



# SPECTRUM MANAGEMENT

## Regulating Wireless Communication

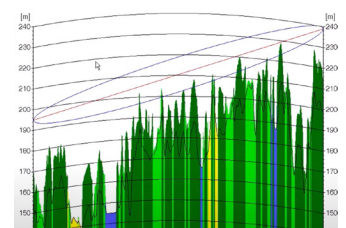
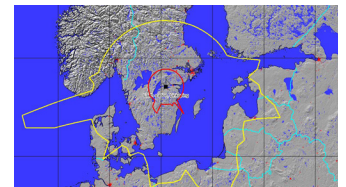
The growing diversity and escalating demands of wireless systems place new responsibilities on the spectrum regulator. Technical analysis, frequency administration, international and national coordination, and resolving interference issues require a capable, multi-service system. Altair® WRAP™, an Altair® Feko® component, provides all the capabilities you need.

### Intuitive Workflows, Comprehensive Results, Actionable Insights

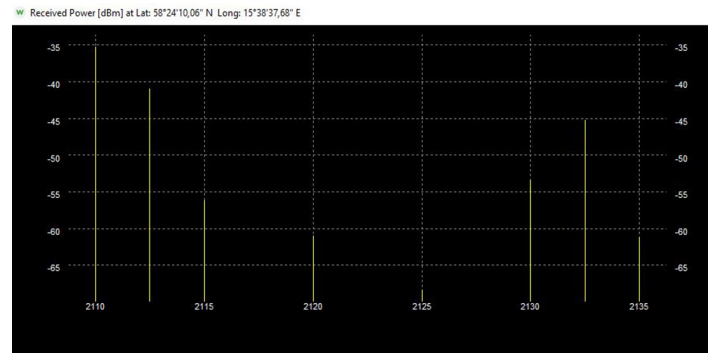
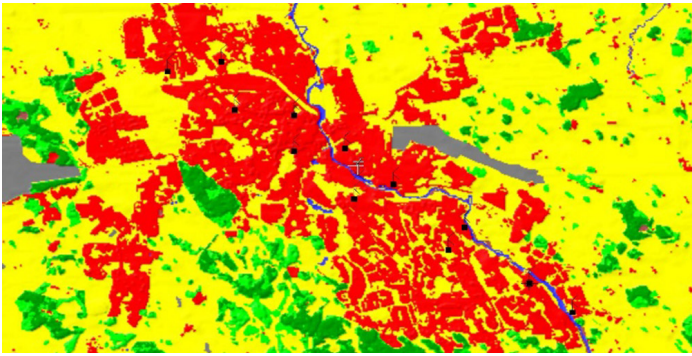
The WRAP system is a comprehensive solution suited for the complex technical and administrative requirements of telecommunications agencies responsible for managing the radio spectrum. With support for large national and international frequency databases, WRAP simplifies and improves spectrum management efficiency.

## CONTROL THE VALUABLE RADIO SPECTRUM ASSETS TO ALLOW MAXIMUM UTILIZATION.

Effective management of crucial radio spectrum resources is necessary for optimal use and peak performance with propagation models that ensure comprehensive coverage across the entire radio spectrum. WRAP's International Telecommunication Union (ITU)-compliant calculation and coordination methods provide compatibility with spectrum regulations while quickly identifying and resolving interference issues in remote and densely collocated scenarios.

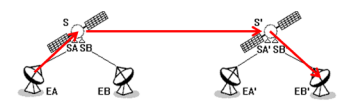
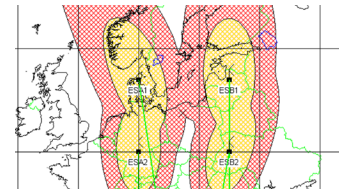


**TOP:** Satellite earth station with Tx (red) and Rx (yellow) contours **BOTTOM:** Example for point-to-point radio link analysis



Spectrum viewer showing occupancy in LTE band at location of interest

The WRAP spectrum allocation manager includes functions for handling allocations on regional and national levels. Quickly analyze allocations with charts and tables; create, edit, and import/export frequency allotment plans and frequency assignments, which can be manual or automatic, to ensure compatibility with the authorized frequency utilization and band plans to maximize spectrum utilization.



**TOP:** Satellite footprint on ground from four satellites  
**BOTTOM:** Inter-satellite network interference scenario

Detect and resolve complex signal interference cases between remotely located stations or in high-density collocation situations and integrate with spectrum monitoring systems to ensure optimum spectrum management. WRAP's support for a wide range of coverage and propagation models, as well as digital maps of different types, provides the flexibility to handle technical analysis of coverage, interference, and optimization of the spectrum utilization.

WRAP houses a variety of tools that make it a comprehensive solution for both civil and defense spectrum regulators. These include, but are not limited to:

- High frequency (HF) communication and planning
- Broadcast network planning
- Point-to-point and multi-point link performance evaluation
- Dynamic and static satellite coverage analysis
- Radar coverage and inclusion of impact due to jammers and windmills
- Hierarchical network planning and management
- Cost and coverage optimizer

Learn more at [altair.com/wrap-applications](https://altair.com/wrap-applications)