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Spectrum

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Latest

Radio Frequency and DVB-T2 Network Deployment for Malaysia's Nationwide Digital Television Rollout

LS telcom provides consultancy and assists MYTV Broadcasting Sdn Bhd (MYTV) in the deployment of their nationwide DVB-T2 Digital Terrestrial Television (DTT) network.

LS telcom together with its local partner Wamata Solutions Sdn Bhd (Wamata Solutions) previously supported MYTV in winning the tender 'to build, operate and manage the infrastructure for the Free-to-Air (FTA) Digital Terrestrial Television Broadcast (DTTB) service in Malaysia.' After the tender, awarded in April 2014, MYTV has now contracted Wamata Solutions and LS telcom to provide consultancy services for MYTV's nationwide radio frequency and DVB-T2 network deployment.

The project includes final frequency planning and allocation, detailed DVB-T2 network coverage planning, support in the preparation of the request for proposals (RFP), bid evaluation and the independent supervision of the transmitter system integration and deployment. The second part of the contract covers extensive training on DVB-T2 operation and maintenance, as well as measurements for network verification and optimisation with remotely piloted aircraft.

LS telcom together with MYTV has already completed a nationwide site survey of 60 sites to verify the infrastructure availability as well as all key parameters influencing network planning and antenna diagrams.

The next step is to plan the real transmitter network, generate the network equipment list and the final roll-out plan. The previously planned DVB-T2 system capacity will be revised and adapted to meet the final Detailed Network Planning. LS telcom also reviewed the initial frequency allocation plan based on the comprehensive data gathered and reported during the site survey. The final frequency plan will then be agreed with the regulator MCMC and will be ready for MYTV to deploy its network. This will be followed by a nationwide network analysis to verify self-interference, network gain, DTT covered areas and covered population.

To ensure smooth cooperation and to guarantee a successful network rollout, a transmission expert from LS telcom will be working onsite with the MYTV team during the whole project. ←

Picture: The MYTV and LS telcom team during the official launch of MYTV Digital TV project

Airborne Transmitter Antenna Measurements for Radio Señale DVB-T2 Network in Colombia

Colibrex GmbH, a 100% subsidiary of LS telcom, carried out antenna radiation pattern measurements via remotely piloted aircraft (RPA) for the nationwide DVB-T2 network of Radio Television de Colombia (RTVC).

Rohde & Schwarz (R&S) Colombia S.A which installed the DVB-T2 transmitter sites contracted the Colibrex turnkey measurement service via remotely piloted aircraft in order to determine coverage deviations from the initial antenna design objectives.

The RPA which includes a measurement and sensor system onboard was used to measure the antenna radiation pattern in the horizontal and vertical planes at predetermined altitudes and distances from the antenna for several high power transmitter sites across the country *(see example results table 1 and figure 1 & 2)*. The sites measured are operating on two or three frequencies and are located in different environments and at altitudes from 130 m to 3540 m above sea level. The antenna height above ground level ranged from 21 m to 146 m.

Juan Carlos Pachon, Sales & Project Manager at R&S Colombia, stated: "We wanted to deliver the best DVB-T2 network possible to RTVC. With the Colibrex measurement service via RPA we were able to verify the real performance of our antenna installations and thereby demonstrate to RTVC the quality of our final installation work and the real value added of our solution. The measurements via RPA are efficient and cost-effective and constitute a real alternative compared to measurements carried out by a manned helicopter, the costs of which would have been prohibitive for this project." ←

Comparative Results

	Theoretical	Measured		
		485 MHz	*491 MHz*	*557 MHz*
Main Lobes (°)	10	15	15	
	100	100	100	
	190	190	195	
	280	280	280	
Tilt (°)	1	1.3	1.3	
	5	5.3	5.2	
	1	0.98	1.07	
	1	0.94	0.97	

Table 1

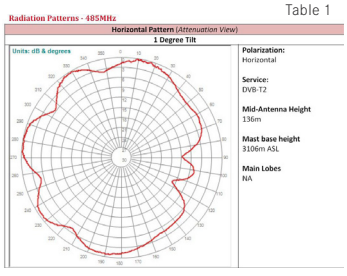

Figure 1 Horizontal antenna radiation pattern

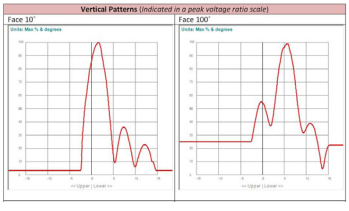

Figure 2 : Vertical antenna radiation pattern

Broadcast Network Deployment

Spectrum Consultancy, Network Design, Planning, Procurement, Roll-out & Optimisation

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 deployment process. This includes spectrum planning and coordination, migration from analogue to digital, analysis of potential technologies and various planning and optimisation simulations. We take care of bid planning, project and procurement management and assist your roll-out with our system integration services. Our planning results in an effective network roll-out plan.

Your Partner for
Digital TV - from Spectrum Planning to Network Optimisation

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 assist you in:

- developing the best spectrum strategies & policies
- mastering the digital switch-over
- frequency sharing / broadcast protection studies

Supporting You in
Managing Your Bid / Initial Planning

Computer based planning with CHIRplus_BC for maximum performance of your 2nd generation digital broadcast networks.

Leading Your Way Through
Detailed Design & Planning

Various planning simulations, detailed antenna design, full network documentation... everything to make your network implementation a success.

Your Partner during Your
Procurement Process

Get help from our **experienced project and procurement team** to avoid problems and delays throughout your project. In addition, we are vendor independent and offer the mix of network equipment which is most adapted to your particular needs.

Enhancing Your
Network Rollout

Stick to your timeframe and budget and achieve the desired quality. We make it happen. We provide **detailed network rollout plans, full system integration services and project management.**

Assisting You to Enable
Peaceful Coexistence of DTT & LTE

Combine simulated and measured information **to solve and avoid interference** and ensure the **protection of your scarce frequency resources.**

Helping You
Optimise Your Network

Mast inspections and **site surveys using remotely piloted aircraft (RPA):** true antenna radiation characteristics, EMF checks.

700 MHz Re-Farming and Re-Engineering of Television Transmitter Sites

Following the last ITU World Radiocommunications Conference in 2012, new spectrum for mobile wireless broadband was identified at frequencies around 700 MHz.

Running from 703 – 803 MHz, it is one of the largest, low frequency bands, ever to be made available for mobile services. Like all new bands, however, it is home to incumbent users who, in this instance, are terrestrial UHF television broadcasters. These television broadcasters have already, in many cases, reduced their use of the UHF band during the switch-over from analogue to digital services, releasing spectrum that many call the 'digital dividend'.

In order to release this new band for mobile uses, it is now necessary to re-farm any television transmitters in the band (channels 49 to 62 using the Region 1 raster) into channels 48 and below. Depending on the number of stations on-air and the density of existing assignments this task could range in difficulty from straightforward to immensely complex. The resulting plan may change the coverage of services and require extensive re-engineering of transmitter sites.

Confining services into less spectrum can lead to sub-optimal frequency assignments, to increased interference and reduced coverage. Careful planning and setting of the transmission parameters can make a significant improvement to any reduction in coverage, in particular where there is use of single frequency networks.

In many cases sites will need re-engineering either because of the need to replace antennas to produce new radiation patterns, or because of large changes in frequency, power or vertical or horizontal azimuth. Reducing the associated costs requires a full and thorough understanding of the infrastructure available at each site, and its capabilities.

LS telcom has over 25 years experience in the planning and optimisation of broadcast services. Our skilled engineers fully understand the problems of re-farming the UHF broadcast band, but also know many of the tricks of the trade that can reduce the impact on television services and, equally importantly, minimise the financial implications associated with changes to sites.

Our sophisticated planning tools will allow accurate modelling of transmission parameters enabling the best possible solution whether in terms of coverage, cost or a balance of both to be achieved.

The ability to use the 700 MHz band for mobile services will also be constrained by the use of the frequencies in neighbouring countries. There are, however, some scenarios which are more detrimental than others. LS telcom can support you in negotiating with neighbouring countries to secure a solution that is more favourable to the introduction of mobile services in the 700 MHz band. ←

LS telcom's CHIRplus_BC software used to model LTE Interference on Digital Terrestrial Television

CHIRplus_BC now includes a specific LTE/DTT interference model and is used by a customer in a European country to help mitigate interference from LTE on the countrywide digital terrestrial television (DTT).

The problem

With the 'digital dividend' spectrum reorganisation in Europe, Digital Terrestrial Television (DTT) services in the 470-790 MHz become close neighbours to the new mobile services in the adjacent 800 MHz band (791-862 MHz). With only 1 MHz guard band separation, those households which receive their television signal in near-by LTE channels will be susceptible to loss of DTT coverage due to interference from the adjacent-frequency LTE base stations.

The solution

With the help of the network planning and interference calculation software CHIRplus_BC, the households which are likely to be affected by LTE interference, as 4G networks are being rolled out over the coming years, can be forecasted.

Based on DTT transmitter and coverage simulation data as well as network base station data of each mobile network operator's 4G rollout plan, CHIRplus_BC first predicts the LTE signal strength in each pixel, corresponding to a certain area, and then calculates the probable reduction in DTT coverage caused by the LTE transmissions. The zones where LTE interference occurs are plotted and the customer then aligns these against population data to finally generate an address list of all households affected. The households are informed and action can be taken, before the interference occurs.

Why LS telcom?

LS telcom was chosen from a range of vendors for their in-depth experience in broadcast TV and interference analysis. The decision for CHIRplus_BC was based on its flexible graphical user interface (GUI) and its comprehensive approach to this specific problem.

This may also be of interest to you

CHIRplus_BC can be deployed in any country of the world to help mitigate LTE interference on DTT networks.

- We can calculate the potential impact that new LTE networks will have on DTT services,
- We can provide the best mitigation techniques and assist in conditioning LTE licences, countrywide or in regions particularly vulnerable to interference.
- We can also assess the interference potential of different LTE network scenarios and different mitigation techniques to find the most cost effective network solution within an operator's budget constraint. ←

Light-weight "Flat Pack" Portable Shelters for Remote Broadcast Sites and Extreme Weather Conditions

In many countries broadcast transmitter sites have to withstand extreme weather conditions, such as snow and wind and they will have to be set up in remote, mountainous locations which are difficult to access.

Have you ever wondered how a fully assembled RF transmission shelter gets up to the site with no roads leading to it? Of course you could use a helicopter to airlift the fully-assembled shelter into position, but this would be very expensive and could be potentially dangerous when strong winds prevail. For the deployment of several sites this could easily turn into a logistical and financial nightmare.

LS of SA have now found the solution. They developed light-weight flat pack portable shelters (*see picture 1*). The different components of these including the roof and base can be carried up to the site by hand and the complete RF transmission shelter will only be fully assembled and deployed at the site.

The shelter walls are made of light-weight insulating chromadek-clad polystyrene panels. Once assembled the very robust enclosures and the roof are able to withstand extreme weather conditions associated with RF transmission sites at high altitudes. The roof is reinforced and slanted to ensure that any snow will fall off. In addition, the heat from the transmission equipment is transferred by ducting into the roof of the shelter to melt snow that may gather on top of it.

The flat pack containers are available in all sizes and equipped with all extra facilities that RF transmission shelters need.

Picture 1: New portable flat pack shelter

Picture 2: Containerised shelter

Possible applications of the flat pack containers:

- Broadcasting facilities (Studio & Transmission)
- Two-Way radio communication networks
- General telecommunication applications
- Standby generators and hybrid power supply systems
- Mobile clinics/laboratories
- Data centres
- Connectivity access centres

Visit us at our Booth...

IBC Amsterdam, Netherlands
12th - 16th September 2014

ABU Digital Broadcasting Symposium, Kuala Lumpur, Malaysia
3rd - 6th March 2015

NAB Show, Las Vegas, USA
11th - 16th April 2015

Broadcast Asia Singapore
2nd - 5th June 2015

LS Summit 2015
Lichtenau, Germany
date to be announced

LS telcom AG
Amtsgericht Mannheim, HRB 211164
Board: Dr. Manfred Lebherz, Dr. Georg Schöne, Dipl.-Ing. Roland Götz
USt-IdNr.: DE211251018

Tender for DVB-T2 Network Rollout in the United Arab Emirates: Assistance to Sharjah Media Coorporation

LS telcom was contracted by Sharjah Media Coorporation, UAE, to evaluate the technical part of bids submitted to the tender for the DVB-T2 turnkey network rollout in the emirate of Sharjah. Part of the contract is also extensive customised training for the customer on planning, design and implementation of DVB-T2 networks.

LS telcom present at major Broadcast Events

LS telcom shared its expert advice in broadcast at several major events.
Advanced planning methods and use of modern tools for the prediction of LTE-DVB-T2 interference as well as the planning of SFN and MFN implementation were the topics covered in the presentations and workshops by the LS telcom experts.

Picture: Luc Haeberle, from LS telcom/ Colibrex, is greeted at the Regional Terrestrial Digital TV Workshop & Frequency Coordination Meeting for Arab States

Picture: At the ABU Digital Broadcasting Symposium (DBS), Kuala Lumpur, in March: speaker Milos Pavlovic, LS telcom, with other speakers

Upcoming Training Courses

LS telcom Training Academy, Lichtenau/Germany

- Broadcast Planning Week: October 13-17, 2014
- Spectrum Monitoring Week: October 21-24, 2014
- Spectrum Management Weeks: November 10-21, 2014

...and many more!

Download the calendar on www.LST.AG/Training.
Alternatively you may contact Ms Sabrina Kautz by email to SKautz@LStelcom.com or by phone: +49 7227 9535 488 for further information on our seminars or for our customised training programmes.

- SPOT ON -

Broadcast System Installation in Africa

LS telcom is currently installing an FM radio and television system in an African country. The contract includes the system design, installation and commissioning of medium power FM and TV transmitters in both the VHF and UHF bands.

- CHIRplus_BC and CHIRplus_FX including mapping data were successfully implemented at 'ETV Transmitters & Communications', the Serbian DVB-T2 broadcast network operator. An extensive training followed at the LS telcom Training Academy in Lichtenau

- The successful cooperation with Digita, Finland, continues, they ordered more CHIRplus_BC licences
- Rai Way (Italy), an LS telcom maintenance customer for more than 10 years has ordered additional licences of CHIRplus_BC, CATCHit and mapping data
- Lagardère, the French media group, acquired CHIRplus_BC
- These customers are well trained:
  - BBC Distribution and BBC GN Distribution received customised training on MF
  - ZNBC, Zambia received customised training on DVB-T2 and general broadcast planning

Editor: Christiane Labitzke **Layout**: Sabrina Kautz

Headquarters

LS telcom AG
Im Gewerbegebiet 31-33
77839 Lichtenau
Germany

+49 (0) 7227 9535 600
+49 (0) 7227 9535 605

Info@LStelcom.com www.LStelcom.com

Subsidiaries

LS telcom SAS
4 av Morane-Saulnier, Bât. A
78140 Vélizy
France

LS telcom Limited
1145 Hunt Club Road, Suite 100
Ottawa, ON, K1V 0Y3
Canada

LS of South Africa Radio Communications (Pty) Ltd.
131 Gelding Ave, Ruimsig,
Roodepoort, 1724 Johannesburg
South Africa

LS telcom Inc.
5021 Howerton Way, Suite E
Bowie, Maryland 20715
USA

RadioSoft Inc.
8900 Dicks Hill Parkway
Toccoa, Georgia 30577-8533
USA

LS telcom UK Limited
Riverside House – Mezzanine Floor,
2a Southwark Bridge Road
London SE1 9HA
United Kingdom

Colibrex GmbH
Im Gewerbegebiet 31-33
77839 Lichtenau/Germany