

ICS telecom

Overview

ICS telecom is the reference Software Tool for Spectrum Engineering & Advanced Radio planning for Regulatory Authorities, Telecom operators, Broadcasters, Telecom equipment suppliers, system integrators, Engineering and consultants firms. It is designed to meet the changing needs of technology and is used extensively by RNP/RNO engineers -- experts charged with radio studies. ICS telecom targets two key areas:

- **Spectrum Engineering & monitoring**
- **Radio planning & optimization**

ICS telecom is the **unique solution on the market supporting all the wireless technologies evolving from a few kHz until 450 GHz**, multiple frequency bands, channels and equipment configurations without any restriction and additional modules.

Supporting more than 100 wireless technologies in a single project

- **Radio cellular technologies**

GSM, PMR, Trunked Radio Systems (TETRA, TETRAPOL, APCO-25, MPT 1327), GSM-R, DCS, EVDO GPRS, Wi-Fi (802.11a/b/g/ac), WiMax (802.16 a/d/e), UMTS, HSPA, HSPA+, Advanced LTE (FDD, TDD), eMBMS.

- **Microwave links**

PDH, SDH, IP-radios, including all the latest categories of MW equipment's using MIMO systems and working in the unlicensed bands (e.g. 70-80 GHz bands).

- **Broadcast**

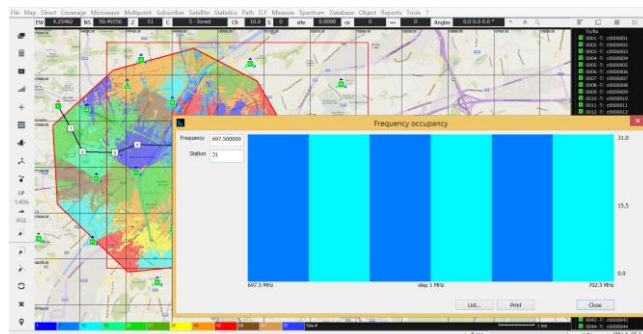
TV, FM, LF/MF, AM, DAB, DAB+, DVB, DVB-T2, ISDB-T, DMR, DVB-S, DVBS2

- **P2MP**

M2M, D2D, SCADA, CDMA 450, MMDS, WiMAX, LMDS, LoRa™ and Smart –Grid.

- **Direction Finders (DF)**

- **White Space Devices (WSD)**



Spectrum occupancy analysis

- **Aeronautical systems and Radio Navigation Systems**

Radar systems, ILS (GP, markers, Loc), COM, MLAT, DME, TACAN, NDB, markers, GBAS RX, MLS AZ, MLS, VHF ground-to-air systems.

- **Satellite**

NGSO and GSO satellites constellations.

- **Heterogeneous networks**

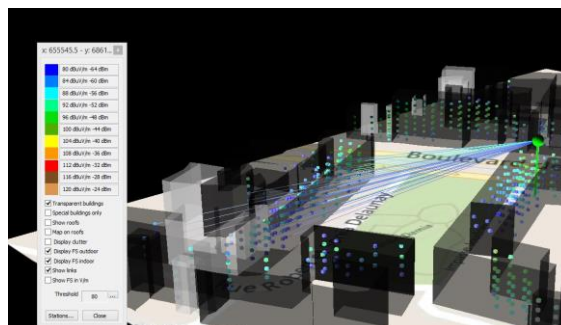
Modelling of macro / micro / femto / indoor / small cells and repeaters.

- **Subscribers and User Equipment**

Modelling of CPEs / UEs / hand-held portable units.

- **Latest technologies**

LTE Advanced - release 11 (including carrier aggregation, joint transmission, Femtocells, SON), 5G technology (under development), aerial and spatial broadband radio equipment (UAVs, aircrafts).



3D indoor/outdoor

Reference Software Tool for Spectrum Engineering & Advanced Radio Planning and Optimization

ICS telecom incorporates more than 50 propagation models

Thanks to a large choice of propagation models, ICS telecom is able to modelling all kind of attenuation effects (diffraction, 2D/3D reflection, ducting effects, etc.) and to carry out coverage studies for all technologies from few KHz to 450 GHz. Furthermore, ICS telecom integrates all standard protection ratios and IRF (for interference or coexistence studies) and an antenna database (more than 10 formats) coming from most of the equipment manufacturers.

Propagation models: Empirical models (Okumura Hata COST 231, Extended Hata, etc.), deterministic models, ETSI, EN, ITU-R (P, S, SA, M, BS, BT, BO, SM, G), 3GPP.

Spectrum management & International coordination

International, bi-lateral and regional coordination:

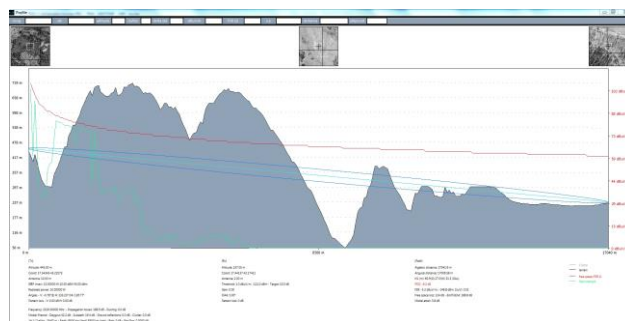
- Complete GE06 coordination process
- GE84/ Stockholm 61
- UFS, NFS, UFS delta, SFN test points,
- Compatibility report (K-Inm, Bonn, Chester, SMM, Psum, S&Y, FW)
- Allotments, GE06 contours
- Border coordination and border agreement;
- HCM, FCC

Spectrum management & compatibility

- Coexistence between Multi RAT
- Earth station coordination
- Microwaves vs. RA (radio astronomic) stations
- EMC: Interference, Noise desensitization,
- Intermodulation, spurious emission
- WSD vs DTT features
- Radio cognitive

Coordination with aeronautical radio equipment

- Coordination with aeronautical radio navigation radar in the 2.7 GHz band
- Compatibility with aeronautical services (SM1009, ICAO BRA, radar vs. Wind turbines/radars)
- MLAT / DME
- Constraint areas (obstacles and perturbators)



Path profile

Large choice of standards formats (import/Export):

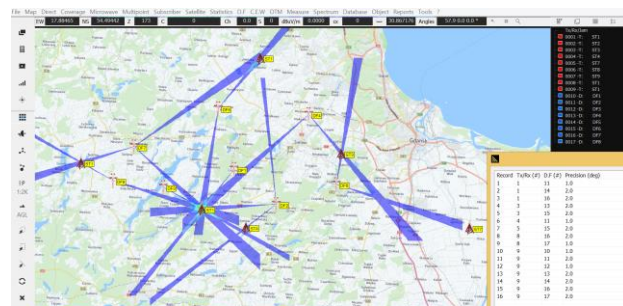
- T01/T02/T03/T04/GS1/GS2/GT1/GT2/GBI TVA/TVD/UKE/CSA/OFCOM/TAFL/Industry Canada/TDAB / 2002/LEGBAC/UKPM, BRIFIC...

Spectrum Allocation

- Advanced Automatic Frequency assignment
- Management of licensed/Unlicensed bands

Radio planning & optimization

- Site planning & acquisition
- Radio network planning
- Transmission planning
- Optimization and KPIs enhancement
- Prospective planning



Direction Finders