatic Violation detection
- Different usage of homing and direction finding
- Locating transmitters using different methods (AoA/GRoA+/TDOA)
- Hints and kinks performing measurements
- Quality of measurement results
- Planning measurement campaigns
- Practical hands-on measurements in the field
- Transfer of the learned skills to daily work

Date
13. - 15.05.2026
18. - 20.11.2026

Course Fee
2,950 € (excluding VAT)

Measurements of Human Exposure to RF Electromagnetic Fields (incl. practical measurements) | *3 Days*

Training Focus
Radio transmitters produce electromagnetic fields which members of the public may be exposed to. In order to assess people's safety their exposure must be measured and compared with the appropriate limits. This course will focus on the measurement of general public exposure; in addition, some aspects of occupational exposure are discussed. The lecture will be supported by practical measurements of real-life radio signals by nearby RF transmitters.

Course Objectives
After completing the training, delegates will be able to perform measurements of RF exposure caused by different radio services which follow the correct measurement methodology, equipment settings and post processing. They will also understand the philosophy behind the exposure limits.

Intended for
This course is intended for those who have basic knowledge in RF wireless communication techniques and understanding in spectrum analyzer, who are interested in measurement of human exposure to RF electromagnetic fields and who may be employed in regulatory authorities, environmental agencies, radiation protection authorities, health and safety departments of network operators or measurement laboratories.

Contents
- ICNIRP's RF exposure limits philosophy
- Status of current biological research
- Basic measurement principles
- Derivation of an appropriate measurement methodology
- Correct measurements of FM, DAB, DVB-T, GSM, UMTS, LTE, 5G basics, TETRA, and radar exposures
- Measurement report and uncertainty budget, typical sources of error
- Measurement strategies
- Measurement practice on real-life signals

Date
21. - 23.09.2026

Course Fee
3,095 € (excluding VAT)

Measurements of Human Exposure to RF Electromagnetic Fields at 5G NR Base Stations | *1 Day*

Training Focus
The main focus of the workshop is on the measurements and evaluation of high frequency electromagnetic fields generated by 5G Base Stations to ensure compliance with RF exposure safety standards.
The workshop is divided in the following blocks. It is mainly aimed at persons regularly working in the field of RF exposure measurement and assessment, e.g.
- Employees of regulatory and licensing authorities
- Employees of federal radiation protection authorities, environmental ministries and agencies
- Occupational safety officers of mobile network operators
- Personnel of expert offices for the measurement of electromagnetic fields in the context of personal protection.

Contents
The workshop will focus on the correct determination of the maximum possible radiofrequency fields generated by 5G base stations at the measurement location. In detail, the following topics will be covered:

Basics
- Important differences of 5G systems compared to 4G (LTE) systems.
- Influence of beamforming antennas on the exposure situation.
- Challenges for a correct exposure determination at 5G sites with beamforming (mMIMO) antennas.

Measurement and Evaluation
- Measurement of actual 5G field strength level with a spectrum analyzer: Correct setting of the instrument.
- Possible strategies for the determination of maximum possible exposure.
- Determination of the maximum RF emission at 5G sites without mMIMO antennas.
- Determination of the maximum RF emission at 5G sites with mMIMO antennas.
- Comparison of frequency selective and code selective measurements.
- Practical demonstration: Code selective measurement of SSS signal.
- Extrapolation of code-selective measurement results to the situation of maximum radiated power using the antenna patterns of broadcast and traffic beams.
- Some examples of measurement and extrapolation results at 5G sites.

Date
26.02.2026
24.09.2026

Course Fee
1,095 € (excluding VAT)

Broadcast - Overview

FM, DAB, TV and 5G Broadcast Antennas

1 Day

Training Focus
The course is aimed at people working in the broadcast industry who want to get an understanding of the most important topics regarding broadcast antennas. It particularly covers the specifications of antenna components and the layout of broadcast antenna systems for Radio and TV (both analogue and digital) in the VHF- and UHF-Band. Additional aspects of the training are methods to design broadcast antenna systems and how to calculate antenna pattern. The training concludes with several examples of how to plan antenna systems for digital terrestrial radio (DAB), digital terrestrial television (DTT) and 5G Broadcast The course is presented in cooperation with partners of the antenna industry.

Course Objectives
After completing the course, participants will have an understanding of the engineering and system design methods of broadcast antennas as well as the technical terms and characteristics. Several practical examples will assist the participants to solidify the theoretical knowledge.

Intended for
This course is intended for those who have a basic knowledge of radio communication technology, who are interested in broadcast antennas and who may be employed in broadcasters, network operators or regulators.

Contents
- Basics and technical terms of broadcast antennas
- Antenna radiators and their characteristics
- Broadcast antenna components and their characteristics
- Broadcast antenna systems design and pattern calculations methods
- Examples for planning of antenna systems for Digital Terrestrial Radio (DAB), Digital Terrestrial Television (DTT) and 5G Broadcast

Date
02.11.2026

Course Fee
895 € (excluding VAT)

DVB-T2 – 2nd Generation Digital Video Broadcast | *2.5 Days*

Training Focus
This training course is aimed at those people working within the broadcast industry who have an interest in future development in terrestrial broadcasting. Participants will become familiar with the requirements, new features and consequences of DVB-T2 compared to DVB-T (such as its higher data capacity) and why it is needed for introducing terrestrial HDTV. Other features such as the possibility of more extended single frequency networks (SFN) will also be discussed. Additional aspects like the current status of DVB-T2 in the world and the compatibility issue between DVB-T2 and LTE complete this training. Finally the course will demonstrate also several practical planning examples using LS telcom's sophisticated broadcast planning tool.

Course Objectives
After completing this course, delegates will understand the technology behind DVB-T2, starting with its predecessor DVB-T. The course will also provide participants with basic guidance on planning a DVB-T2 network in respect of satisfying the coverage and capacity requirements including the consideration of possible coordination issues.

Intended for
This course is intended for those who have a basic knowledge of broadcast technology, who are interested in DVB-T2 and who may be employed in broadcasters, network operators or regulators.

Contents
- DVB-T basics
- DVB-T2 features
- DVB-T2 planning/coordination
- Choice of DVB-T2 parameters
- Current status of DVB-T2 deployments
- Compatibility LTE/NR vs. DTT
- Overview of other DTT technologies including ISDB-T and ATSC
- Entire terrestrial network planning procedure
- Alternative terrestrial broadcast distribution platforms like 5G broadcasting

Date
03. - 05.11.2026

Course Fee
2,095 € (excluding VAT)

DVB-T2 – Measurement Technology in Theory and Practice | *1.5 Days*

Training Focus
This training course is aimed at those people working within the broadcast industry who have an interest in future development in terrestrial broadcasting. Participants will become familiar with the requirements, new features and consequences of DVB-T2 measurements compared to DVB-T. Beside the general aspects of digital broadcast measurements and measurement parameters the training provides interesting insights in practical demonstration of field measurements as well as receiver and transmitter tests. The training is presented in cooperation with Rohde & Schwarz.

Course Objectives
After completing this course, delegates will understand the technology behind DVB-T2 measurements as well as all associated measurement parameters. Several practical demonstrations will solidify the theoretical knowledge.

Intended for
This course is intended for those who have a basic knowledge of DVB-T2 technology, who are interested in DVB-T2 measurements and who may be employed in broadcasters, network operators or regulators.

Contents
- Basic of digital broadcast measurements (picture quality assessment, transport stream analysis, RF measurements)
- Basic RF measurement parameters in DTV (level, BER, MER, shoulder attenuation, impulse response)
- Repetition of DVB-T measurements
- DVB-T2 measurement technology (i.e. differences to DVB-T, T2-MI analysis, rotated constellations, PLP, SISO/MISO)
- Practical demonstration of different new T2 features (PLP, rotated constellations, SISO/MISO)
- DVB-T2 receiver test (theory and practical demonstration)
- DVB-T2 transmitter test (theory and practical demonstration)
- DVB-T2 field measurements, SFN measurements (theory and demonstration of a lab SFN)

Date
05. - 06.11.2026

Course Fee
1,750 € (excluding VAT)

FeMBMS – 4G/5G-based Broadcast

2 Days

Training Focus
This training course is aimed at those people working within the wireless communication business or broadcast business. Participants will get an overview on FeMBMS – 4G/5G-based broadcast. The seminar gives an overview on the requirements of broadcast and wireless communication technology and describes how 4G/5G-based broadcast is implemented in the 4G/5G standards. The training is presented in cooperation with Rohde & Schwarz.

Course Objectives
After completing this course, delegates will understand the technology behind FeMBMS – "Further evolved Multimedia Broadcast Multicast Services". Focus is on the physical layer not on the protocol level.

Intended for
This course is intended for those who have a basic knowledge in information technology, who may be employed at broadcasters, network operators or regulators.

Contents
- Introduction to „FeMBMS", 5G/4G-based broadcast
- Field trials 5G/4G-based broadcast
- Traditional broadcast
- DVBIP, IPTV, Streaming, OTT
- Overview wireless communications from 2G, 3G, 4G to 5G
- Former mobile broadcast trials and standards, DVB-H/SH, T-DMB, MediaFLO, etc.
- Traditional Mobile Communication Applications
- Identification of broadcast applications - for wireless communications
- "Traditional" and "Modern" use-cases in broadcast and in wireless communications
- Physical layer overview LTE and 5G
- Single-frequency networks, SFN-requirements
- FeMBMS – physical layer
- Comparison to DVB - data rates, robustness, properties, opportunities
- Summary and outlook

Date
16. - 17.06.2026

Course Fee
2,195 € (excluding VAT)

Broadcast Planning Tool CHIRplus_BC (LF/MF) | *2 Days*

Training Focus
This course will focus on LF/MF frequency and coverage planning using CHIRplus_BC. It will start with an overview on the international frequency plans covering the LF and MF frequency bands, i.e. GE75 and RJ81, available databases and coordination rules. Special focus will be given to the LF/MF specific ground wave and sky wave propagation, daytime and nighttime coverage analysis as well as interference calculations. Examples and case studies will be shown for analog and digital (DRM) systems using CHIRplus_BC.

Course Objectives
After completing the course, participants will be able to use CHIRplus_BC in a very knowledgeable way. In addition to the use of the tool, delegates will also understand the theoretical and practical background to the calculations.

Intended for
This course is intended for those who have a basic knowledge of broadcast, who are interested in broadcast planning and who may be employed in broadcasters, network operators or regulators.

Contents
- The GE75 (RJ81) frequency plan
- BRIFIC interface and ITU notification
- Antenna modelling in LF/MF
- Ground wave and sky wave propagation
- Daytime and nighttime analysis
- Protection ratios and interference analysis
- Coverage contours and fading zones
- LF/MF Coordination calculations
- Analog and digital network examples

Date
on demand

Course Fee
on request

Broadcast Planning Tool CHIRplus_BC (Radio/TV, Analog/Digital) | *3 Days*

Training Focus
The course will start by showing delegates how to configure CHIRplus_BC and the basics of field strength calculations and interference analysis. One focus of the training will be the usage of the network processor and the various calculation results. As well as the digital features of CHIRplus_BC its use for analog services will also be illustrated. Understanding the principles of the analog network analysis is a prerequisite for developing efficient networks for digital terrestrial broadcasting. Digital terrestrial networks (DAB+, DVB-T, DVB-T2, DVB-T2 LITE, ISDB-T, ATSC) bring a number of new requirements regarding the reception mode which will be covered. Planning for portable or mobile reception is linked with many new features such as single frequency networks (SFNs) and network gain. To meet these new requirements it is necessary to learn and use the numerous features of the tool efficiently. The course will impart both theoretical and practical knowledge. The training will involve the usage of CHIRplus_BC and some case studies.

Course Objectives
After completing the course, participants will be able to use CHIRplus_BC in a very efficient way. Furthermore the features and calculation results will be explained from both the theoretical as well as from the practical viewpoint.

Intended for
This course is intended for those who have basic knowledge of broadcast, who are interested in broadcast planning tools and who may be employed in broadcasters, network operators or regulators.

Contents
- Overview of 5G Broadcast Planning Procedures in CHIRplus_BC
- Configuration and setup
- Graphical User Interface (GUI)
- Geographic Information System (GIS)
- Field strength calculations
- Coverage calculations and analyses
- Coordination procedures
- Analog and digital network analyses
- Compatibility DTT vs. other services (e.g. LTE/NR)
- Exercises

Date
13. - 15.04.2026

Course Fee
2,495 € (excluding VAT)

Broadcast Planning Exercises using CHIRplus_BC | *2 Days*

Training Focus
This course provides a solid understanding of the design and planning of analog and digital broadcast networks using the LS telcom broadcast planning software CHIRplus_BC. The course follows the typical steps of radio network planning from selection of suitable sites and coverage planning to the compatibility checks with existing networks or international frequency plans. As well as theoretical explanations, much time is spent following practical exercises in the planning of broadcast networks using CHIRplus_BC to illustrate effects of different planning parameters and network configurations. The training will involve the usage of CHIRplus_BC and some case studies.

Course Objectives
After the course, participants will have a good understanding of the design and engineering of broadcast networks as well as the capability to use the broadcast planning tool CHIRplus_BC in a very efficient way.

Intended for
This course is intended for those who have a basic knowledge of broadcast planning and CHIRplus_BC tools usage, who are interested in broadcast planning exercises and who may be employed in broadcasters, network operators or regulators.

Contents
- Introduction of radio network planning
- Targets and procedures of radio network planning
- Active and passive interference calculations
- Frequency scan
- Coordination
- Coverage calculation
- Planning of analog and digital networks
- Analysis and optimization of broadcast networks
- 5G broadcast planning
- Compatibility DTT vs. other services (e.g. LTE/NR)
- ...and a lot of hints and tricks

Date
16. - 17.04.2026

Course Fee
1,695 € (excluding VAT)

Registration Form

Seminar:

Title

Date

Fee *EUR (excluding VAT)*

Please register the following delegate:

Organization

Delegate

Title First Name

Family Name

Job Title

E-mail

Authorized by:

Invoice Name

Invoice Address

VAT-Id-No.

Date Signature

Group Discount

Register 2-3 delegates for one seminar, *receive 5% discount*
Register 4 delegates for one seminar, *receive 10% discount*
Register 5-6 delegates for one seminar, *receive 15% discount*
Register 6+ delegates for one seminar, *receive 20% discount*

For more information, please contact our team at Training@LStelcom.com or via phone +49 (0) 7227 9535 482.

Training

Send your completed form to:
LS telcom AG

Training@LStelcom.com
+49 (0) 7227 9535 605

Online registration via:
www.webstore.LStelcom.com

Commercial Details

Training Time Schedule
If not marked differently, the training starts at 9:00 am and ends at 4:30 pm.

Course Fee
The fees are per participant. Each price is quoted in EURO and does not include Value Added Tax (VAT). Training courses that take place in Lichtenau will be invoiced with 19% VAT.
The course fee includes course material, refreshing beverages, coffee, snacks and lunch during training courses in Lichtenau. Travelling costs, accommodation and living expenses for the participants are not included. The course fee must be paid latest 2 weeks prior to the course start in order to guarantee a seat. Transfer should be made to:

Sparkasse Hanauerland
IBAN: DE93 6645 1862 0000 1036 98
SWIFT: SOLA DE S1 KEL
VAT-Id-No.: DE 211251018

Application
The application should be signed and returned to LS telcom by mail or fax at least 21 days prior to the training course start date or register online at www.webstore.LStelcom.com.
If enrolling, we ask you to provide us with the information required on the registration form.

Minimum number of attendees
LS telcom reserves the right to change the course date or cancel the course if the number of participants is insufficient.

Language
The courses will be held in English unless stated otherwise. The course documentation is in English.

Certificates
LS telcom will award certificates of participation to all those who complete a course.

Location
The scheduled courses are held at our LS telcom Training Academy in Lichtenau, Germany, located between Strasbourg and Baden-Baden, unless stated otherwise.

Data protection
As an attendee, you agree that we keep and process your personal data to manage and administer the training course and to keep you informed about future training courses offered by us (please cross out this paragraph if you do not agree).

Withdrawal policy
Cancellations may be made free of charge up to 21 days prior to the start of the training course. After this time, a cancellation charge of 80% of the course fee applies. In all cases, withdrawals must be confirmed in writing prior to the course start date, otherwise the full amount will be due. Substitutions may be made prior to the course starting.

Disclaimer
LS telcom reserves the right to change or cancel any part of its published program due to unforeseen circumstances.
Your registration alone does not constitute a binding agreement and requires our written approval and order confirmation, which regularly can be assumed by our invoice.

No recording
Please observe that any picture, audio and/or video recording of our online training is strictly prohibited.