Software – Consulting and Radio Engineering – Transmitter Integration – Measurements for Terrestrial Broadcasting

www.LStelcom.com
Who we are

LS telcom is a premium global supplier in providing terrestrial broadcast solutions – frequency and network planning software, consulting, engineering and transmitter integration. We have been in the broadcast market since the early 1990s and rank amongst the pioneers in digital broadcast network planning. Our broadcast network planning software was the first of its kind on the market. Our success in digital TV planning projects goes back to 1999.

Today we are over 250 employees worldwide helping you tackle any issue in terrestrial broadcasting that you may have.

Who we serve

- Public and private broadcast network operators
- Regulatory and media authorities
- Transmitter and antenna manufacturers
- Content providers

in over 90 countries across all continents.

We serve you from our headquarters in Germany and our subsidiaries in Canada, China, France, South Africa, UAE, UK and USA, as well as our representative offices in Argentina, Hungary and Oman.
What we do

We enable our customers to offer the best broadcasting services to consumers.

We do so by...

■ offering advice in the creation of the best policy and technology framework for broadcasting – development of spectrum strategies and digital migration concepts, etc.
■ helping our customers to plan, procure and roll-out efficient and future-proof broadcast networks, optimise their networks, make better investment decisions, and keep up with latest technology and regulations.

For over 20 years we have been working hand in hand with our customers worldwide earning their trust. When considering your issues, we can call upon our experience from around the world to ensure that your solution addresses local requirements as well drawing upon the best international practises.

What we offer

■ Software and systems for frequency planning, design, coordination and optimisation of broadcast networks
■ Coverage and antenna measurement systems and services
■ Turnkey transmitter container installation
■ Consulting & radio engineering
■ Training and seminar courses

How we innovate

Innovation is a core value at LS telcom. We invest much time and effort in R&D of our products. Our software contains more than 100 man-years of development and valuable customer feedback.

We are a sector member of the ITU (International Telecommunication Union) and member of several broadcast industry associations, and participate regularly in national and international broadcast working groups and conferences. Our active membership in these organisations and our close contact with our customers ensure that we have unrivalled visibility of global developments.
Regulatory authorities and broadcast network operators in over 90 countries worldwide use the software CHIRplus_BC to plan, coordinate and optimise broadcast networks of all kinds of standards and technologies. They chose our software, because it is specifically aimed at them and their needs. CHIRplus_BC contains over 100 man-years of software development, valuable customer feedback and experience in the broadcast industry.

This is what makes our software unique.

Our customers have used our software for the planning of single transmitters to multiple networks with local, regional or nationwide channels, including single frequency networks (SFN).

Thanks to the intuitive user interface and the implemented macros, broadcast engineers can quickly leverage all capabilities of CHIRplus_BC. The macros, launched with a mouse-click, allow for automated workflows of repetitive planning and calculation processes. The software includes all interference calculations a broadcast planner and coordinator needs, also considering other services operating in the same or adjacent frequency bands.

More reasons to use CHIRplus_BC

Pre-set system technology configuration for more user friendliness and ease of use

The software includes intuitive user dialogs optimised for broadcast planning. It provides pre-set system parameters and variants, for each network technology, by default. This allows for faster click-through of the planning procedure and reduces errors. All digital terrestrial television (DTT) systems, such as DVB-T/T2, ISDB-T, DTMB, CMMB and ATSC and digital radio systems, such as T-DAB, DRM, DRM+ are supported by CHIRplus_BC.

Eliminate interference from LTE on DTT networks

With the roll-out of 4G networks, CHIRplus_BC can help forecast which households are likely to be affected by LTE interference. Based on DTT transmitter and coverage simulation data as well as network base station data of mobile network operators’ 4G rollout plans, CHIRplus_BC predicts the LTE signal strength in each pixel, corresponding to a certain area, and then calculates the probable reduction in DTT coverage caused by LTE transmissions in the 700 and 800 MHz bands. The zones where LTE interference occurs can be plotted. These zones can then be aligned against population data to finally generate an address list of all households affected.
Frequency Planning, International Coordination & Notification

Following ITU Standards & Recommendations

- Support of coordination processes according to ITU and relevant international frequency plans / easy access to, data query, and import from BR IFIC, IDWM (ITU Digitised World Map)
- GE06 functionality: Allotment and assignment planning, including concept of allotments with various Reference Planning Configurations (RPCs) and Reference Networks (RNs) for compatibility and interference analysis
- LS telcom is represented in several ITU-R study groups, such as the Working Party 6A and the Working Party 3K. All relevant ITU Recommendations are implemented into CHIRplus_BC soon after their publication.

Automatic Channel Assignment

For advanced frequency planning CHIRplus_BC offers an automatic channel assignment procedure taking into account the coverage of the network stations which can be assessed using raster field strength calculations or a more generalised contour approach, including interference and self-interference. You can either re-assign all channels or chose to search new channels for certain transmitters of the network only.

Network Planning – huge productivity gain for large networks

Huge nationwide network calculations are supported by the integrated multithreading network processor, which calculates several results simultaneously and reduces the calculation time considerably. The network processor works for both analogue and digital systems. For single frequency networks, the network processor also covers the calculation of self-interference and statistical network gain.

Coverage Verification and Optimisation

For network optimisation purposes the user can easily import measurement data into CHIRplus_BC to compare the real network data with the data in your database and to calibrate propagation models for more accurate planning. You can compare measured and predicted values per site or use raster result files, which you can also compare with SFN results.
For over two decades we have worked alongside regulatory authorities and broadcast network operators across all continents. In over 30 countries worldwide we have planned broadcast networks and assisted in broadcast policy development, frequency planning and technology selection. Whatever the broadcasting issues you are facing - count on us to help solve them.

Spectrum Policy and Strategic Consulting

The broadcast industry is undergoing rapid change. With technology evolution, regulations change and so does the need for frequency spectrum. Digitisation has brought many opportunities, but also many challenges. We can help you to fully exploit the opportunities and overcome the challenges.

We are experts in:

- Development of spectrum strategy and policy
- Business case analysis
- Obtaining network licenses
- Frequency sharing studies (DTT and LTE) and protection of broadcast services
- Mastering the digital switchover
- Spectrum pricing and evaluation
- TV white space management
- Spectrum audits and inventory
- International coordination
- Verification of terms of licence conditions and coverage verification
Frequency Sharing Studies

**DTT networks without LTE interference**

LTE services will bring a lot of benefit to many consumers but it may restrict viewers of digital terrestrial television (DTT) by causing potential interference on the TV network. We assist regulatory authorities as well as broadcast and mobile operators in deploying LTE services in the most successful way while protecting DTT services from 4G interference. Delivering software and services for over 20 years to both the broadcasting and mobile industry, as well as regulators, makes us a trusted partner for all parties involved.

LS telcom experts help regulators to calculate the potential impact that new LTE networks will have on DTT services, they can provide solutions for the best mitigation techniques and also assist regulators in conditioning LTE licences, countrywide or in regions particularly vulnerable to interference. LTE network operators can benefit from LS telcom’s expertise in testing the interference of different LTE network scenarios and different mitigation techniques to find the most cost-effective network solution within an operator’s budget constraints.

**TV White Space Management**

LS telcom is a leading light in white space management, being one of the first players in the industry. We have worked with numerous stakeholders to enable access to white space spectrum.

We also offer a proven white space database which is based on our consolidated and long-term experience in database systems for spectrum management. We are, for example, one of the approved suppliers for the FCC TV bands database system. Providing protection to authorised services, the system ensures the integrity of broadcast services. We offer our white space expertise and systems to operators and regulators alike.
Network Design, Planning, Procurement, Implementation and Optimisation

We are your reference when it comes to optimised broadcast networks. Our experienced and multidisciplinary team provides a wide range of knowledge of ALL broadcast technologies and the various skills required for the successful planning, implementation and optimisation of broadcast networks. As well as the technical studies and engineering, we take care of bid planning, project and procurement management.

Full Turnkey Network Deployment

These are typical questions we help you find the answer for, always with regards to your initial position, your budget, business and technical requirements:

- Which technology is best to deploy in my given case?
- How do I best use the liberated spectrum?
- How do I best migrate from analogue to digital?
- Can I reach more network coverage with the same infrastructure?
- Does the real network correspond to the planned one?

The LS telcom Training Academy offers an enormous range of broadcast training courses the whole year round. Check out our standard course programme and our customised courses.
Measurements & Optimisation

An operational broadcast network needs to be optimised and maintained to guarantee continuous quality of service and careful use of network resources over time. We optimise your existing network with regards to quality of service, coverage, technology cost, operational expenditure, or any other parameter that you would like us to check.

We compare your stored network data with real network conditions for trouble shooting and network optimisation. Whatever measurement you need; continuous wave (CW), radio coverage and human exposure measurements, electromagnetic emissions compliance reporting or spectrum monitoring; our service portfolio covers them all.

Our service includes the provision of all kinds of measurement devices, including vehicles and remotely piloted aircraft.

Network Design & Coverage Planning

Professional network and coverage planning is the foundation of any robust and cost-effective broadcast network delivering high quality of service. We cover the end-to-end broadcast network planning process from spectrum strategy planning and coordination, to initial and detailed coverage planning. This includes migration from analogue to digital networks, analysis of different potential technologies and various planning and optimisation simulations. Our planning results in an effective network roll-out plan. Equipment lists detailing the number of transmitters and antennas, equipment types, as well as detailed site surveys, antenna patterns, coverage plots and population analysis are produced.

Integrating a measurement system that works effectively in a vehicle is a complicated task. At LS telcom we are experienced in the design, build and commissioning of mobile measurement systems.
Antenna measurements for acceptance testing, site survey and verification – much more cost-effective and accurate than using a conventional helicopter

LS telcom offers antenna measurements, mast inspections and site surveys using remotely piloted aircraft (RPA). Determine in an easy, quick and cost-efficient way the true radiation characteristics of your RF transmission installations and receive high resolution video and photography of the ground facilities and of the mast. Operators can measure the real antenna pattern and effective radiated power and compare it to the planned pattern for adjustment and optimisation before any final commissioning and acceptance testing. Not only can you optimise network coverage and guarantee the expected service level to their customers in a cost-effective way; you will also be able to reduce your infrastructure maintenance cost. Regulators on the other hand can easily verify that licensed operators’ transmission installations are compliant with the terms of licence and that antennas are radiating within the legal EMF (electromagnetic field) limits. All our measurements follow the general guidelines of the ITU for radio monitoring.

How does it work?

The latest remotely piloted aircraft (RPA) is adapted to carry the measurement sensor, GPS based high resolution position and orientation sensors, an autopilot, a data processor and specific radio frequency (RF) shielding. The package also includes software for data analysis and the presentation of results. The solution is offered as a turnkey service, from the preparation and calibration of the remotely piloted aircraft (RPA), to the in-flight antenna performance measurements and the delivery of the results, such as horizontal radiation pattern, vertical radiation pattern, null fill and tilt values.
Containerised Broadcast Transmitter Systems

The installation of new sites always involves a great amount of cost and can be time-consuming. The same is true when a site has to be upgraded, but there is no more space for additional equipment.

We deliver high power digital broadcast transmitter turnkey installations. Our services span container installation, testing, construction and commissioning to the point where the containers are ready to operate. With our routine installation team you can reduce work on-site to a minimum and therefore reduce overall installation costs.
We have customers in over 90 countries worldwide:

- Radio Regulatory Authorities
- Ministries
- Network Operators
- System & Infrastructure Service Suppliers
- System Integrators
- Media Companies
- International Institutions

For further information, please visit our website www.LStelcom.com or contact us:

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