Optimizing Mining Communications with Advanced Network Planning

April 2024

Webinar Agenda

- Housekeeping and Introduction to ATDI
- Seamless conversion of survey data into the digital terrain model (DTM)
- Using state-of-the-art deterministic propagation models for accurate coverage predictions
- Effortless modelling of multiple technologies across one easily managed project
- Identifying coverage gaps and determining optimal locations for trailer placements
- Identifying and mitigating interference areas.

About ATDI

- Incorporated in 1991 in Paris, France
- Global leader in spectrum engineering and spectrum management solutions
- Main products
  - HTZ Communications: Network planning tool (2G/3G/4G/5G/IoT/..)
  - ICS Manager: Spectrum management solution (sites, licenses, etc …)
- Specialty: 3D predictions & Propagation model development
- Technologies: 2G/3G/4G/5G/IoT/P2P…

Our Services

Washington London Madrid **Paris** Warsaw Kiev Sydney

Training

Customised training service online or onsite.

Support

24/7 global technical support via phone, email and web-conference

System Customisation

Business analysis, system design, architecture, customisation, integration, and configuration.

Spectrum consulting

Provide professional consulting services in spectrum engineering and management to solve any spectrum issues.

Cartographic data

Medium to High resolution DTM and Clutter library.
Cloud base digital map image streaming and cache support.

System Deployment & Maintenance

Support on Go-Live, Testing, and bug fixing.
On-going maintenance support with software updates.

RF Planning & Spectrum Management Solutions

- HTZ Communications
- HTZ Automation
- HTZ Web API
- RRL Plugin
- ICS Manager
- ICS Portal

ATDI Mining Customers

HTZ Communications

Complete out of the box RF planning and optimization solution

- Supporting all wireless technologies from a few kHz to 1 THZ
- Massive library of propagation models as an all-in-one package - including deterministic, empirical and custom models. Our deterministic models generate coverage prediction with accuracy greater than 90%, with no tuning required.
- Comes out of the box with global cartographic datasets including DTM and Clutter
- RF Engineering tool combined with a powerful GIS Engine allowing advanced GIS manipulation. Features advanced 3D GIS data utilization including 3D-Ray tracing to improve modelling accuracy
- Automates for any planning calculations and analysis including coverage, interference and frequency assignments
- Enables parallel processing to run computations faster on machines with several processors for larger network calculations to improve calculation efficiency
- Integrates with Google Earth and other online maps, to overlay coverage plots and station lists, including an editable user palette and threshold legend

Multiple Technologies in an All-in-One Solution

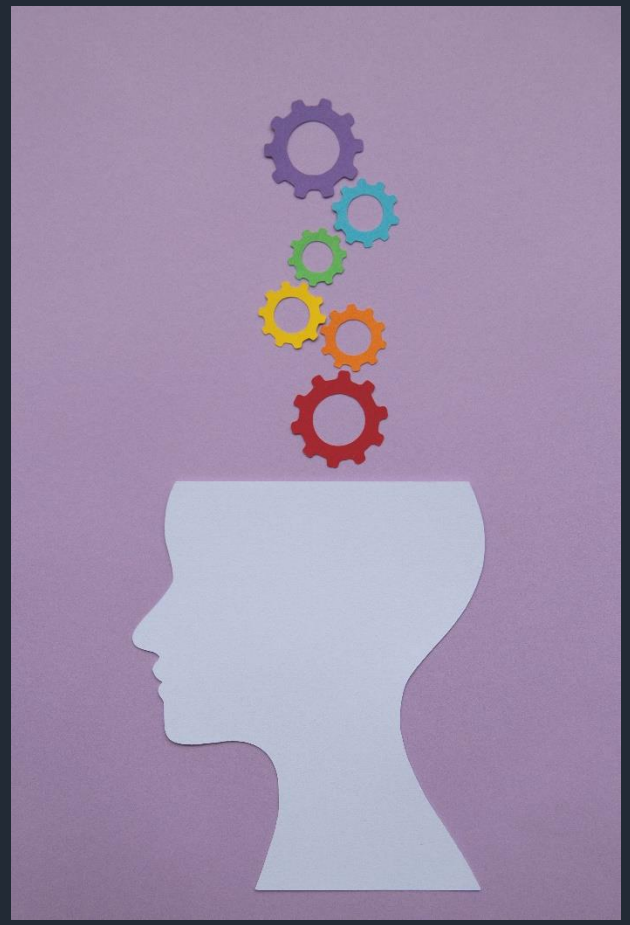
- Fixed wireless access: P2P, P2MP, LMDS, WLL, BWA, WiFi, WiMAX
- Mobile: 2G, 3G, 4G, 5G, WiMAX, DVB-H, LTE
- DSA, Cognitive Radio, TV White Spaces
- PMR: Analog, TETRA, Tetrapol
- Broadcast : FM analog and digital, TVA, DAB, DRM, DVB-T/T2, ISDB-T
- Tactical communications, Electronic warfare
- Radar and direction finders
- HF, Aeronautical, UAVs
- Satellite Communications
- IoT: LoRa, NB-IOT

NB-IoT

LIVE DEMO

- Prop Models
- GIS Functions
- Site Search / Acquisition
- Network Modelling (Private LTE/5G, LMR, MW Links)
- Network Optimization
- Coverage Outputs
- Interference Analysis

Expanding Scope of Knowledge



- Geographic Information System
  - Coordinate codes
  - Datums and ellipsoids
  - Cartographic conversions
- Desktop Planning
  - Pre-planning
  - Site acquisition
  - Measurement correlation
- Network Configuration
  - Parameter identification
  - Network modelling
  - Coverage predictions
- Testing and Optimization
  - FSR, RSSI, RSRP, RSRQ, SNIR predictions/analysis
  - Capacity
  - Quality of Service

Propagation Models

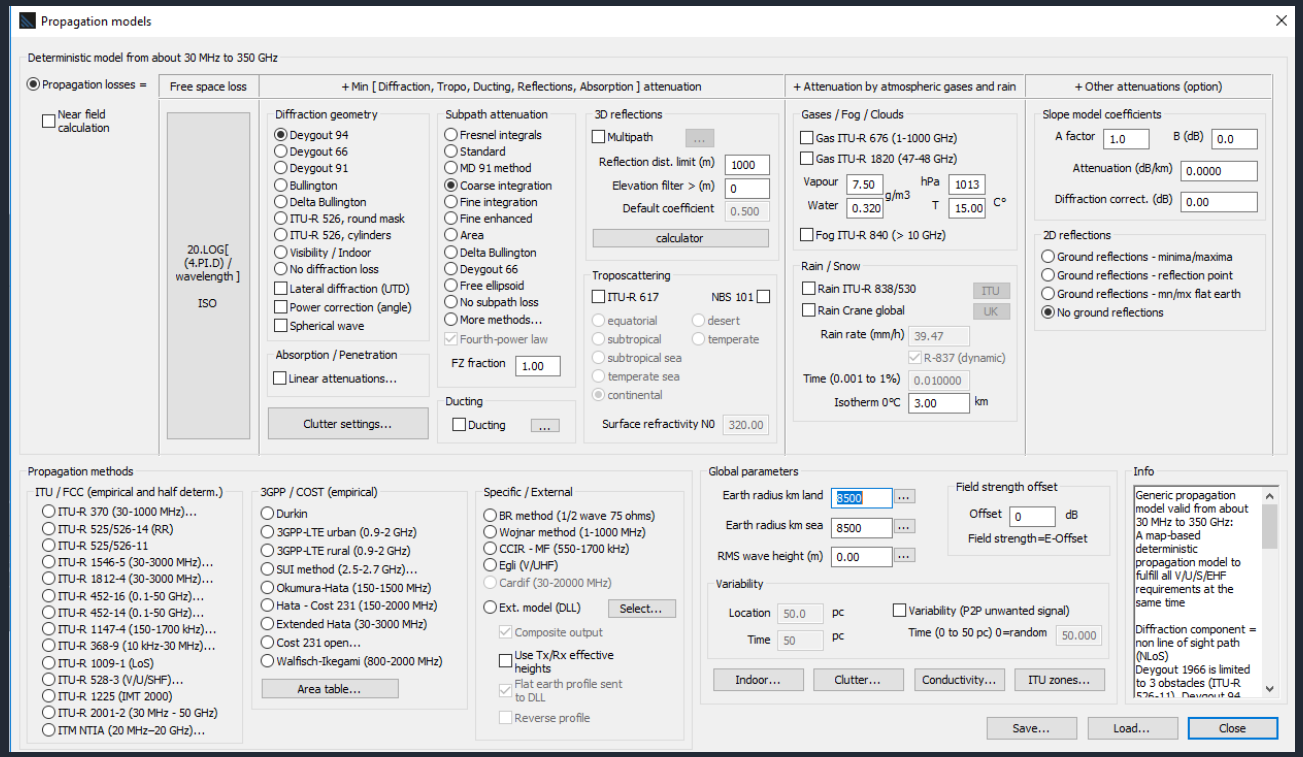
A comprehensive advanced propagation model library as all-in-one package

HTZ Communications includes a comprehensive set of propagation models as part of its standard licence package.

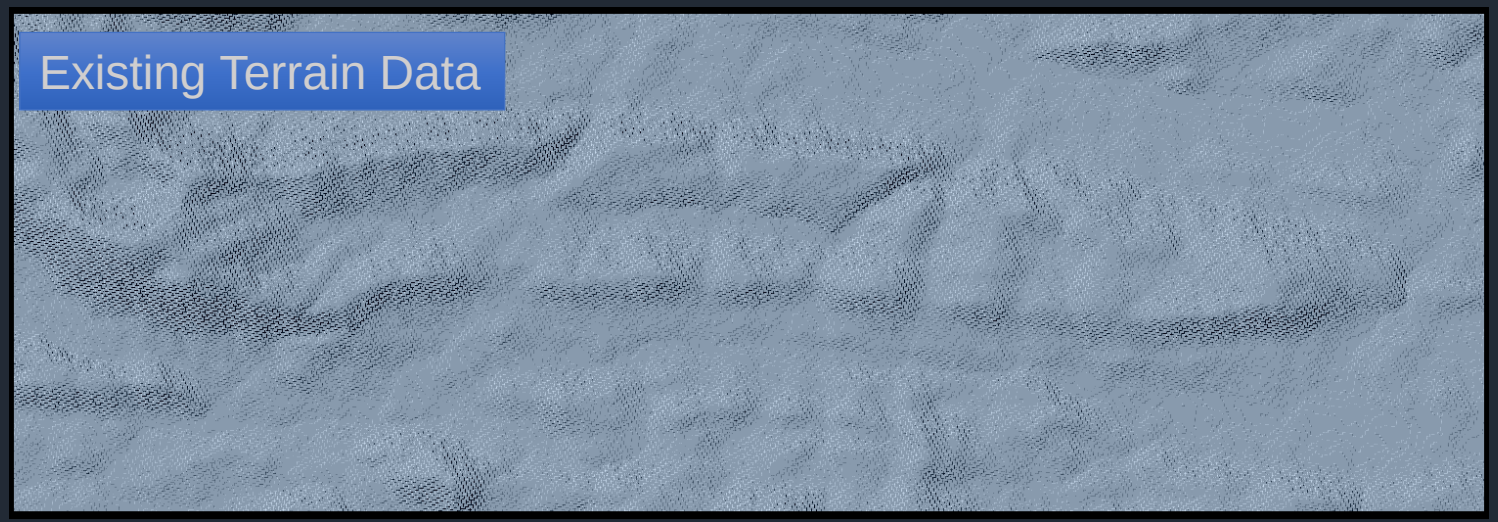
Propagation components are added to a base model (2D) to create flexible 3D models covering from 30 MHz to 450 GHz.

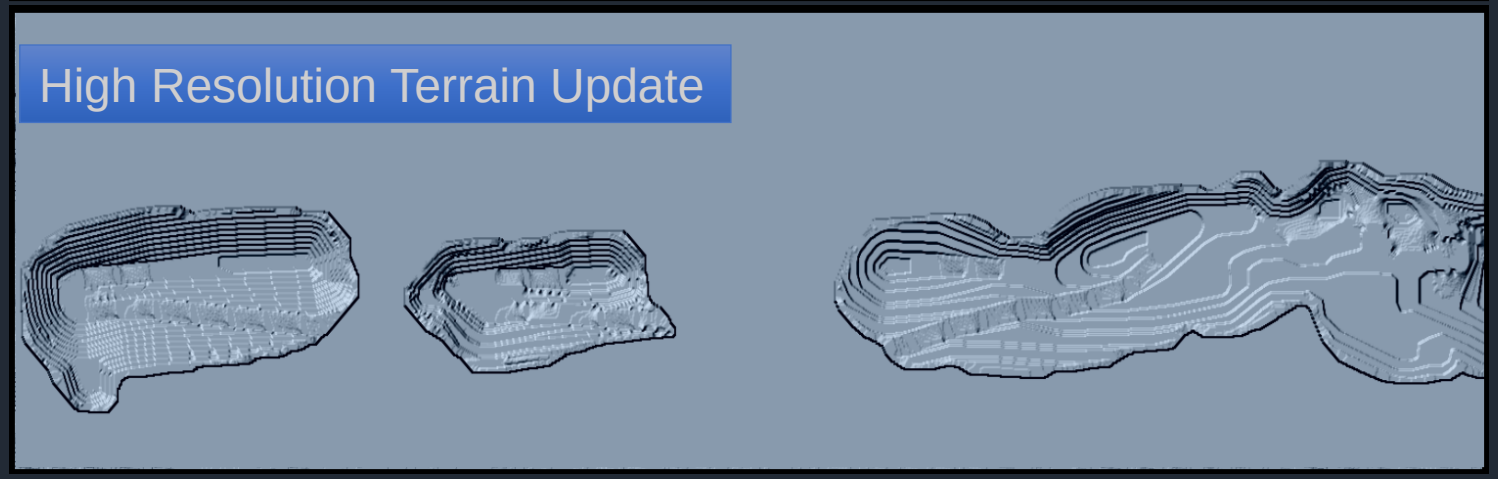
Below is a list of available propagation components.

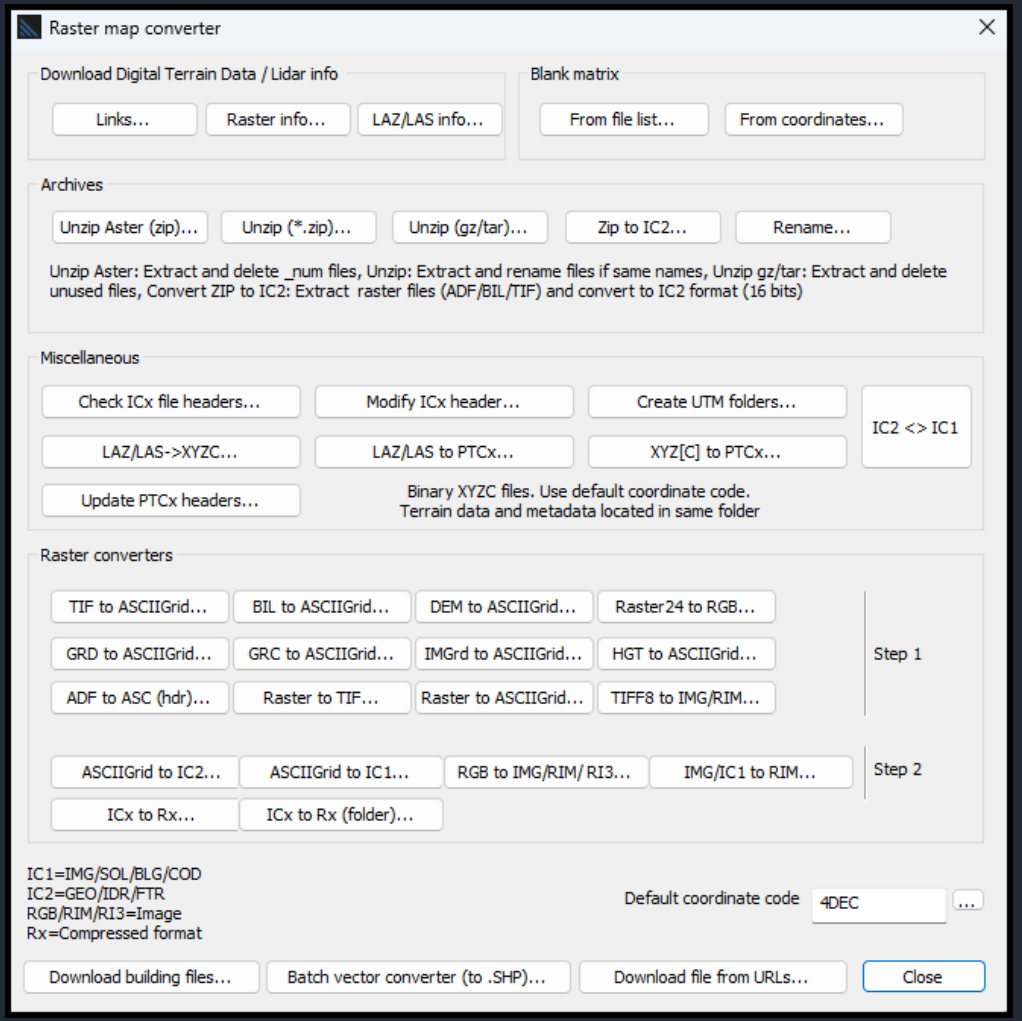
- Vertical diffraction
- Lateral diffraction (on/off)
- Angular correction (on/off)
- Subpath attenuations (obstacles in the first Fresnel zone)
- Troposcattering
- Ducting effect
- Rain and gas attenuations
- Gradient influence
- 2D reflections (on/off)
- 3D reflections (specular or Lambertian)



Advanced GIS Capabilities







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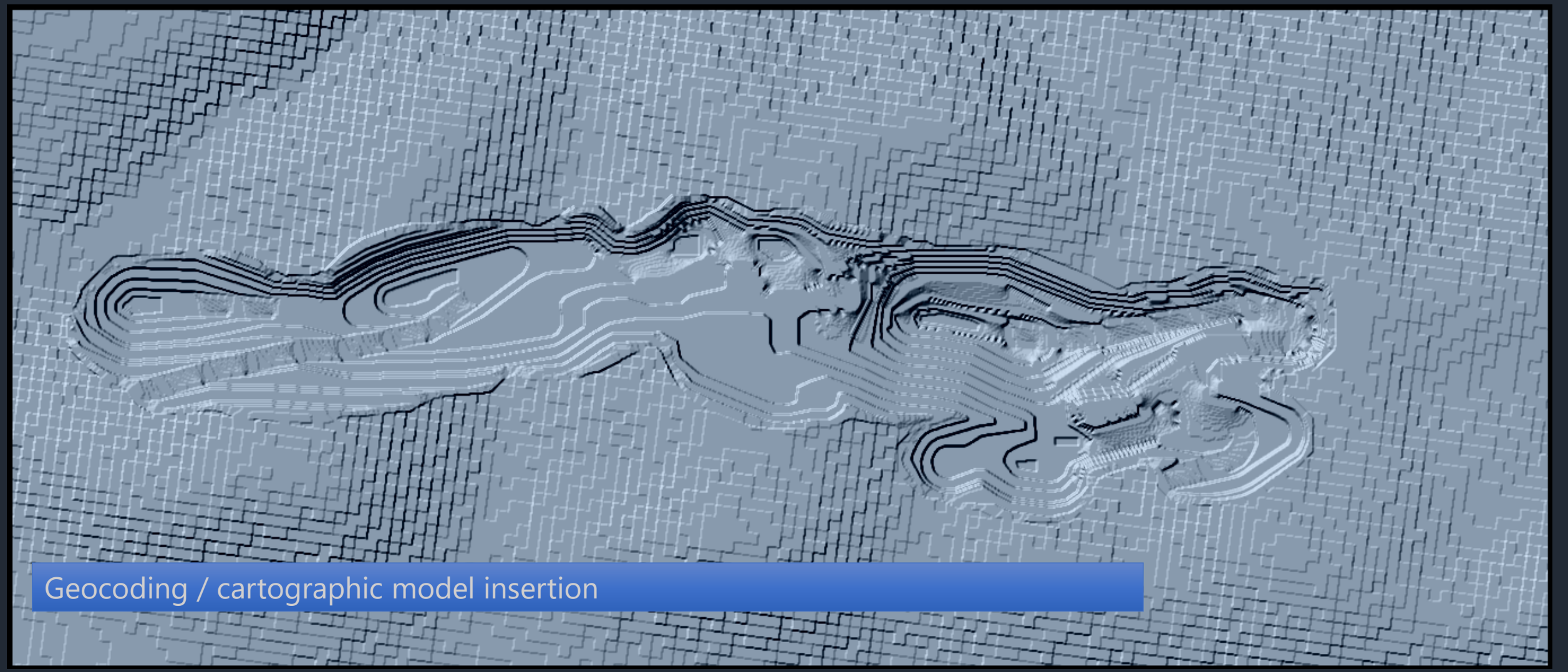
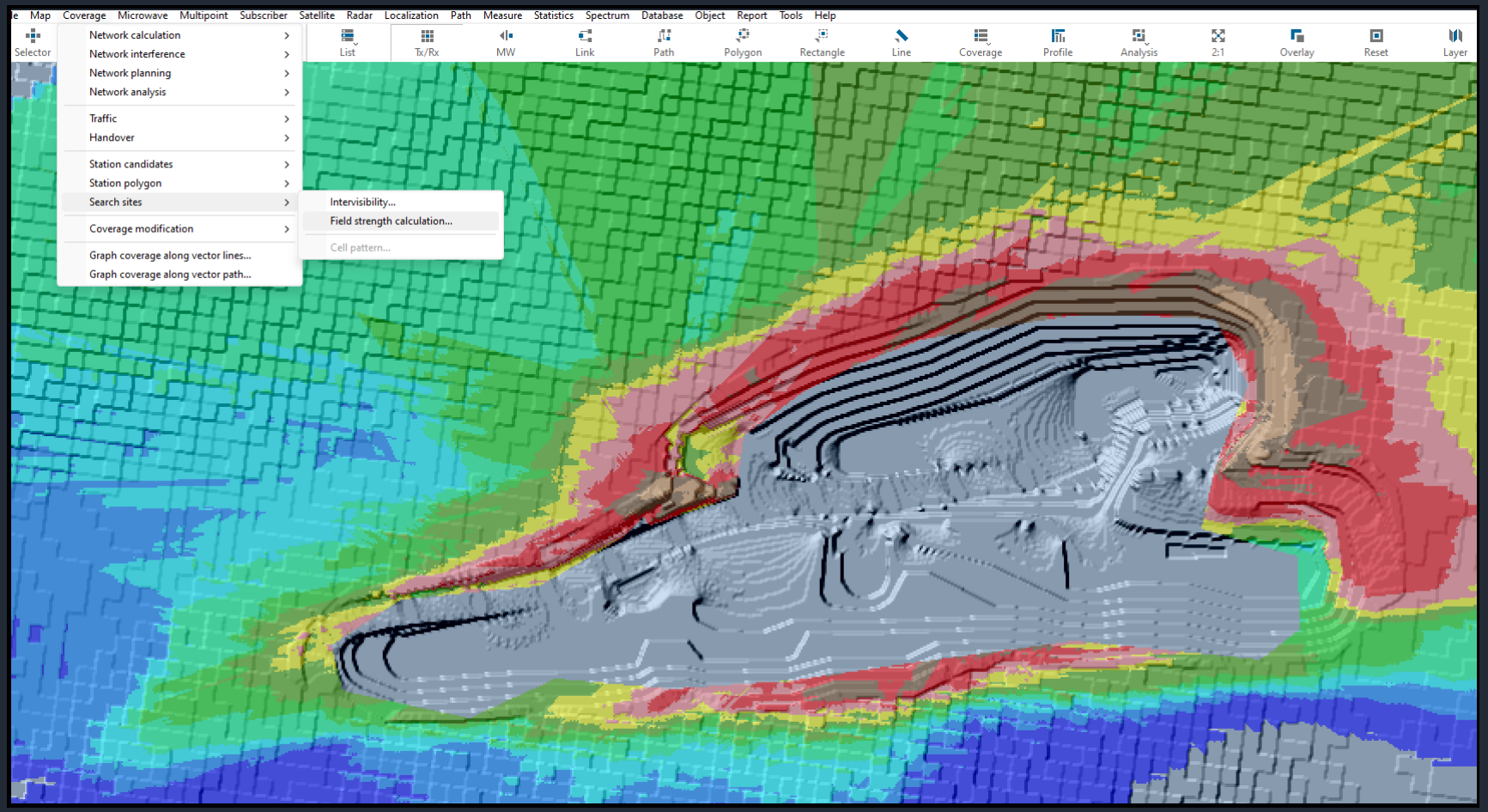


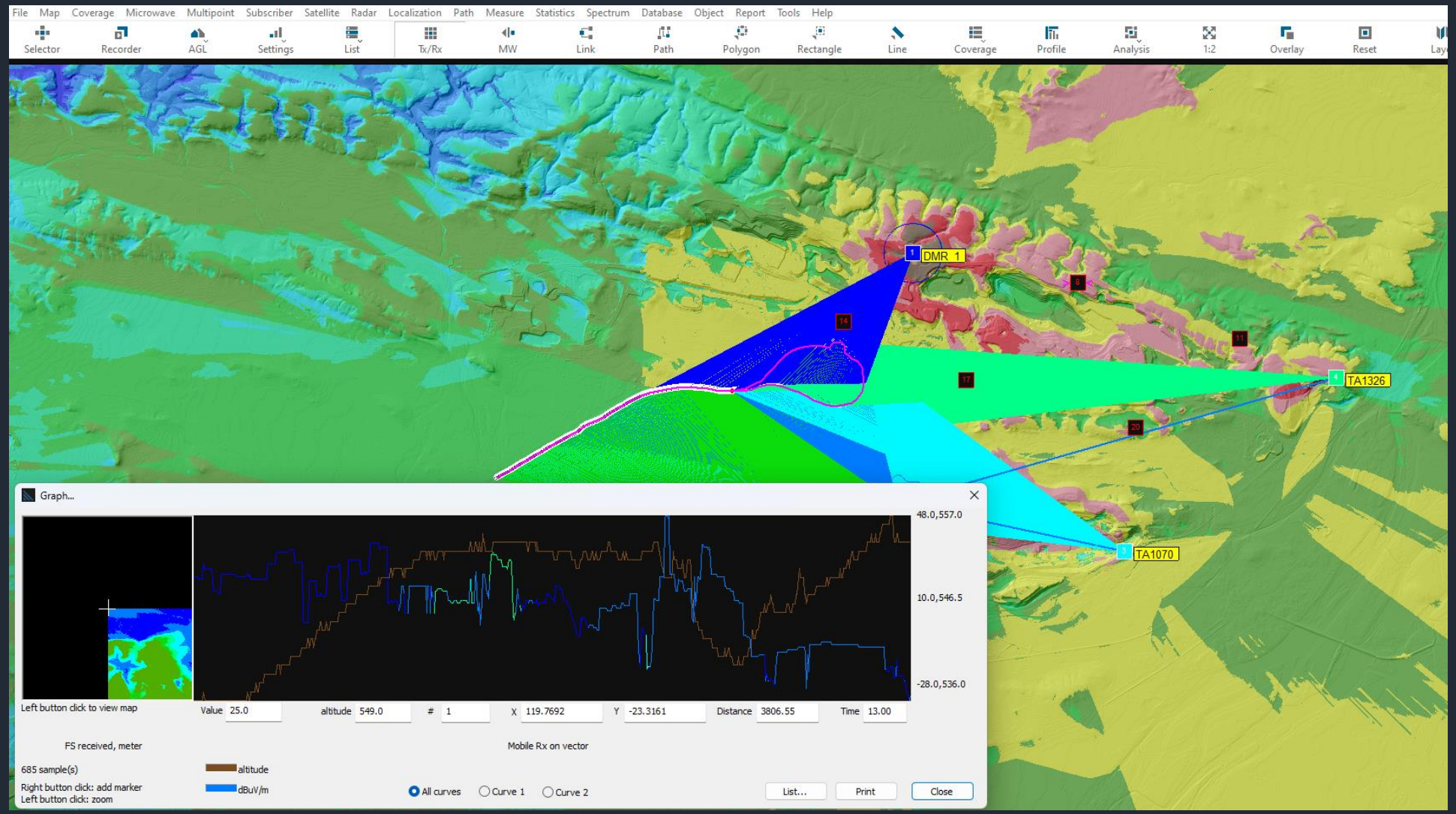
Streamlined Planning Functions

Site Planning
- Site Search
- LOS Search
- FS Search
- Intervisibility

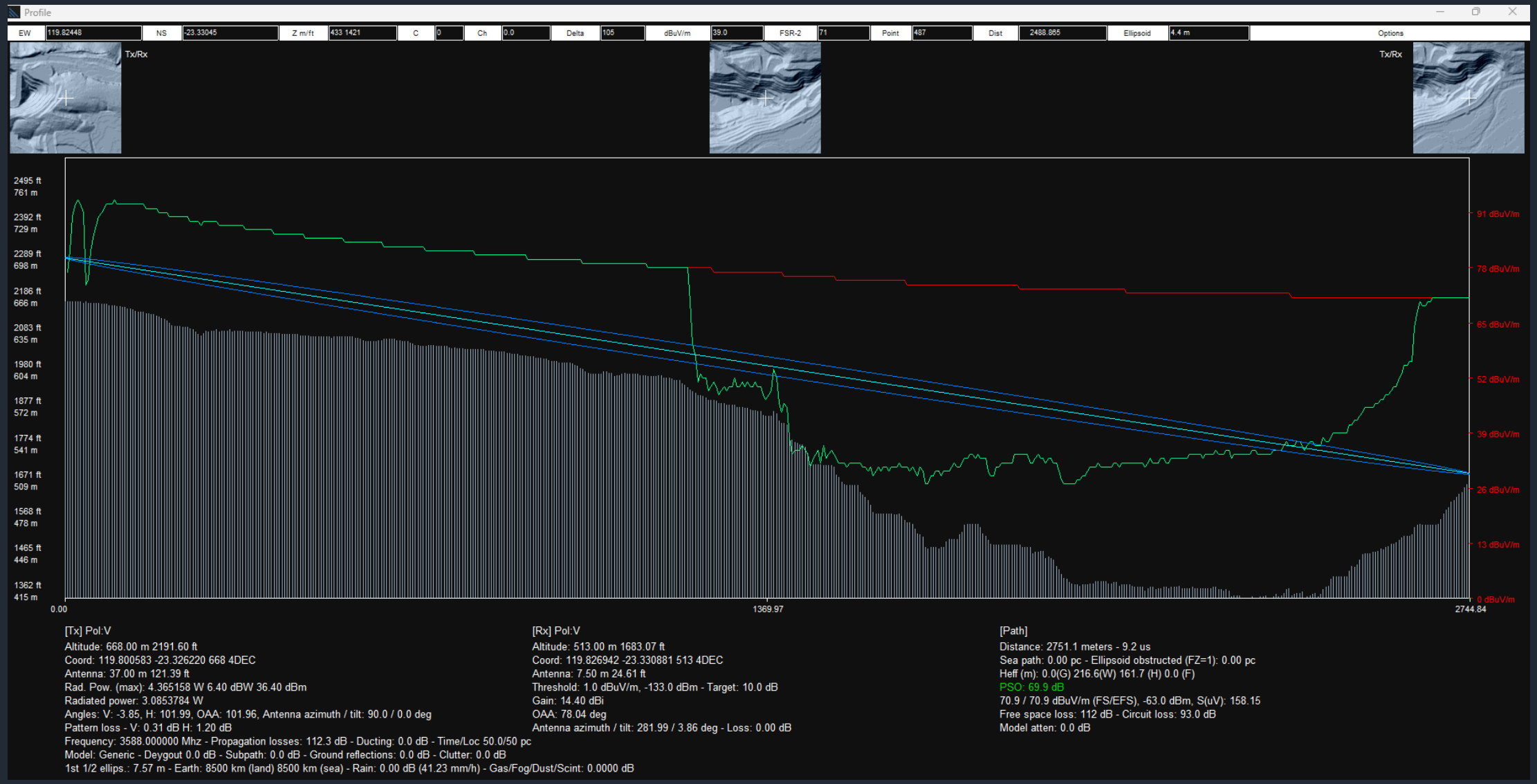
Point Planning
- Prospective
- Parenting
- Mesh/Link



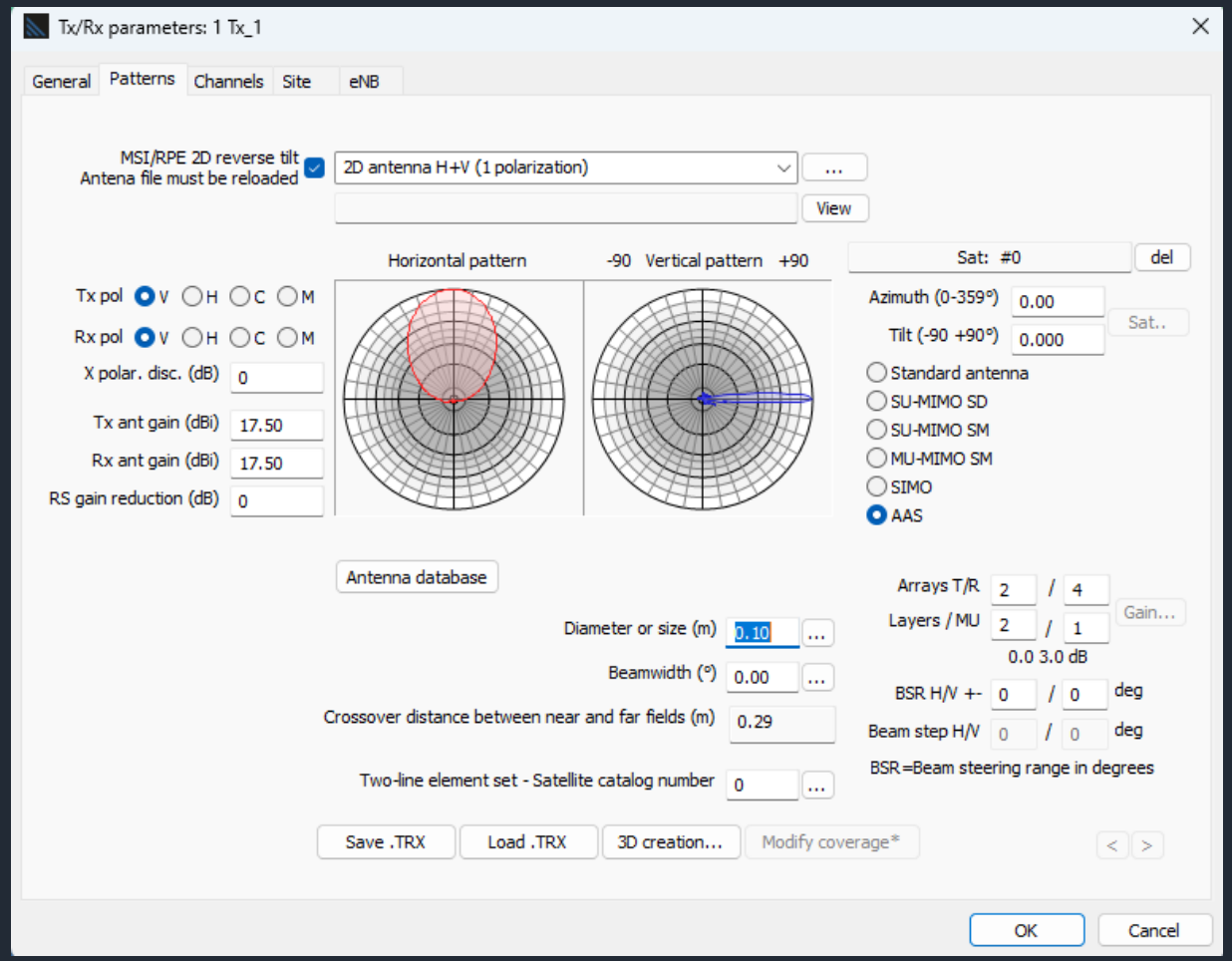
On Path Coverage Analysis

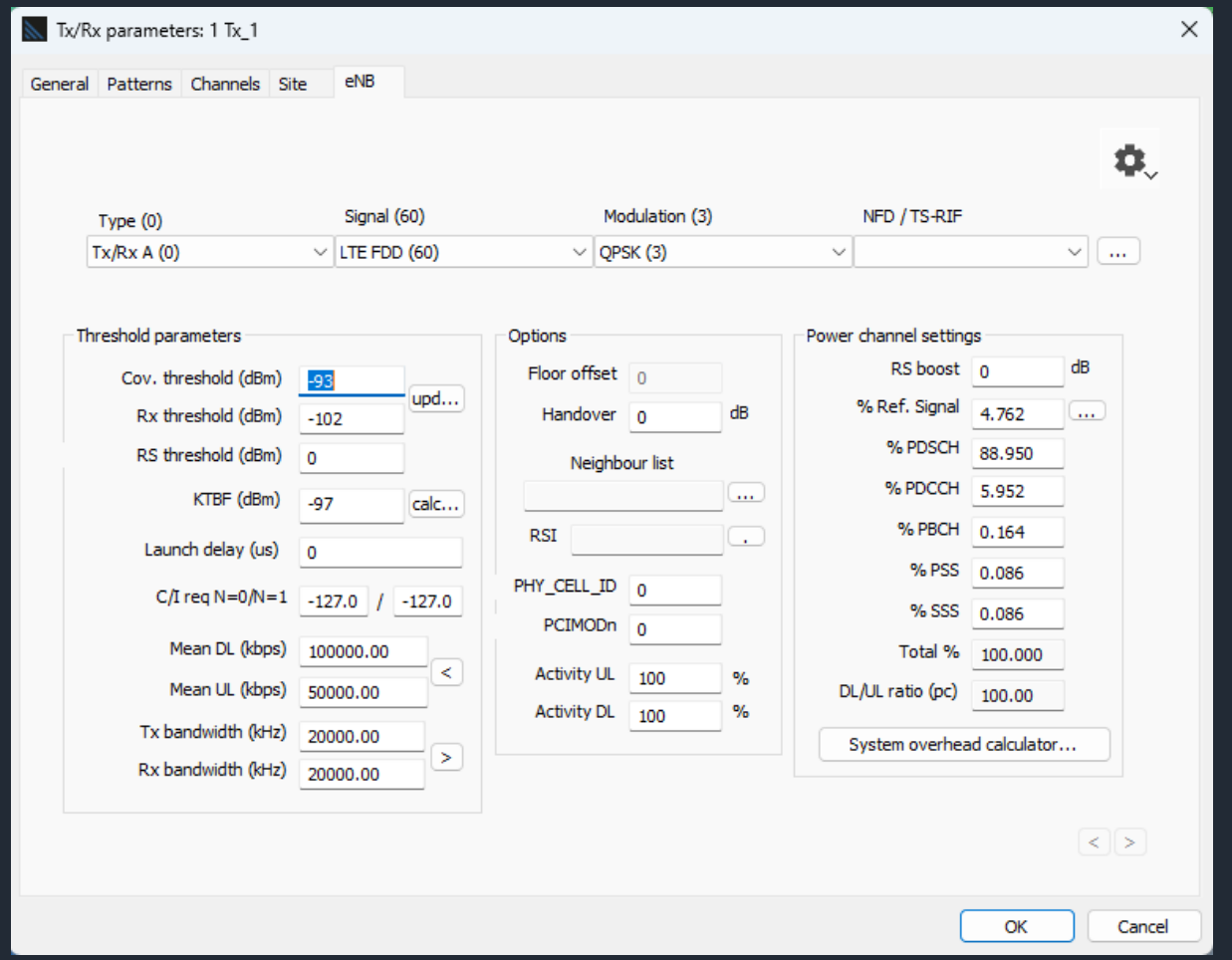


Profile / Cross-Section Analysis

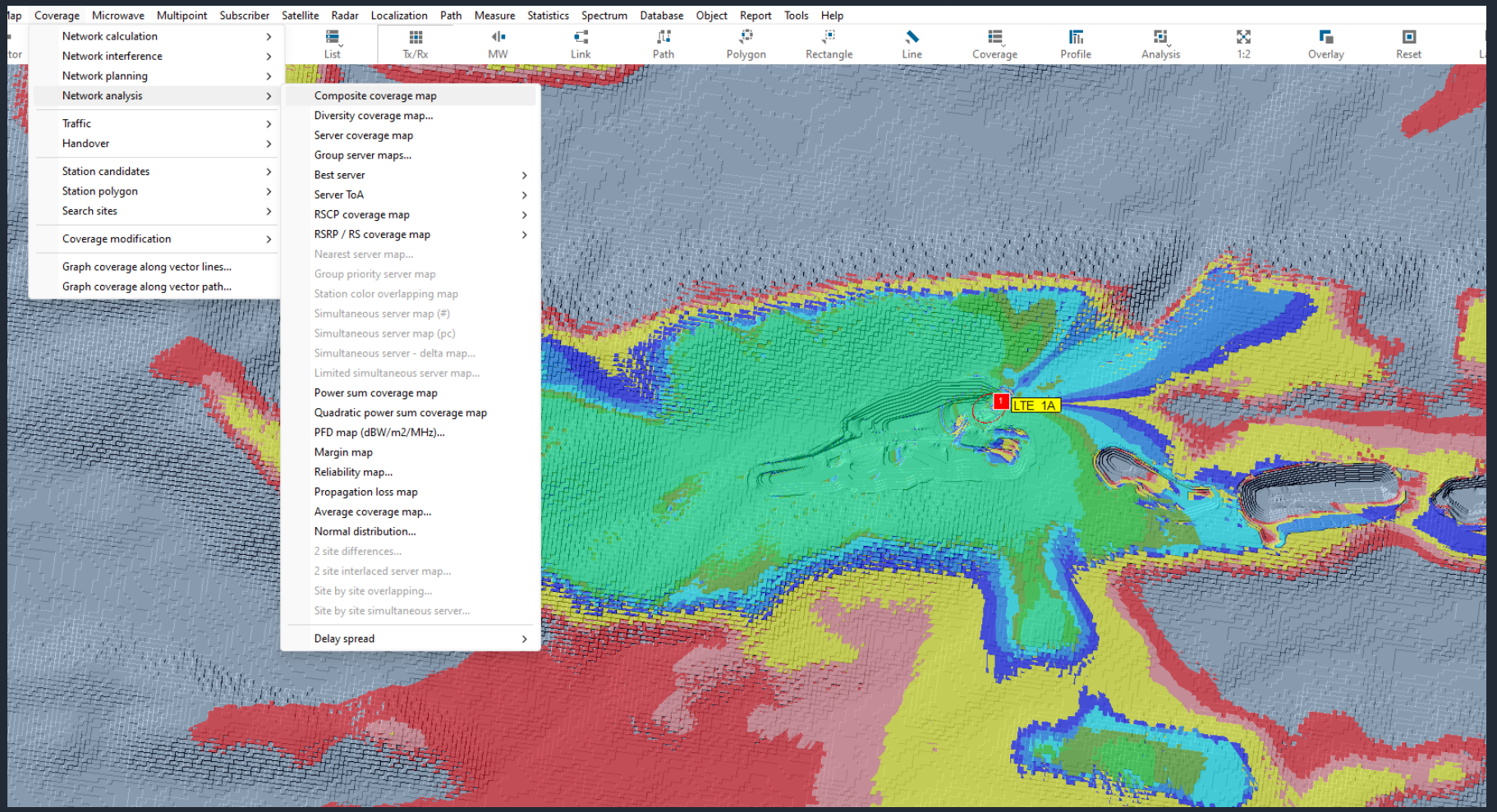


Tx/Rx Modelling





Coverage KPI's



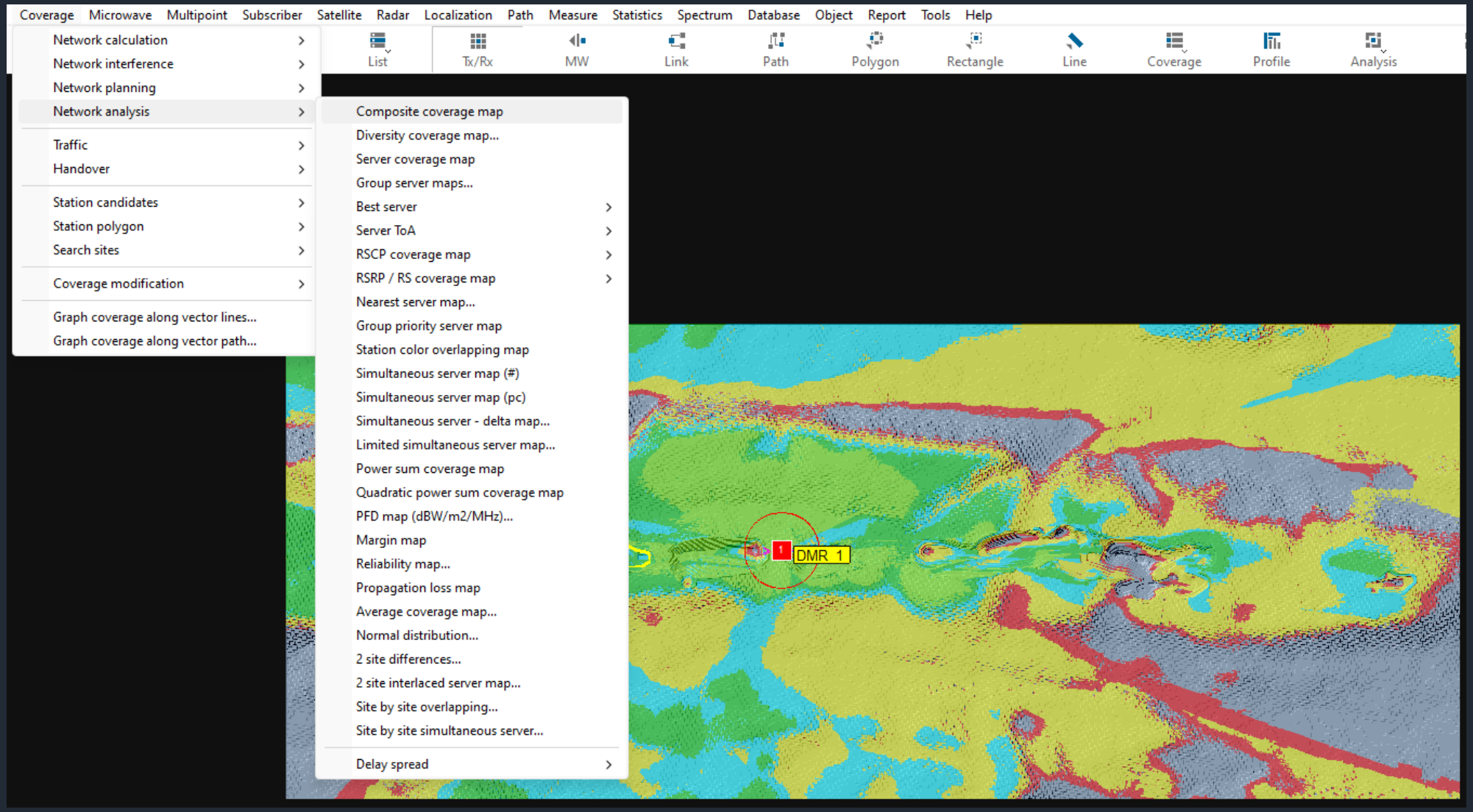
Coverage

- Composite
- Simultaneous
- Best Server (1st, 2nd, etc...)
- Overlapping

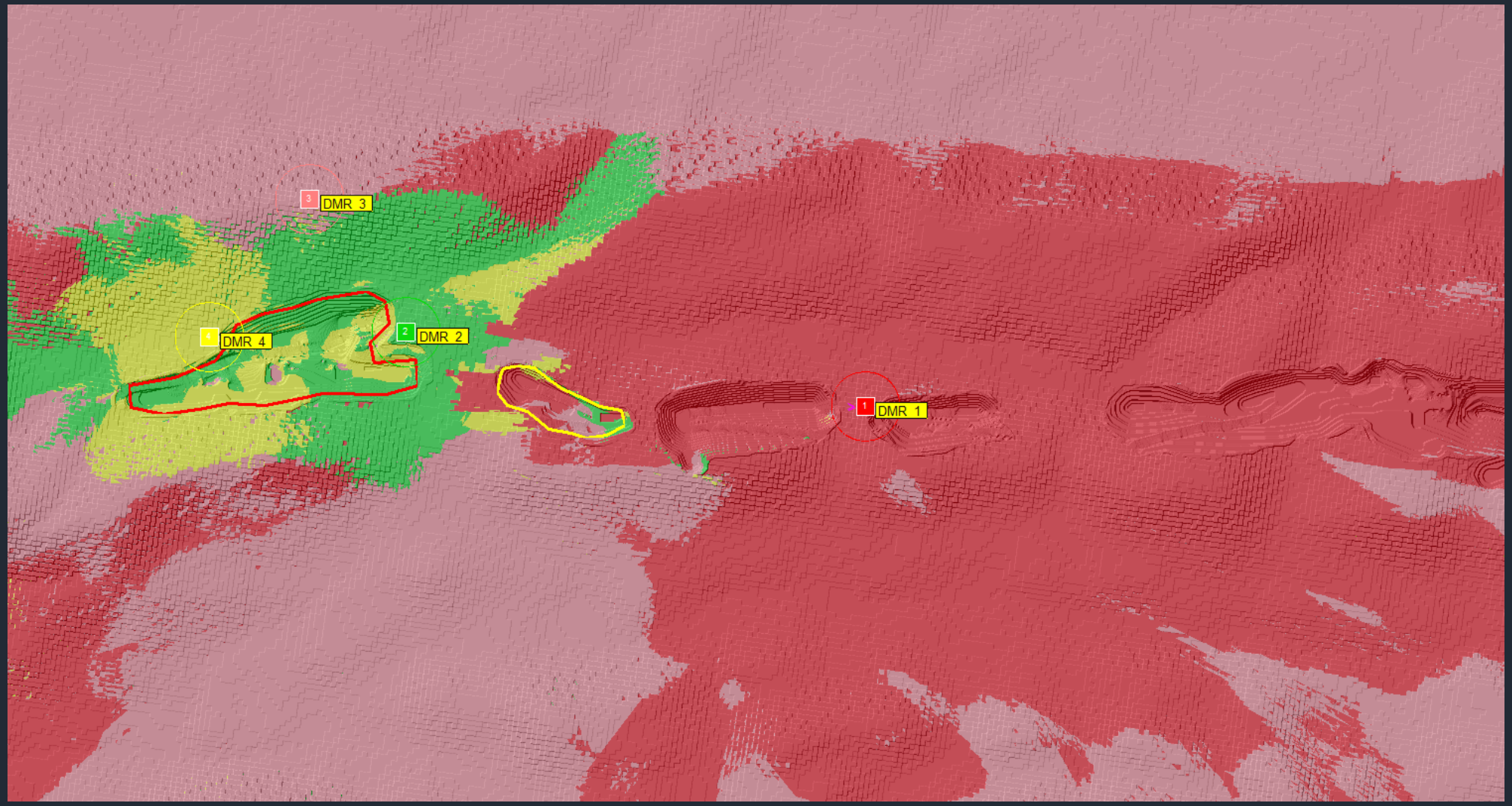
Interference

- C/I
- SNIR
- IRF
- Threshold Degradation
- Intermodulation

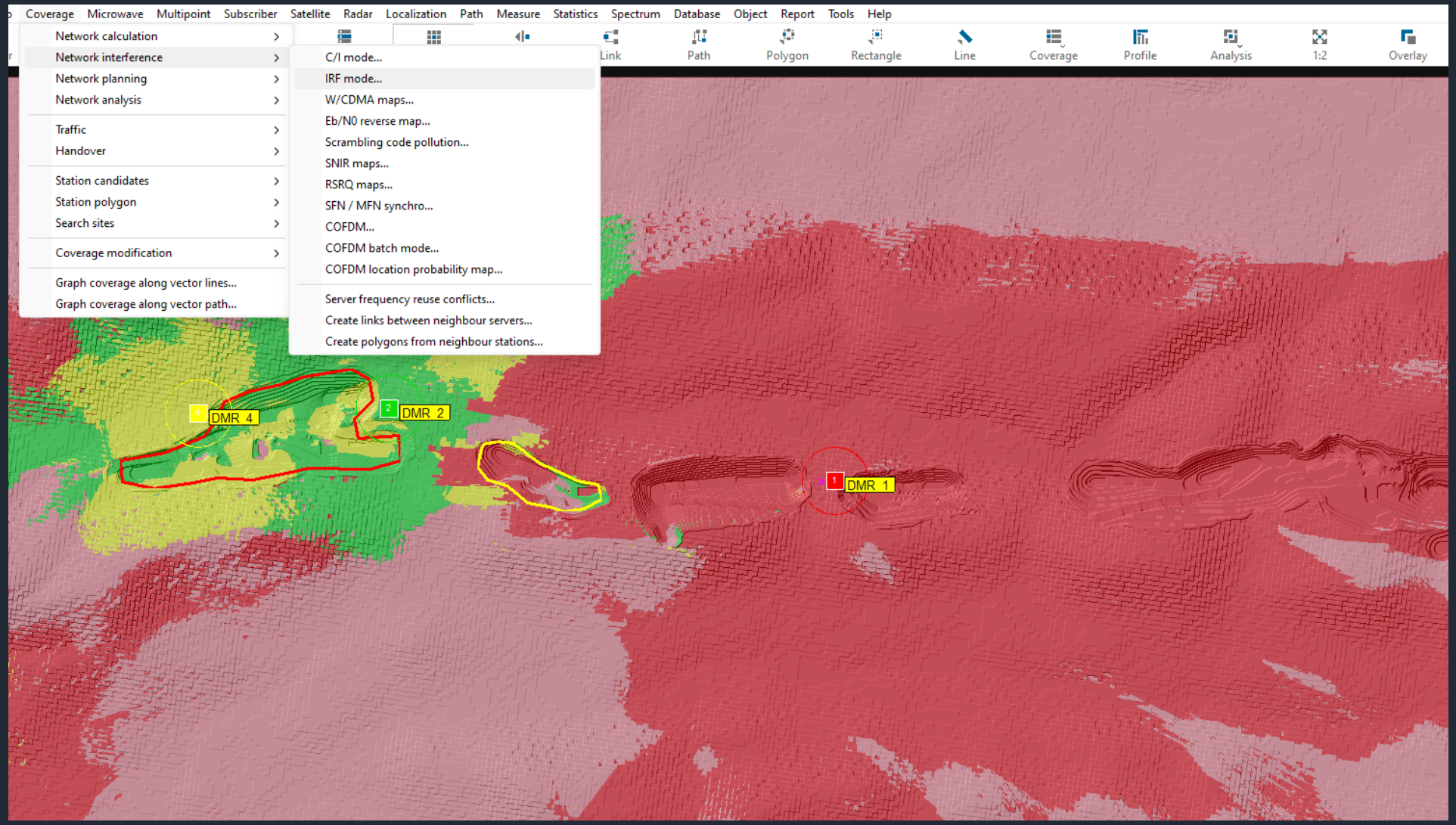
Composite Coverage (dBm)



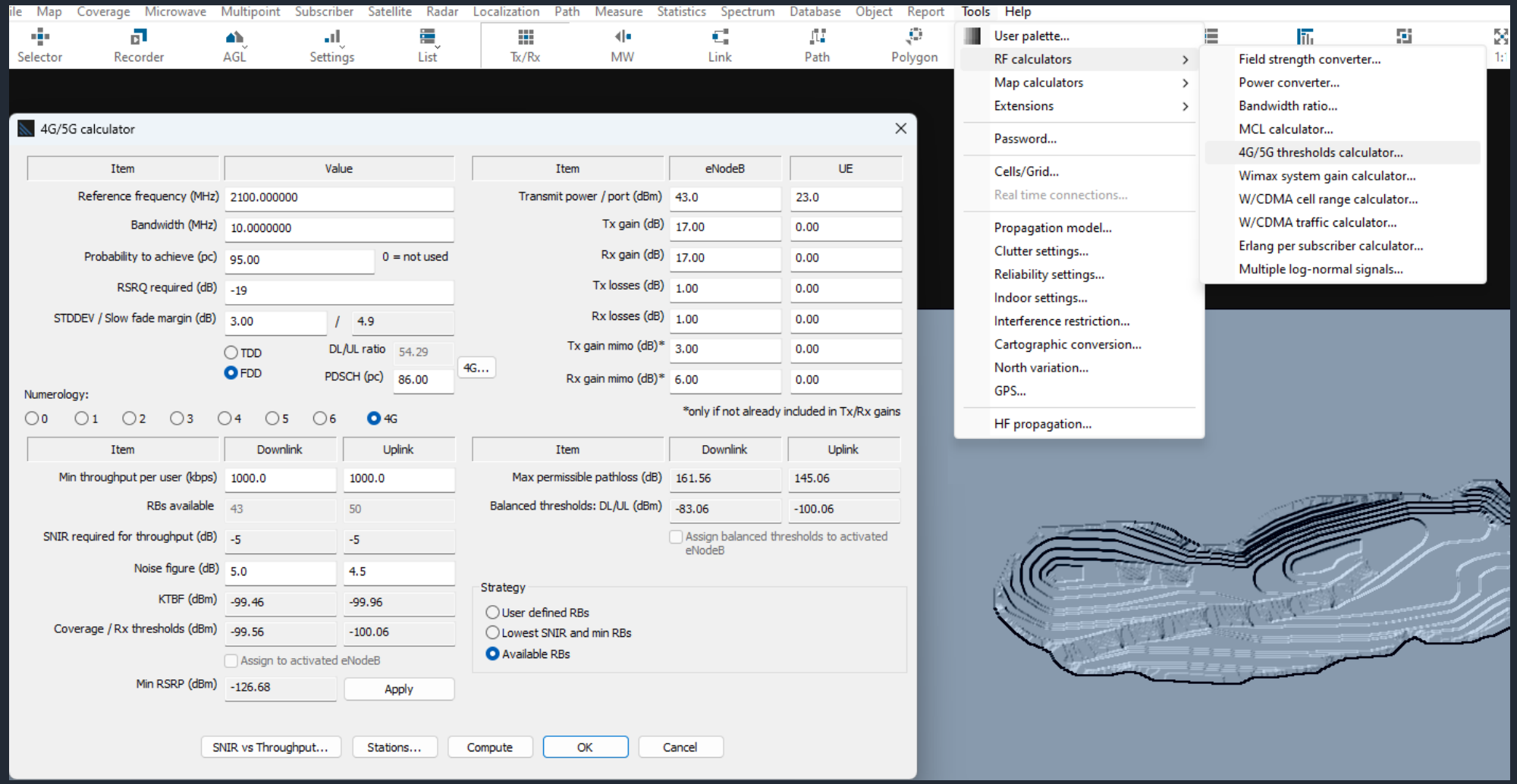
Best Server Coverage



Multiple Interference Analysis Functions



Advanced Planning Functions



RF Calculators

- Threshold
- Power converters
- MCS/MCL

Reports

- 3D Coverage
- Legend Color
- % Covered

Q & A

THANK YOU FOR YOUR ATTENTION

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30 YEARS OF EXPERIENCE

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