

AUTOMATED SPECTRUM MANAGEMENT SYSTEM FOR DEVELOPING COUNTRIES

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Abstract:

The Kyrgyz Republic has developed an automated national system for spectrum management, which has been in use since the end of 2003, named as SIRIUS. The system was designed to be simple and easy to use, so that core operations normally done by more powerful systems could be performed with a limited staff and without any need for any specialized training going beyond basic radio technology. The new system fully complies with ITU-R Recommendations (particularly Rec. SM.1604) and fully meets requirements to “Enhanced basic SMS system” set forth by the Istanbul Action Plan, approved by World Telecommunication Development Conference, Istanbul, Turkey, 2002.

A team of spectrum management and computer experts are improving the system continually, in the light of experience acquired in its operation and new documentation produced by ITU-R. In view of the very positive results achieved using the system under conditions where the number of frequency assignments is not excessive (up to 50 000-100 000), and given that it is uncomplicated and user-friendly, SIRIUS is potentially of use for many developing countries.

SIRIUS is capable of performing the following core functions.

- 1) Administrative module:
 - a) licensing of frequency assignments;
 - b) domestic and international coordination and notification;
 - c) invoicing and fines.
- 2) Engineering analysis module:
 - a) spectrum use planning;
 - b) different analytical methods of assessing station SNR and EMC;
 - c) general-purpose engineering analysis tools for calculating interference and coverage areas for stations, path analysis etc. using digital terrain data;
- 3) Monitoring module:
 - a) recording interference complaints, investigating and eliminating interference;
 - b) preparation of spectrum monitoring jobs for monitoring stations;
 - c) collection and analysis of spectrum monitoring data;
 - d) analysis of emission measurements for comparison with database.

SIRIUS was developed using modern technological platforms, topology and IT architecture, ensuring a high level of security, reliability, integrity, safety of information and rapidity of response. Multi-user data processing on the basis of client-server technology provides many advantages for the organization of a central database, unique user interface, security and audit systems, and strategies for backing up, restoring, logging, and importing and exporting data.

SIRIUS can support the simultaneous operation of up to 20 workplaces. It is possible to increase the number of parallel user sessions still further by upgrading certain portions of the system.