



LS of South Africa Radio Communication Services (Pty) Ltd

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Company Profile

# LS of South Africa Radio Communication Services



# 1 Company Background

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LS of South Africa Radio Communication Services, as part of the LS telcom group of international companies, was founded in 1999 to address spectrum management and radio network planning requirements in Africa, with a particular focus on South Africa.



As time progressed, LS of SA's portfolio of services and products has expanded to adapt to RF (Radio Frequency) requirements in the region. LS of South Africa has 55 full-time employees based at our head office, installation and container assembly facilities in Johannesburg.

LS of SA is a subsidiary of LS telcom AG of Germany, a listed company on the German stock exchange, which assists us with training and technology when required.

LS of SA is involved in various aspects of the RF industry, including broadcasting, spectrum management, RF engineering, spectrum monitoring and RF planning in regulatory, commercial and military environments.

LS of SA is associated with numerous professional organisations, including:

- ITU (International Telecommunications Union) Sector Member
- JSAG (DoC Joint Spectrum Advisory Group)
- SADIBA (Southern African Digital Broadcasting Association)
- ICASA (Independent Communications Authority of South Africa)
- CIDB (Construction Industry Development Board)
- South African Department of Labour – Level 3 B-BBEE Contributor

## 2 Services and Products

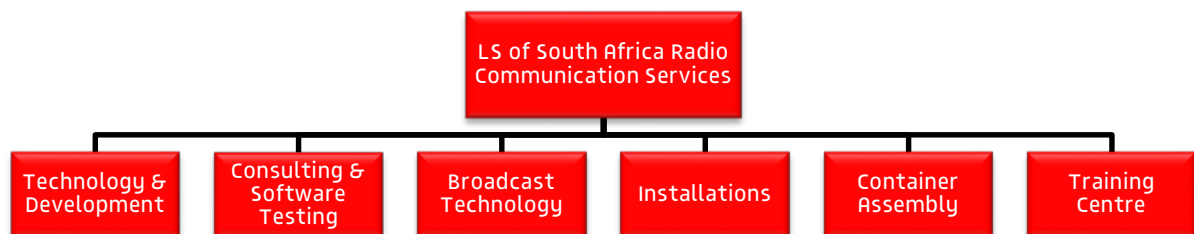
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The core focus of the business is RF engineering-related products and services. These include:

- Radio Planning and Spectrum Management
- Frequency Planning
- Radio Interference Studies including Radio Astronomy
- Point-to-Point and Point-to-Multipoint RF Studies
- Network and Site Area Coverage Analyses
- Radiation Safety Compliance Predictions and Measurements
- RF Audits – Antenna Radiation Measurements
- Site Audits – High-Resolution and Infrared Aerial Photography
- Custom-made Containerised Shelters (RF Shielded)
- Turnkey RF Installations and Commissioning – On-Site/Off-Site
- Mobile, Fixed and Airborne RF Monitoring Solutions
- Turnkey Broadcast Project Management and Installations (All technologies)

## 3 Divisions

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### 3.1 Technology and Development

This division is tasked with the research and development of new technologies and methods for performing activities related to, among other disciplines, Spectrum Monitoring and Analysis. Hardware and software systems from various manufacturers are integrated to offer innovative new solutions in the RF engineering field.

One of the latest successes of this division is the development and realisation of the world's first RPA (Remote Piloted Aircraft) based RF measurement platform.



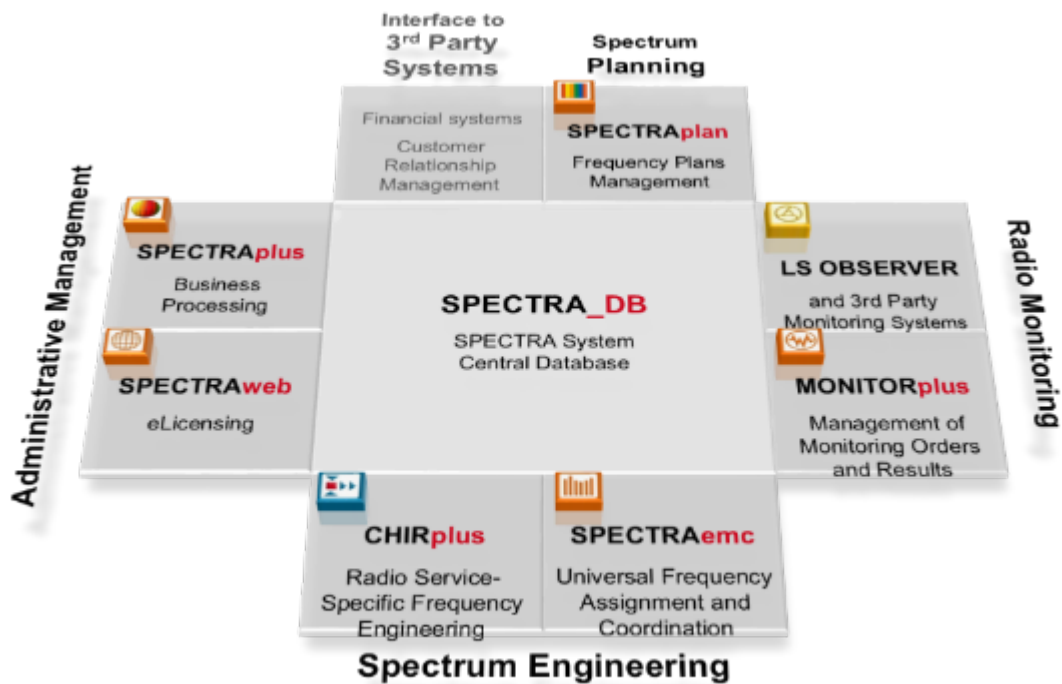
## 3.2 Consulting and Software Testing

### 3.2.1 Spectrum Management

LS telcom's world-renowned SPECTRA automated Spectrum Management system, comprises various modules that include Administration Management (Licensing and Billing), Spectrum Planning and Spectrum Monitoring components. Specialised versions are available for aeronautical and military Spectrum Management.

LS of SA provides expert advice on national and regional Spectrum Management, including Spectrum Coordination Activities, Spectrum Audits, Spectrum Migration and Refarming.

LS of SA also offers ancillary services, such as database sanitation and spectrum audits for regulators and network operators to verify database accuracy. This is achieved by comparing monitoring data to licensing data provided by the client.



LS of South Africa performs software testing on all of LS telcom's abovementioned components, giving its Consulting division intricate insight into the latest features and functionality of the SPECTRA system.

### 3.2.2 Spectrum Monitoring

In terms of Spectrum Monitoring, LS telcom offers the modular Observer system, enabling the client to develop a highly effective, dynamic and compact monitoring network. The Observer is available in fixed and mobile configurations. Once the network, comprising fixed and mobile units, is established, Geolocation is possible utilising TDoA (Time Difference on Arrival) and PoA (Power on Arrival) methods.

The Observer system can be combined with conventional monitoring front-ends from other manufacturers, enabling regulatory authorities to expand on its current monitoring setup without the need for complete replacement of its existing monitoring equipment.



LS telcom's MONITORplus software enables the user create and run monitoring orders for equipment from various manufacturers including ARGUS, ESMERELDA and SCORPIO interfaces as well as to display and interpret monitoring data. Direction finding calculations and display of the results is also done in MONITORplus.

### 3.3 Broadcast Technology

LS of SA offers turnkey RF Project Management, covering all broadcast technologies.

Utilising its CHIRplus\_BC broadcast planning tool, LS of SA comprehensively predicts coverage simulations and identifies available frequencies for new entrants to the broadcast environment. CHIRplus\_BC enables the identification of potential existing and Greenfield broadcast sites.

LS of SA is able to create complete broadcast frequency plans for regulatory authorities. Planning of Single- and Multiple Frequency Networks (SFNs and MFNs) can also be done, taking into account coordination with neighbouring countries.

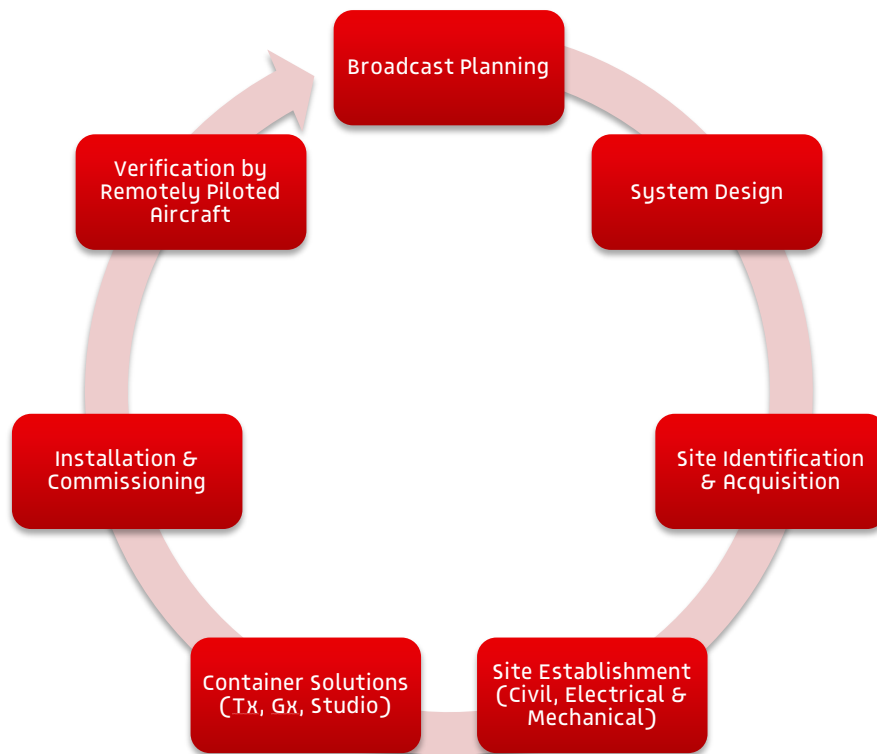
From a hardware perspective, LS of SA has vast experience in the installation and commissioning of broadcast transmission systems and integration of these systems with the associated equipment (antennas, masts, UPS systems, programme input equipment, combiners, rigid lines, cooling systems and feeder cables etc.).

Studio design, both conventional and containerised, is done in-house by LS of SA.

Through its various partnerships and agencies, LS of SA offers a vendor-agnostic approach to broadcast projects and their implementation, ensuring that projects are not bound to the specifications and costing of any one equipment manufacturer.

Using its Remote Piloted Aircraft solution, LS is able to verify that equipment installations are done according to specification and that the client will receive optimal return on investment from its infrastructure.

During the operations and maintenance phase of the now-operational broadcast installation, the Remote Piloted Aircraft platform can then be used to provide high-resolution photo and video records of the installation's condition, checking for cable damage, lightning damage, corrosion etc.



### 3.4 Installations

LS of SA has performed in excess of 200 RF transmission and backup power generation system installations into specially-converted steel shipping containers, as part of the largest DTT (Digital Terrestrial Television) network in the world.

LS of SA builds monitoring vehicles for regulatory authorities looking to locate illegal spectrum users, and broadcasters wishing to monitor broadcast quality.

Taking into account the inherent systems integration component of the abovementioned installations, LS of SA integrates, among others, transmitter, generator, UPS, telemetry, cooling and ventilation systems.

LS of SA's dedicated commissioning teams are available to perform both off-site precommissioning and factory acceptance testing with the client, as well as on-site installation and commissioning.



### 3.5 Container Assembly

LS of SA has converted in excess of 200 steel shipping containers for the installation of RF Transmission and backup power generation equipment. Containers are manufactured to the highest standards and each unit is subjected to LS of SA's stringent quality control and assurance processes.

Activities during the manufacturing process include:

- Container conversion
- Steel component manufacturing
- Fitment and finishing
- Spray painting
- Quality assurance and acceptance

LS of SA can advise the client on detailed design, based on the user requirement specification, but can also offer conceptual design, taking into account ergonomics and optimal cooling and ventilation configurations.



## 3.6 Training Centre

The LS of SA training centre is based at LS of SA's head office in Ruimsig, Johannesburg, and offers cost-effective training solutions tailored to the needs of developing countries.

LS of SA offers the following training courses:

- LS SPECTRA Software Tool Training
- Broadcast Basics
- FM Basics
- Spectrum Management
- Human Exposure/EMF
- RF Basics
- Transmitter Commissioning
- Diesel Generator Commissioning

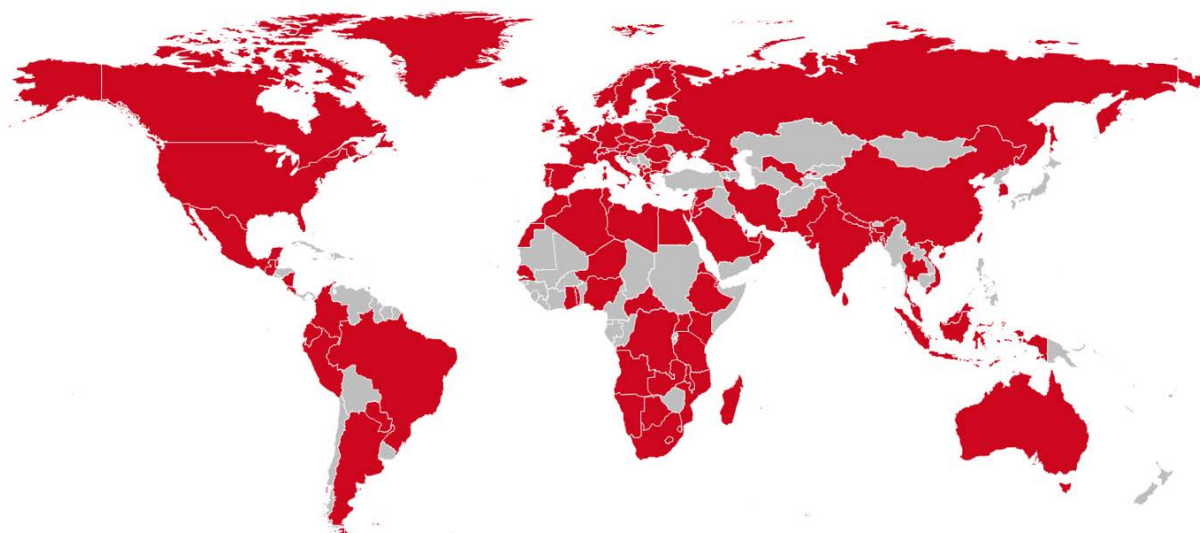
LS of SA also offers bespoke training courses specific to the needs of clients, topics include Digital Dividends 1 & 2, Dynamic Spectrum Access/White Space, Spectrum Economy, Spectrum Auctions, Coexistence between LTE and DTT to name but a few.

## 4 Clients

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### 4.1 Regulatory/Ministerial

Internationally, more than 90 regulatory bodies makes use of services and products from the LS telcom group of companies,



In the African context, these include:

- Independent Communications Authority of South Africa (ICASA)

- South African Department of Communications
- Ugandan Communications Commission (UCC)
- Communications Regulatory Authority of Namibia (CRAN)
- Lesotho Communications Authority (LCA)
- Malagasy Office of Research and Regulation of Telecommunication (OMERT)
- Télédiffusion d' Algérie (TDA)
- Ethiopian Ministry of Communications and Information Technology (MCIT)
- Senegalese Regulatory Authority for Telecommunications and Post (ARTP)

## 4.2 Radio Astronomy

- Square Kilometre Array (SKA) Radio Astronomy Project
- Astronomy Management Authority (South Africa)

## 4.3 Broadcasting

- Independent Communications Authority of South Africa (ICASA)
- Multichoice Africa
- Ethiopian Broadcast Authority (EBA)
- Seychelles (Ministry of Communications)
- Ugandan Communications Commission (UCC)
- Communications Regulatory Authority of Namibia (CRAN)
- Malawi Communications Regulatory Authority (MACRA)

# 5 Major Projects

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- SARFSA spectrum audit 9 kHz to 500 MHz – South African Department of Communications
- FM spectrum audit and optimisation – Ugandan Communication Commission
- Supply of RF engineering software (SPECTRAemc) – South African Astronomy Management Authority
- RF interference studies – SKA Radio Astronomy project
- Supply and installation of containerised RF transmission solutions – Multichoice
- Develop SA UHF DTT frequency plan to accommodate Digital Dividend 1 and 2 – ICASA
- Development of DTT and FM frequency plans for Namibia, Malawi, Ethiopia, Seychelles, Uganda and Nigeria
- DVB-T2 network planning (Kenya, Mozambique, Namibia, Nigeria and South Sudan, Ethiopia, South Africa, Swaziland, Lesotho)

- FM coverage planning (Niger, South Africa, Sierra Leone, Guinea)
- National broadcast site audits (RF & Photographical) – CRAN (Namibia)
- Appointment as service provider for Airborne Antenna Radiation Pattern Measurements over a period of three years nationally – Sentech (South Africa)
- DVB-T2 broadcast RF site RF measurements by Remote Piloted Aircraft – Radio Senale/Rohde & Schwarz Columbia (Columbia)
- DVB-T2 site installations – Zambia, South Africa, Nigeria, Kenya
- DTT network rollout – MyTV (Malaysia)
- DVB-T2 training, tender evaluation and post-installation inspection of Transmission sites – Sharjah Media (United Arab Emirates)
- Evaluation of DTT and DTH STBs and antennas – Government Organisation
- Supply of containerised shelters for TETRA radio network system upgrade at Sishen Iron Ore Mine – SAAB Grintek Technologies (South Africa)
- Military Spectrum Management consulting – Government Organisation

## 6 Contact Details

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