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LS telcom
Smart Spectrum Solutions

Global Spectrum Experience

// Linear TV over mobile devices

How CHIRplus_BC will help introduce Mobile TV via (F)eMBMS

CHIRplus_BC, the world-leading broadcast network planning and engineering software, sold in over 70 countries, will feature (F)eMBMS planning functionality.

Evolved Multimedia Broadcast Multicast Service (eMBMS) or Further evolved Multimedia Broadcast Multicast Service (FeMBMS) is a technology standard that allows the simultaneous distribution of identical media content to a large number of mobile and portable devices. The simultaneous content delivery via eMBMS saves frequency spectrum and transmission network resources, making it an efficient technology for exploiting Mobile TV services via LTE and 5G. In addition, it offers the flexibility to switch between broadcast and unicast mode dynamically.

Linear TV is not dying: With eMBMS, operators can offer transmission of sports and other live events, real TV game shows and election programs to mobile and portable devices. Not in front of the television for the world cup final or the Tour de France? With (F)eMBMS to come, watch it live on your smartphone!

CHIRplus_BC addresses mobile operators, planning to introduce (F)eMBMS, and broadcast operators providing broadcast sites to other operators and service providers rolling out eMBMS services.

CHIRplus_BC supports all parameters for the efficient planning of (F)eMBMS networks from ITU BT.2254 and 3GPP which are summarized in the EBU TR 034 Report. As different input assumptions were applied and parameters were not used consistently in various studies, representatives from the broadcast as well as the mobile industry harmonized parameters in this report in order to be able to compare coverage and results of future studies on the subject matter.

In CHIRplus_BC, the user can define the percentage of unicast and multicast to simulate exactly the network capacity needed for the different services on offer to the end user. CHIRplus_BC will provide the right balance of broadcast/multicast coexistence with unicast mode to optimize resource utilization. CHIRplus_BC calculates the coverage for different reception modes, such as portable outdoor (handheld), rooftop antenna, light portable indoor (handheld, light indoor (0dBi antenna)).

As with any network rollout, efficient network planning is key to overall (F)eMBMS network efficiency. CHIRplus_BC was first sold in 1994 and since then has always included the latest ITU standards and recommendations, as well as continual improvements through hands-on user experience and customer feedback. It includes extensive features for single frequency network (SFN) planning. The multithreading network processor, which calculates several results simultaneously, reduces the calculation time for nationwide network calculations considerably. For single frequency networks, the network processor also covers the calculation of self-interference and statistical network gain.

CHIRplus_BC: eMBMS planning

Consulting on frequency and network planning for Digital Terrestrial TV in Indonesia

LS telcom was commissioned by their local partner for Indonesia, PT Solitechmedia Synergy, to support them in the nationwide Digital TV planning in Indonesia.

LS telcom will begin the project by defining different Digital Terrestrial TV (DTTV) service areas. These will be based on the analog service areas and analog contours, which will be adapted to fit to existing administrative districts where possible. The newly defined digital service areas or allotments, will later be put as new service areas for the digital service providers.

LS telcom will then perform the DTTV network planning for several border and dense areas. The digital terrestrial TV coverage and frequency planning will be based on a minimum coverage rate of 70% of the population per service area. LS telcom will define a frequency plan for the final digital DTTV network as well as for the simulcast phase, when analog and digital TV co-exist. The DTTV frequencies will be divided into three categories "no", "slight" and "strong" interference during the simulcast phase, which will finally determine the frequencies to be used as well as the number of channels per

DTTV service area that can be operated during that period. LS telcom's planning method and results will serve as a model for the DTTV planning of the remaining service areas.

The project also includes training of Solitech-media employees on LS telcom's digital broadcast network planning suite CHIRplus_BC, as well as advisory services and a workshop for knowledge transfer. ∎

Replacement of medium wave transmitter for Sentech (SOC) Limited

Sentech commissioned LS of SA's subsidiary, Radio Telecommunication Services (RTS), to replace one of their 25 kW medium wave transmitters, which was destroyed by fire and soot. Sentech chose RTS for the transmitter replacement, following their visit to a containerized transmission facility that LS of SA had prepared for Magic 828 in 2015. The Sentech technical team was impressed with the design features and overall compactness of the Nautel NX25, which was supplied and installed by LS of SA in a turnkey project along with future long-term support from the transmitter manufacturer. For the installation, time was of the essence and

LS of SA's team, under the lead of transmission specialist Vaughan Taylor, successfully installed and commissioned the new transmitter in just over a month from the date of the customer placing the order with LS of SA. Sentech staff also received comprehensive training on the NX25 prior to the installation.

Mr. Mbongeni Mofokeng, Sentech Manager for Cape Town Operations said, "Thank you RTS for your efforts. The new NX25 installation and service we've received from RTS, has certainly met with the expectations of my team and ultimately our client, Cape Pulpit." ∎

The Sentech Cape Town Transmitter Operational Centre team put the NX25 through its paces at the switch-on

Broadcast training for Myanmar

LS telcom provided a weeklong technical training on modern broadcast coverage and frequency planning to MRTV, Myanma Radio and Television. The ABU commissioned LS telcom to carry out this training on their behalf as part of their Technical Advisory Service to their members. Milos Pavlovic, Sales Director Broadcast at LS telcom, delivered the training, which aimed at engineers working in the broadcast industry in Myanmar and who focus on the planning and regulation of audio and television terrestrial broadcasting networks. Training participants came from the Ministry of Transport and Communications, the Ministry of Defense and other private broadcast network operators. The training included a wide range of theoretical and practical topics, from the introduction to broadcast theory, differ-

ent broadcast network technologies, to wave propagation effects and propagation models, through to detailed presentation of required mapping and transmission data, interference theory, broadcast network analysis and finally the network optimization process based on different criteria. LS telcom, also a member of ABU, and its Training Academy have trained thousands of delegates who have received professional training since the foundation of the LS Training Academy in 2003. ∎

For further information on the LS Training Academy:
www.lstelcom.com/en/ls-training-academy/broadcast/
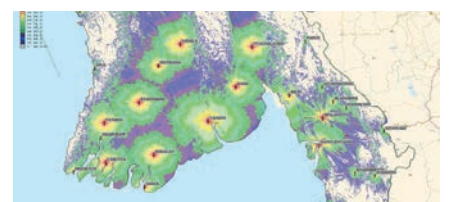
DTT coverage in Myanmar

FM broadcast consulting for URCA, Bahamas

The regulatory authority of The Bahamas, URCA, commissioned LS telcom to review their current FM radio broadcast technical standards and to support them in a public consulting process. The objective is to establish the final technical standards that will form part of the FM radio broadcast policy. ∎

5G compatibility study for Intelsat

Intelsat, a provider of C-Band satellite services in the United States, commissioned LS telcom Inc. for a spectrum study with the objective to analyze the characteristics of signal interference as a result of introducing 5G deployments in adjacent spectrum to its existing C-Band Satellite services. The modeling and recommendations represent the first phase of a multiphase program being executed by Intelsat to prepare for the future 5G deployments. ∎

LS telcom expands cooperation on LoRa software tools with Digita

Digita, a pioneer in wireless and digital solutions, and LS telcom, have agreed to expand their cooperation on network planning tools. Digita already employs LS telcom's software planning tool suite CHIRplus for the planning of their radio and TV networks and microwave links, and the cooperation now expands to the planning of Internet of Things (IoT) networks. Digita has adopted the CHIRplus_TC application, which provides full functionality and is optimized for the planning of LoRa networks and other narrow-band standards typically applied to the roll-out of IoT, smart cities and smart grid applications. LoRa is next-generation's radio technology that has been especially designed to meet the needs of IoT.

"LS telcom is a strong software supplier with whom we have had long-standing and satisfying cooperation. It is excellent for us that their services have expanded to include the planning of IoT networks", says Ari Kuukka, Director of IoT Services at Digita. "We have tested several IoT planning tools and chose to adopt the LoRa software supplied by LS telcom. We were also able to influence the development of the software's features to cover our specific needs in the planning work", says Mikko Meriläinen, network planner at Digita.

Manfred Lebherz, CEO and Member of the Board of LS telcom, commented, "We are very pleased that the Finnish company Digita, on the forefront of technologies and standards, has selected our LoRa planning software. This proves that we are on the right track with our IoT planning functionality development program, and we highly appreciate the close partnership with Digita, who provide valuable contributions to form our functional roadmap to fully match with our customers' day-to-day needs." ∎
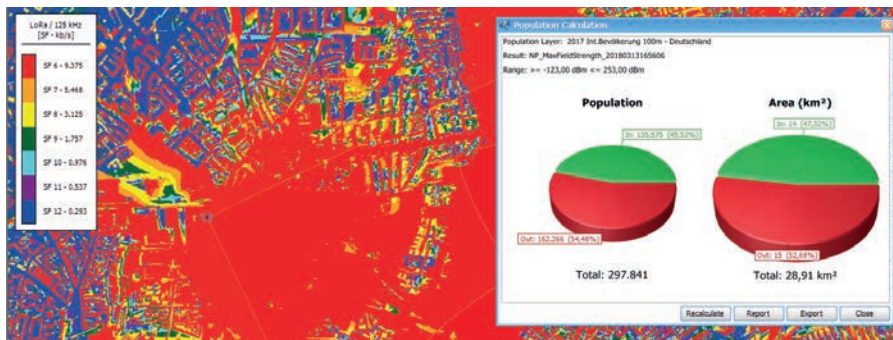
CHIRplus_TC: LoRa planning

National Korean broadcaster KBS acquires CHIRplus_BC

KBS*, the largest and oldest public national Korean broadcaster, has acquired CHIRplus_BC to assist them in planning their ATSC 3.0 SFN. "We chose CHIRplus_BC to improve our efficiency in the planning of the ATSC 3.0 SFN. CHIRplus_BC is the world's most used broadcast network planning software. It carries the experience of over 25 years of broadcast network planning, combined with extensive functionality for the planning of ATSC single frequency networks. We are very confident that with CHIRplus_BC our engineers will plan the best ATSC 3.0 SFN ever in Korea, from a technical and economic perspective," confirmed SungHo Jeon, Research Engineer at KBS Korea.

The software was sold with the assistance of LS telcom's Korean partner JNS (www.jnstek. com). ∎
*www.kbs.co.kr

Audio processing consulting services for Phoenix FM

LS of South Africa provided Phoenix FM, Lusaka, Zambia, with specialist consulting services for optimizing its FM signal on-air audio quality. The assignment included the technical evaluation of the station's complete transmission chain from the studio output to the off-air received FM signal. Vaughan Taylor, transmission specialist at LS of South Africa, worked with the Phoenix FM engineering team on the optimization of the audio processing system including extensive drive tests at several locations in Lusaka and listening tests. Changes to the transmission infrastructure as well as 'tweaks' to the audio processing system were made to improve performance considerably. Muzaza Musulwe, Managing Director of Phoenix FM stated, "The work done was wonderful. There has been significant improvement to audio quality."

The LS telcom team also undertook a full audit of the transmission infrastructure with a view to proposing several refinements, which would seek to improve the stations long term management of their transmission system. ∎

CHIRplus_BC for the benefit of Grupo Imagen

Ing. Gerardo Abraham Carreño López who is a licensed broadcast consultant in Mexico acquired CHIRplus_BC to support him in offering broadcast consulting services to Grupo Imagen, one of the major broadcast and media companies in Mexico. Besides extensive engineering functionality, CHIRplus_BC has proven yet again its capability to support national regulatory compliant planning procedures and provide relevant results. CHIRplus_BC was sold with the help of LS telcom's Mexican partner Inceleris. ■

How to optimize radio coverage

At the workshop "Coverage Planning for Radio Stations" organized by TV Imagen, Mexico, in February 2018, Milos Pavlovic demonstrated how to plan TDT ATSC/3.0, FM, and HD radio with LS telcom's broadcast network planning tool CHIRplus_BC. He also explained how drones can measure and optimize broadcast network antennas. ■

CHIRplus_BC to support DVB-T2 operator to roll out its network

The Dutch DTT license holder has outlined the timeline for the switchover of its terrestrial pay TV platform to DVB-T2/HEVC. CHIRplus_BC will help the DVB-T2 operator to meet their frequency and network planning objectives while migrating from DVB-T to DVB-T2. The switchover will be finalized by April 2019. For the migration, the operator has also contracted additional propagation models, mapping data and training from LS telcom. Maintenance and customer support has been extended. ■

Broadcast Partners Expands Planning Capacities

Broadcast Partners, a long-time customer of LS telcom, recently purchased software updates (for existing licenses) and additional licenses of CHIRplus_BC. The software licenses have been updated and purchased to plan and coordinate FM, DAB+ and DVB-T2 networks. ■

FM broadcast licensing support for FM Assiniboia

LS telcom provided technical frequency licensing services to the FM Assiniboia Broadcasting Station. Following LS telcom's services, FM Assiniboia's new LPFM (low-power) broadcasting station in the Province of Saskatchewan, Canada, successfully obtained a frequency license. ■

FM frequency licensing support for Galcom International

The new Christian Broadcast Station Aujourd'hui l'Espoir in Canada, in partnership with GALCOM International, has contracted LS telcom for technical frequency and program licensing support in order to obtain an LPFM broadcasting frequency and programming license in the Province of Quebec, Canada. Once the authorities have granted the initial license, it is planned to increase the service coverage of the station by implementing additional rebroadcasting stations. ■

DAB+ trial for Cape Town

RTS (subsidiary of LS of SA) will collaborate with Sentech SOC Limited to launch a formal DAB+ trial, which will serve to cover the greater Cape Town City Bowl area. It is expected that the transmission system for which RTS has facilitated the loan of equipment from a few manufacturers, will be installed at Sentech's Tygerberg transmitter facility – being the primary point of presence in the market for existing analog radio (FM) and UHF television (PAL I and DTT) services.

The collaborative team are now awaiting the outcome of a suitable trial license, which will have to be granted by the Independent Communications Authority of South Africa (ICASA). ■

Sentech's Tygerberg transmitting facility

// Meet us at...

- **ABU Digital Broadcast Symposium** | Kuala Lumpur/Malaysia | March 4th – 7th, 2019
- **NAB Show** | Las Vegas/USA | April 8th – 11th, 2019
- **IBC** | Amsterdam/Netherlands | September 13th – 17th, 2019