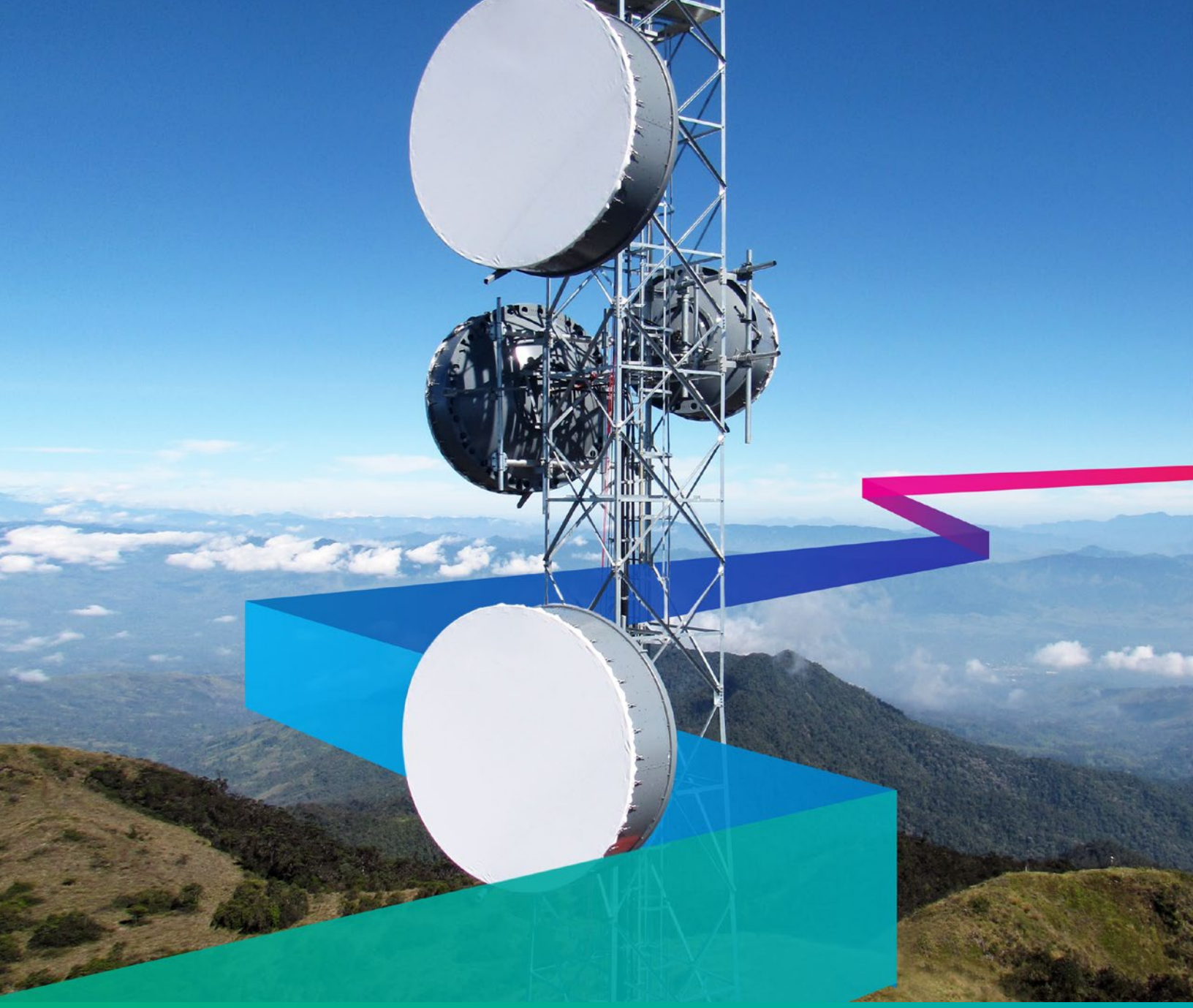


iQ·link®

The global toolkit for fixed wireless design

comsearch™
A CommScope Company

COMMSCOPE®

Featuring

- ## Collaborative, real-time, central database
  Enables numerous remote users to design concurrently. iQ·link serves customers with well over 100 concurrent users!

- ## Rapid analysis
  From bulk designs to mesh line-of-sight (LOS) and large-scale interference analysis.

- ## Frequency flexible
  Support for all microwave and fixed wireless access (FWA) frequency bands.

- ## Modern, intuitive user interface
  Logically presented information without the clutter of numerous pop-up windows.

- ## Near/non-LOS diffraction modeling
  Developed by Comsearch® principal propagation scientists.

- ## Efficient re-use of precious, limited spectrum
  Over 30 years of experience in spectrum management has been channeled into the interference analysis algorithms.

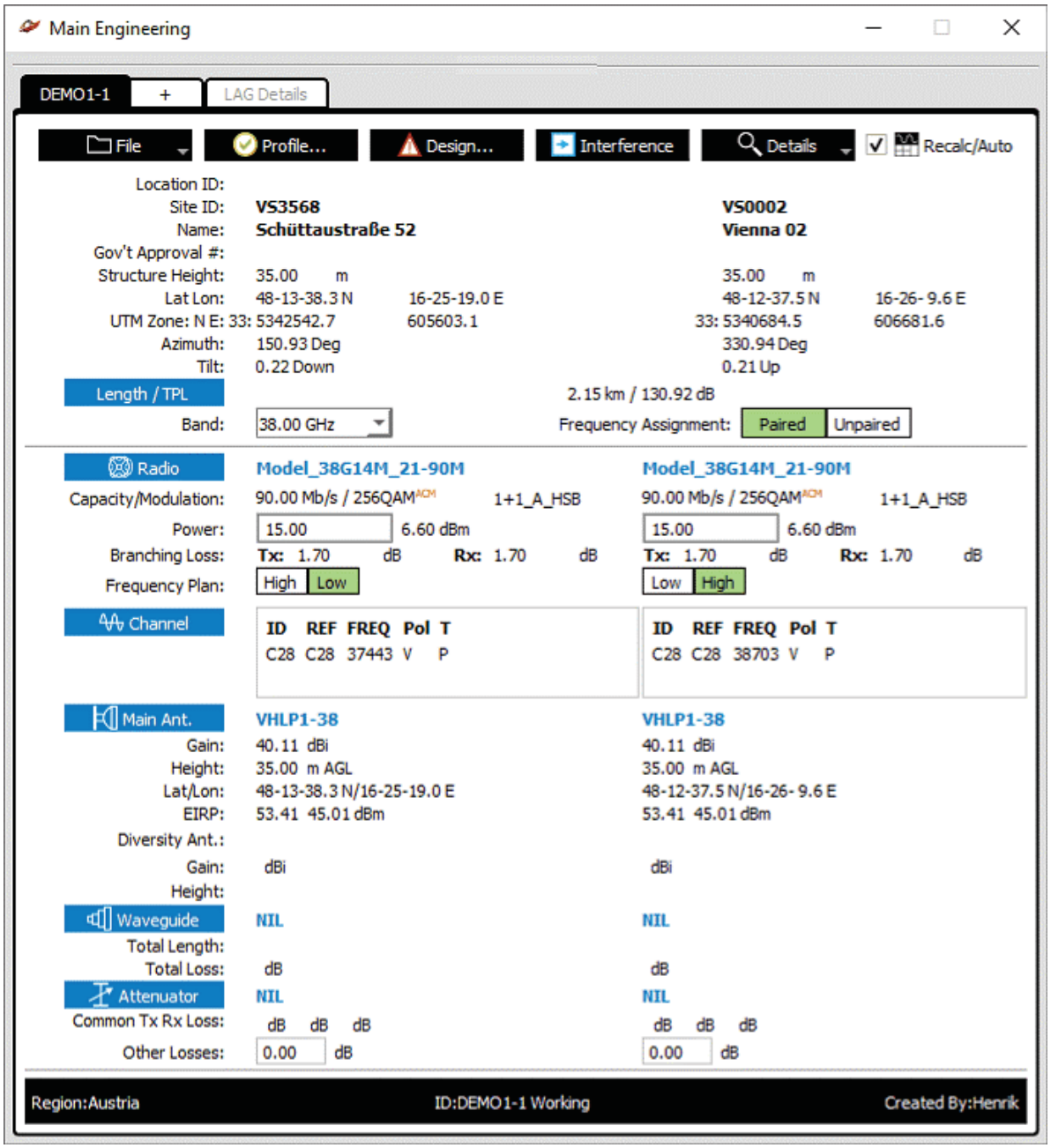
- ## Capability to handle any size network
  We have customers with databases of over 100,000 links!

- ## Complementary services
  Including custom software development, enabling you to focus on your network planning.

Quick Link Budget Design

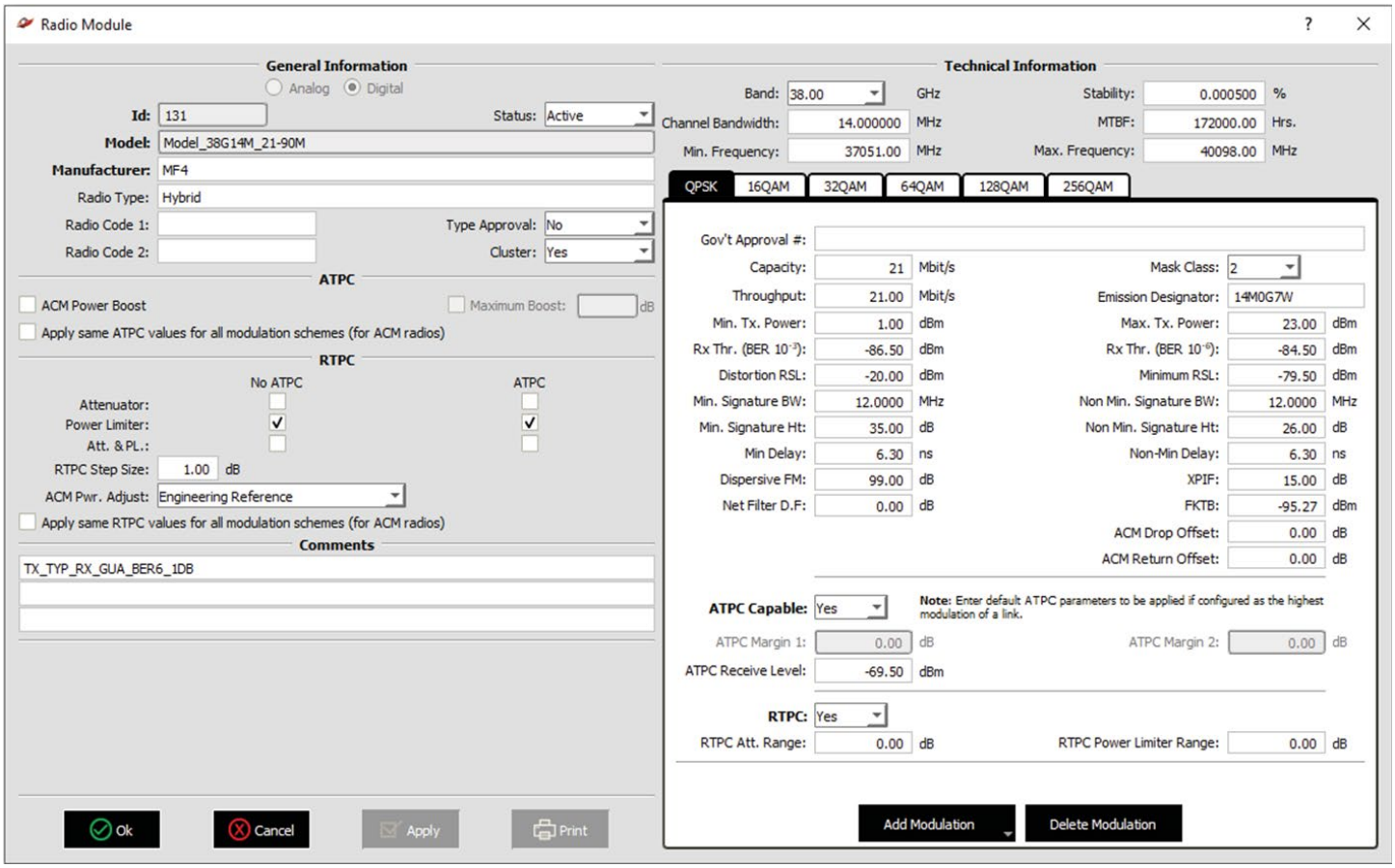
iQ·link enables rapid creation of point-to-point (PtP) or PMP links.

This engineering window provides a one-page summary of all of the necessary microwave link elements, enabling the user to build the link and make changes without the need to sort through a clutter of multiple windows.



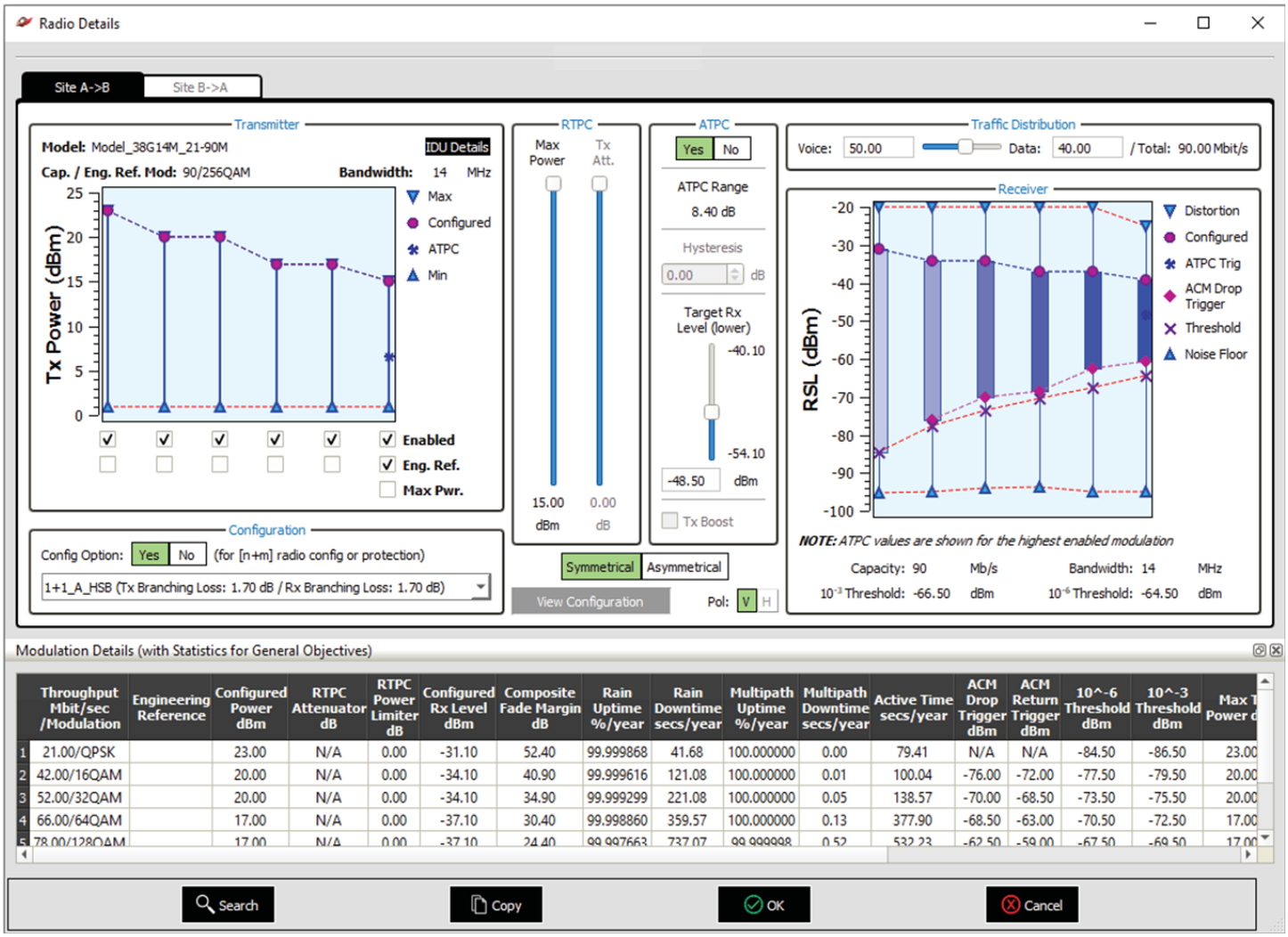
Comprehensive Support for Adaptive Modulation

The result of numerous discussions and meetings with major operators and equipment manufacturers, iQ·link offers the most comprehensive functionality to support the design of microwave links and FWA sites with adaptive modulation radios.



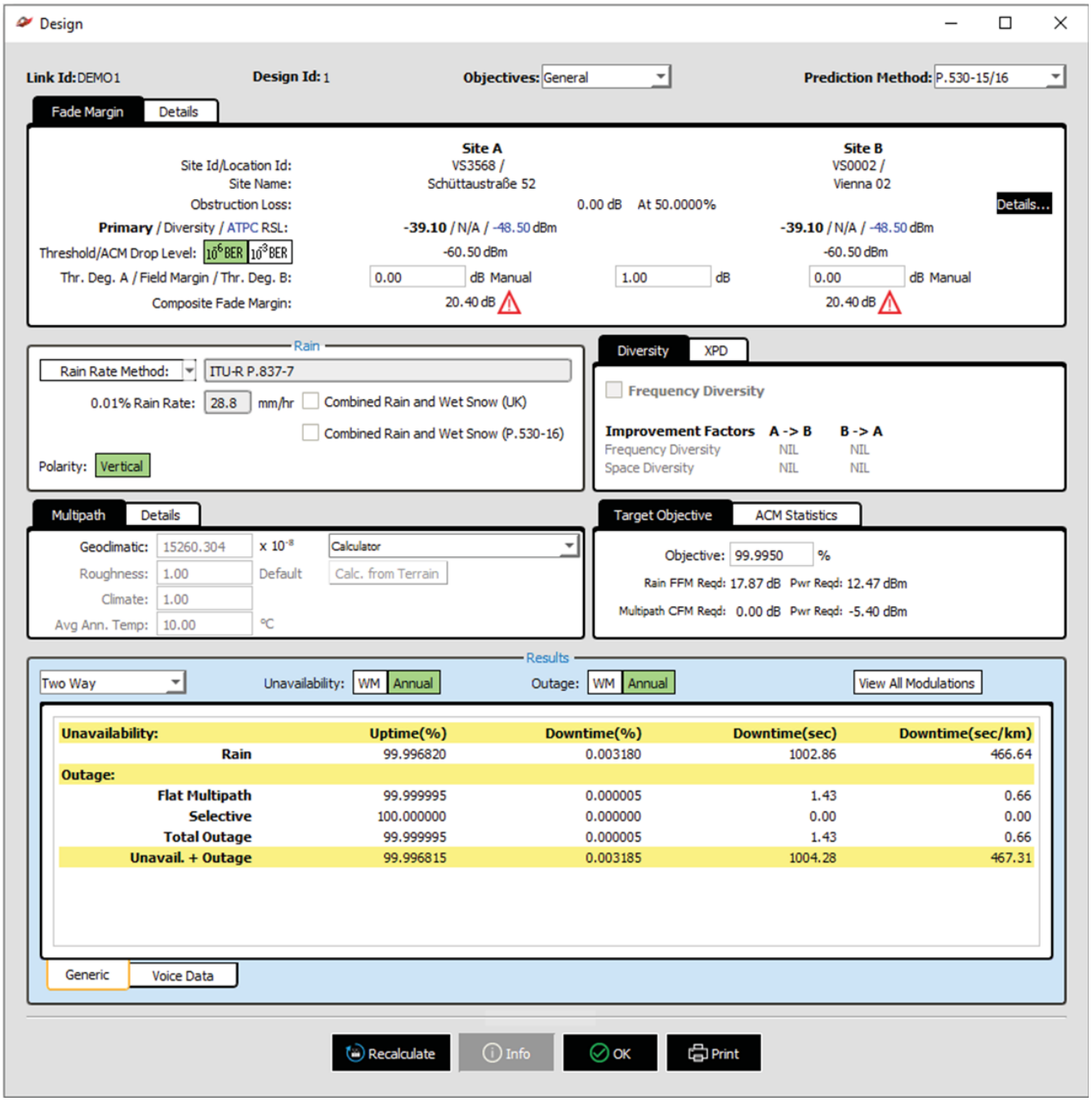
Radio State Analysis Graphics

An innovative graphical user interface presents modern IP radio's options to the designer in the most intuitive way possible.



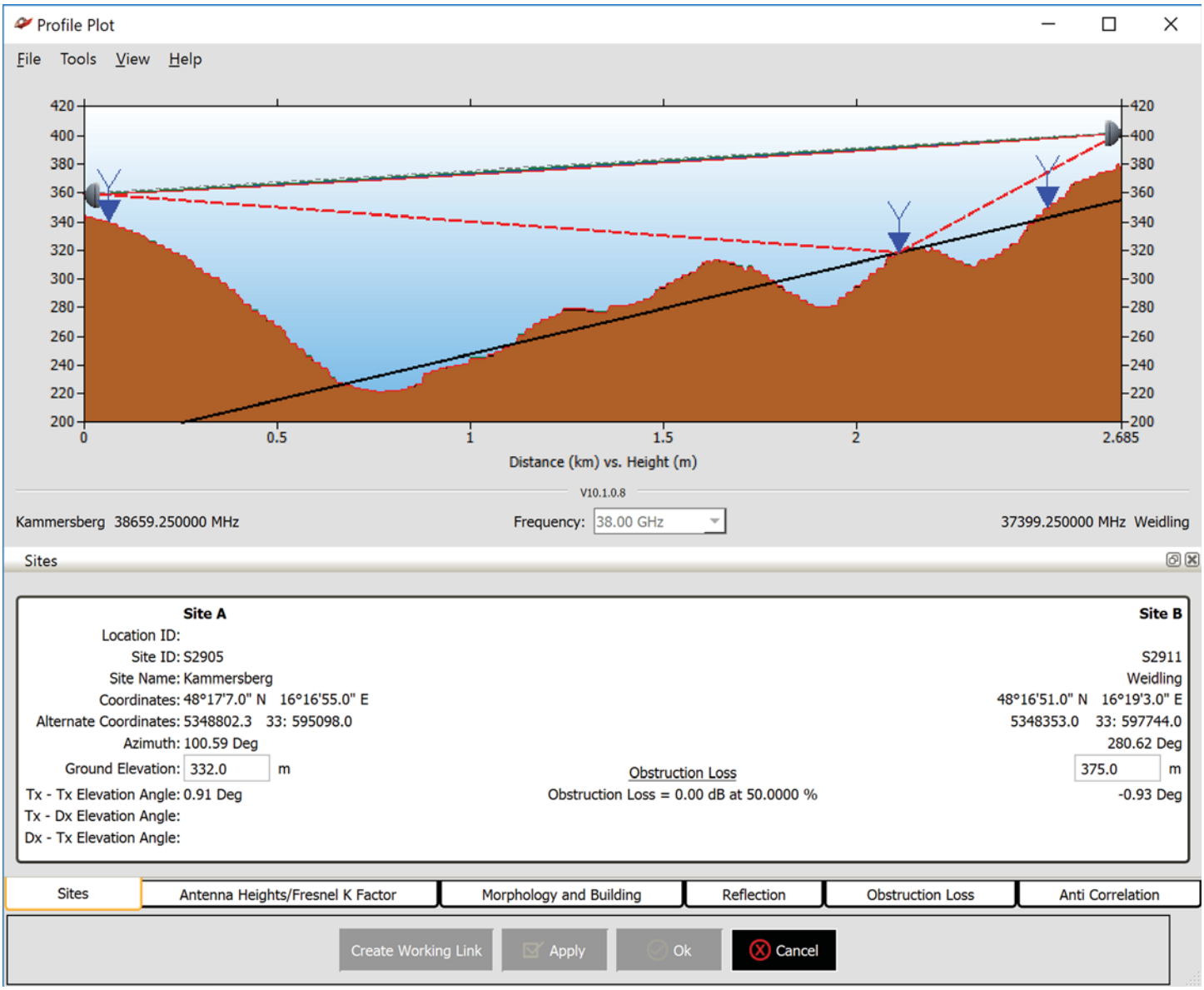
Availability and Performance Assessment

iQ·link performs link availability and performance calculations using industry standard propagation and objective models including Vigants, Glauner, ITU-R P.530 (revisions 6 through 17) ITU-T G.821 and G.826, Crane, ITU-R P.837-3, ITU-R P.837-1, ITU-R P.837-3, ITU-R P.837-5/6, ITU-R P.837-7.



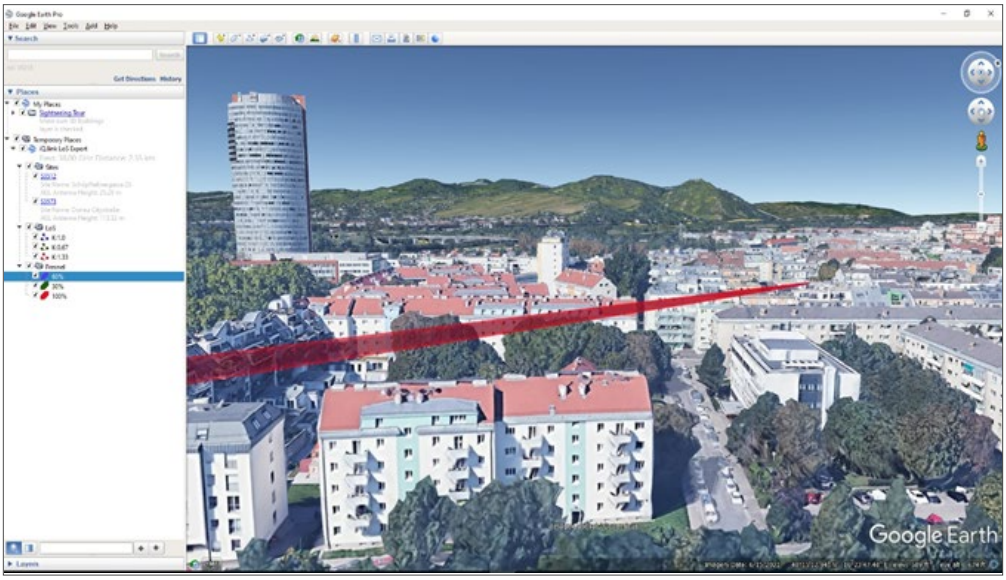
Detailed Path Profile Analysis

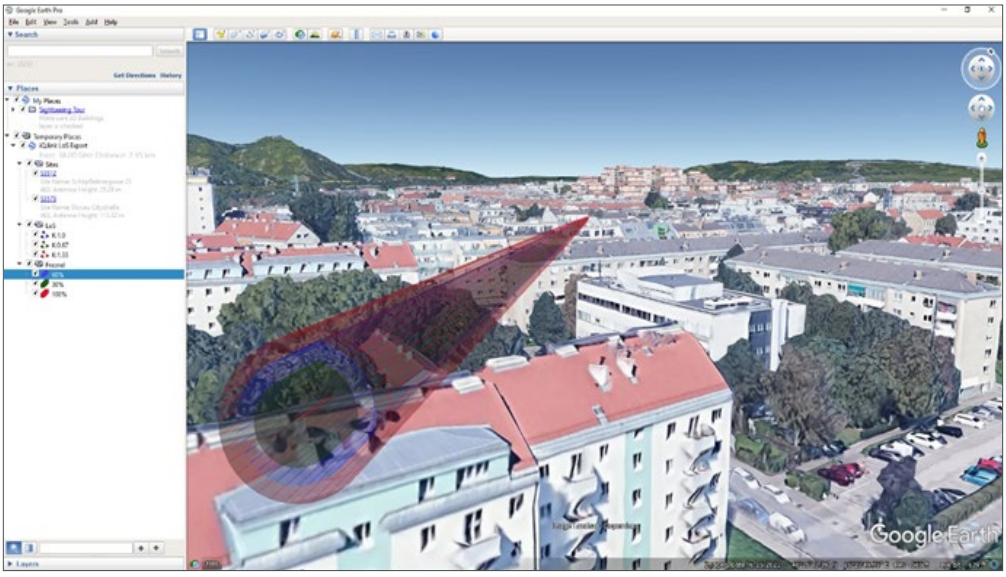
iQ·link's Profile Module generates a terrain profile between two sites to determine the LOS characteristics of the proposed link. The terrain profile can also incorporate clutter data such as buildings and vegetation.



Detailed Path Profile Analysis

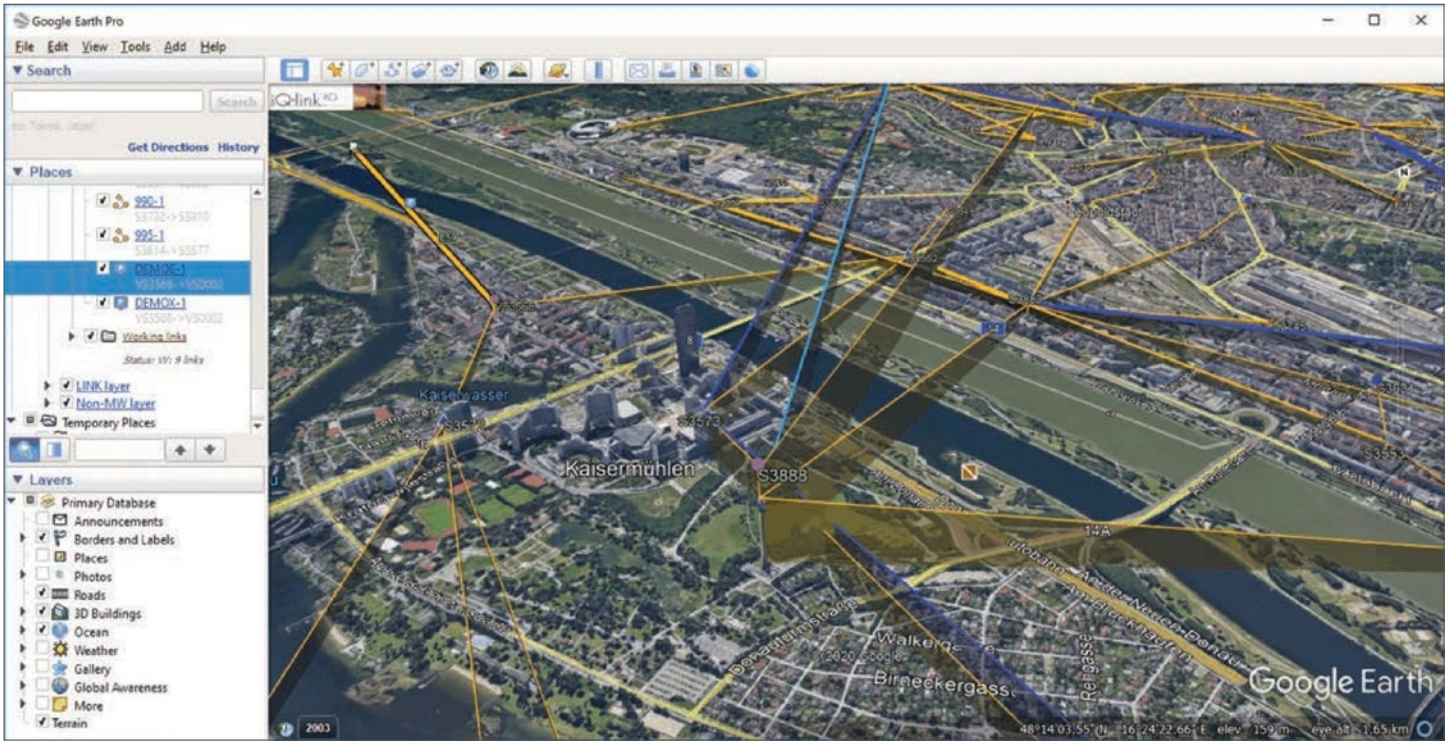
The Path Profile can be exported in Google Earth's KMZ format, showing the 3D Fresnel Zone with layers corresponding to the Fresnel Zone percentage, allowing for an accurate visualization of the effect of an obstruction in the path.





Live Integration with Google Earth™

iQ·link offers a direct LIVE integration with Google Earth™. As links are planned and saved in iQ·link, they automatically appear in Google Earth! Anyone in your organization—from engineers to the marketing department—can have a detailed view into the network.

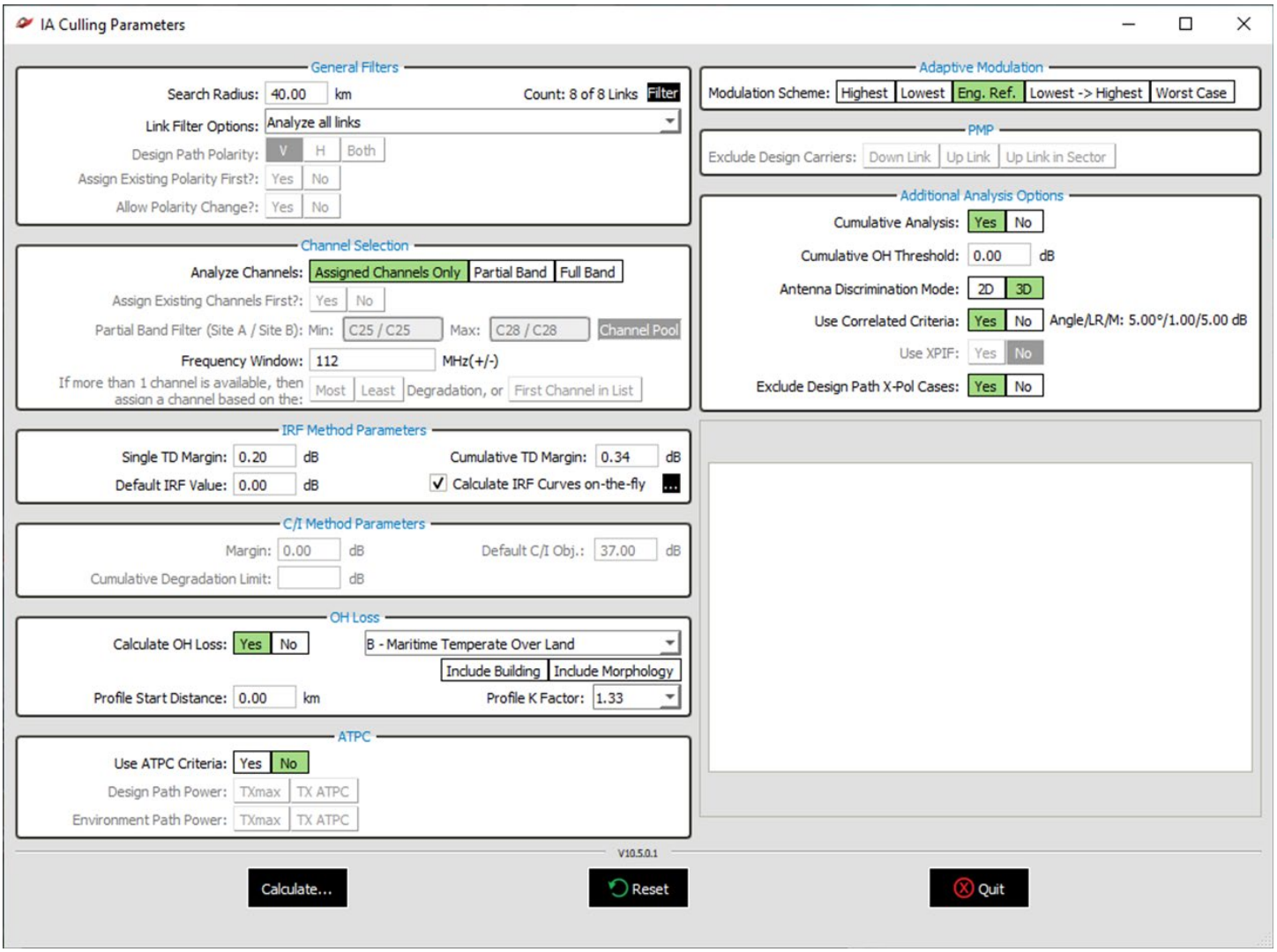


Interference Analysis

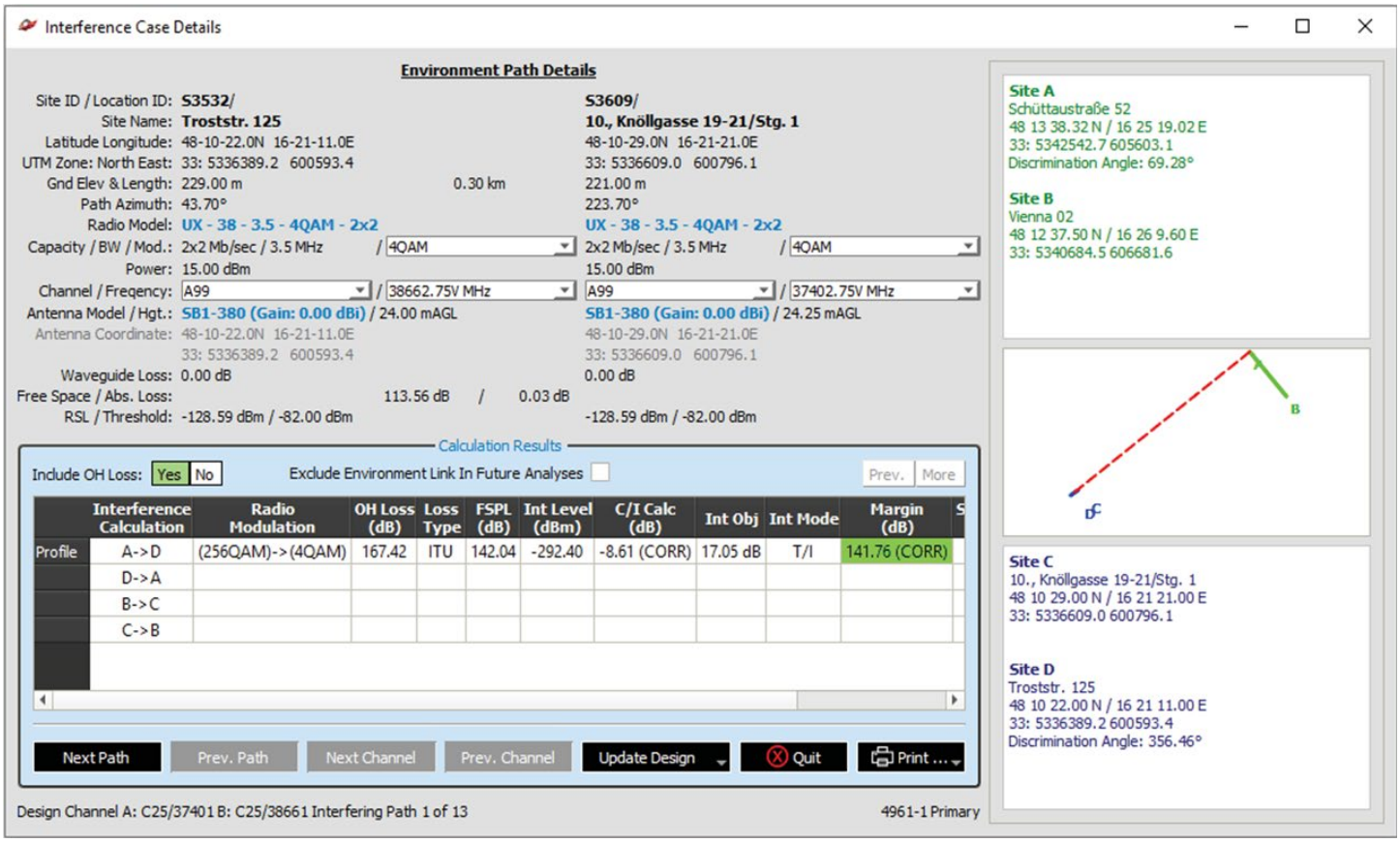
iQ·link's detailed, efficient interference analysis calculates the interference potential from a proposed new link against the database of all previously stored primary designs and confirmed links. Both PtP and PMP systems are considered simultaneously.

Other options include the ability to utilize 3D antenna patterns when available, predict diffraction loss along interference paths due to obstacles and relax interference objectives due to correlated fading in bands where rain is the primary fading mechanism.

Also offered is automatic frequency planning (AFP), enabling rapid auto-assignment of interference-free channels to numerous links in bulk. This feature also incorporates a sophisticated high/low conflict resolving algorithm.

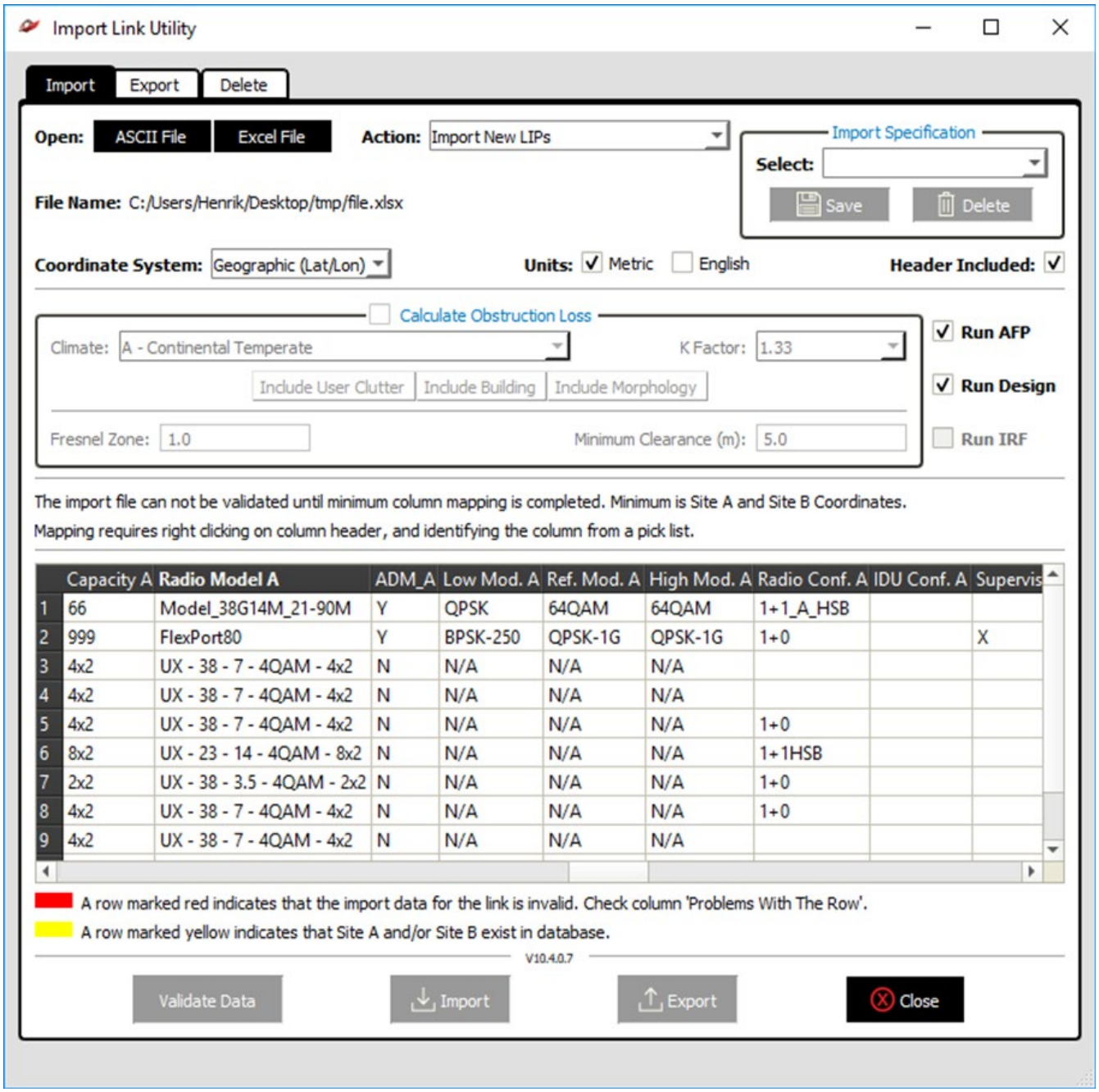


Interference Analysis



Bulk Link Design

iQ·link provides the user with the tools to perform Bulk Link designs, Obstruction Loss calculations, Interference Analysis, and Automatic Frequency Planning (AFP) by modifying the Link configuration in an Excel or delimited text template and then importing them into iQ·link. This streamlined design workflow can translate into great savings in both time and resources.

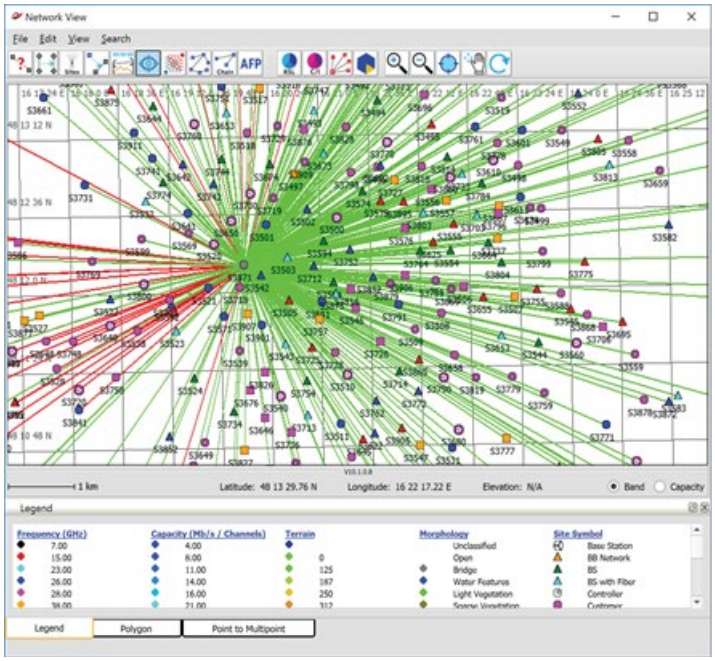


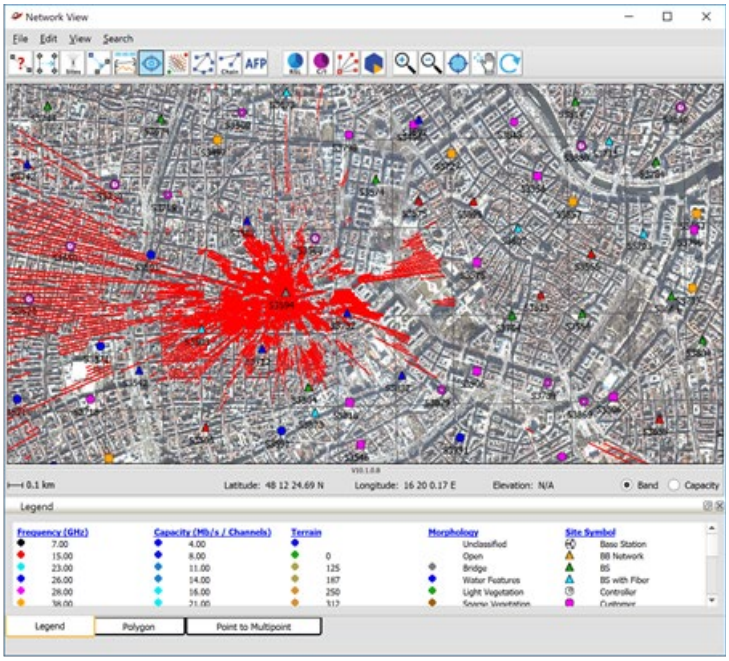
	Capacity A	Radio Model A	ADM_A	Low Mod. A	Ref. Mod. A	High Mod. A	Radio Conf. A	IDU Conf. A	Supervis
1	66	Model_38G14M_21-90M	Y	QPSK	64QAM	64QAM	1+1_A_HSB		
2	999	FlexPort80	Y	BPSK-250	QPSK-1G	QPSK-1G	1+0		X
3	4x2	UX - 38 - 7 - 4QAM - 4x2	N	N/A	N/A	N/A			
4	4x2	UX - 38 - 7 - 4QAM - 4x2	N	N/A	N/A	N/A			
5	4x2	UX - 38 - 7 - 4QAM - 4x2	N	N/A	N/A	N/A	1+0		
6	8x2	UX - 23 - 14 - 4QAM - 8x2	N	N/A	N/A	N/A	1+1HSB		
7	2x2	UX - 38 - 3.5 - 4QAM - 2x2	N	N/A	N/A	N/A	1+0		
8	4x2	UX - 38 - 7 - 4QAM - 4x2	N	N/A	N/A	N/A	1+0		
9	4x2	UX - 38 - 7 - 4QAM - 4x2	N	N/A	N/A	N/A			

Comprehensive Network View with Rapid LOS Calculations

Users have the ability to visualize environmental factors such as terrain, morphology, and clutter layers, as well as buildings, maps, aerial imagery, vector data and other layers.

Several engineering functions can be accomplished directly from this utility. This includes quick and detailed link profiles, rapid LOS analysis and reporting, site creation, chain reliability calculations and coverage, and carrier-to-interference (C/I) analysis for point-to-multipoint (PMP) /FWA systems.



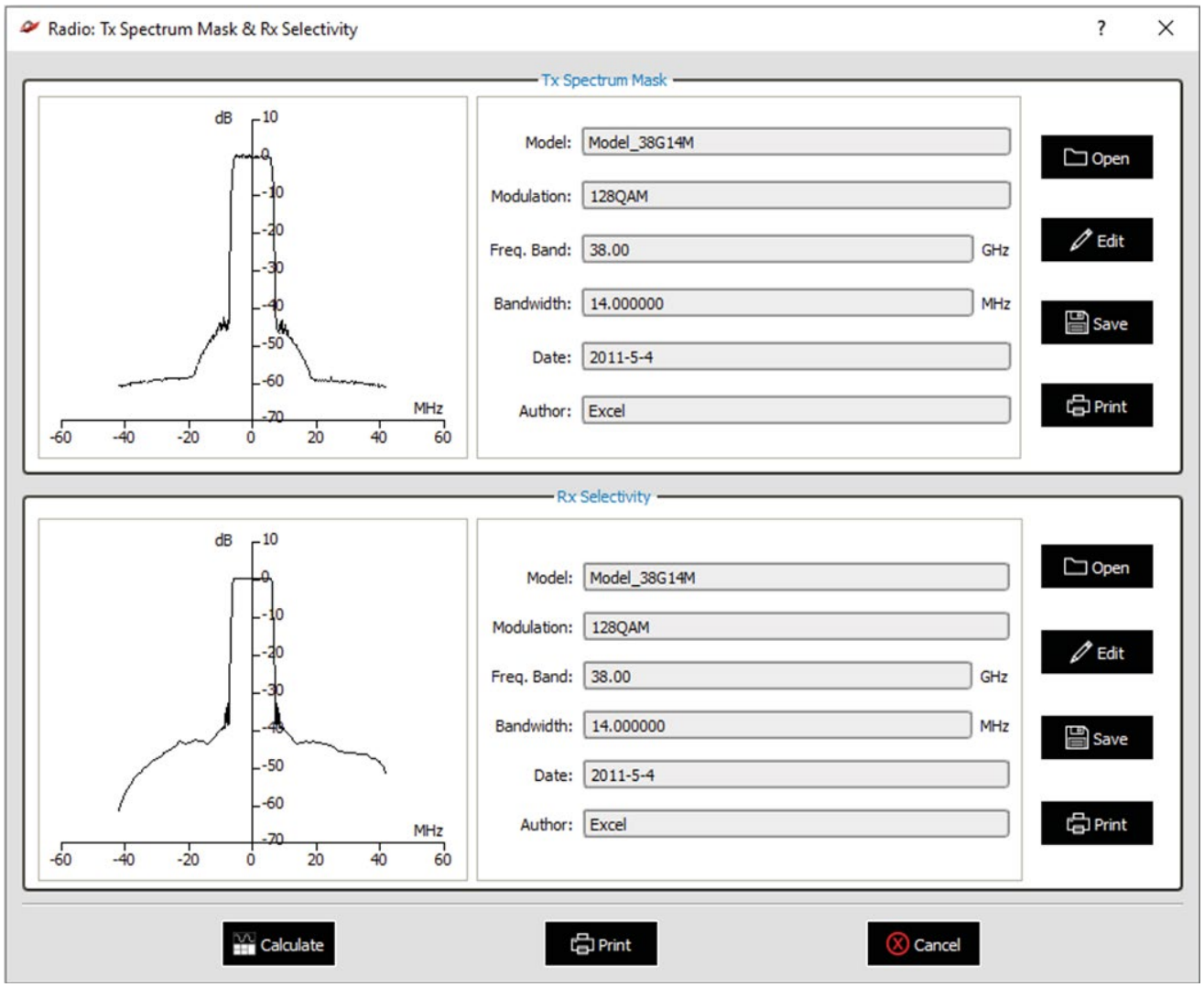


Transmit (Tx) Spectrum and Receive (Rx) Selectivity

Detailed interference objectives between any combination of interfering and victim radios are quickly derived using Tx spectrum masks and Rx selectivity curves provided by the manufacturer or European Telecommunications Standards Institute (ETSI) defaults.

The interference objective curves can be calculated on-the-fly, this results in a very fast interference analysis with no impact on performance or on the quality of the results.

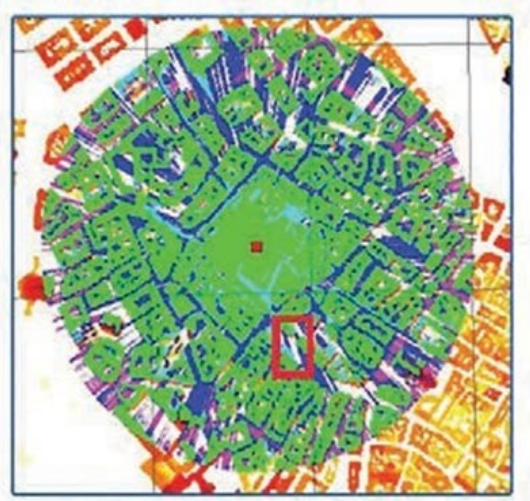
Since the interference objectives matrix no longer needs to be precalculated and saved to the database, installation times for new radio models is greatly reduced. This is especially important in networks with a large number of radio models.



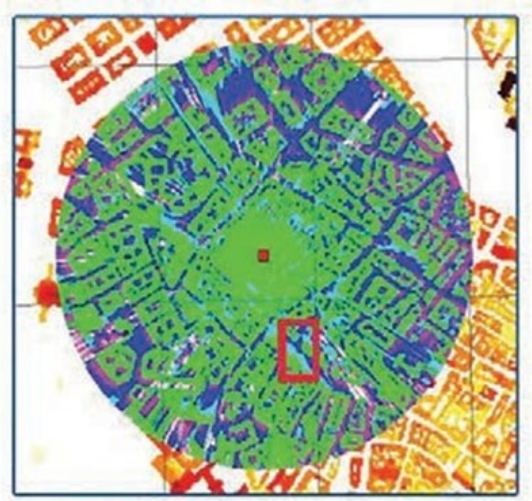
Near and Non-line-of-sight (nLOS) Propagation model

Backhaul in a dense urban environment with small cells presents challenges traditional LOS microwave cannot always address. Radio frequency (RF) studies have shown that nLOS microwave can be a viable solution.

Comparison of these two plots (below) shows that there are many areas where the calculated received signal level (RSL) is improved using the nLOS algorithms. The highlighted area demonstrates such an example. In this partic- ular area, losses calculated using CommScope's nLOS algorithm are as much as 70 dB less than those calculated using the traditional ITU (International Telegraph Union) algorithm.



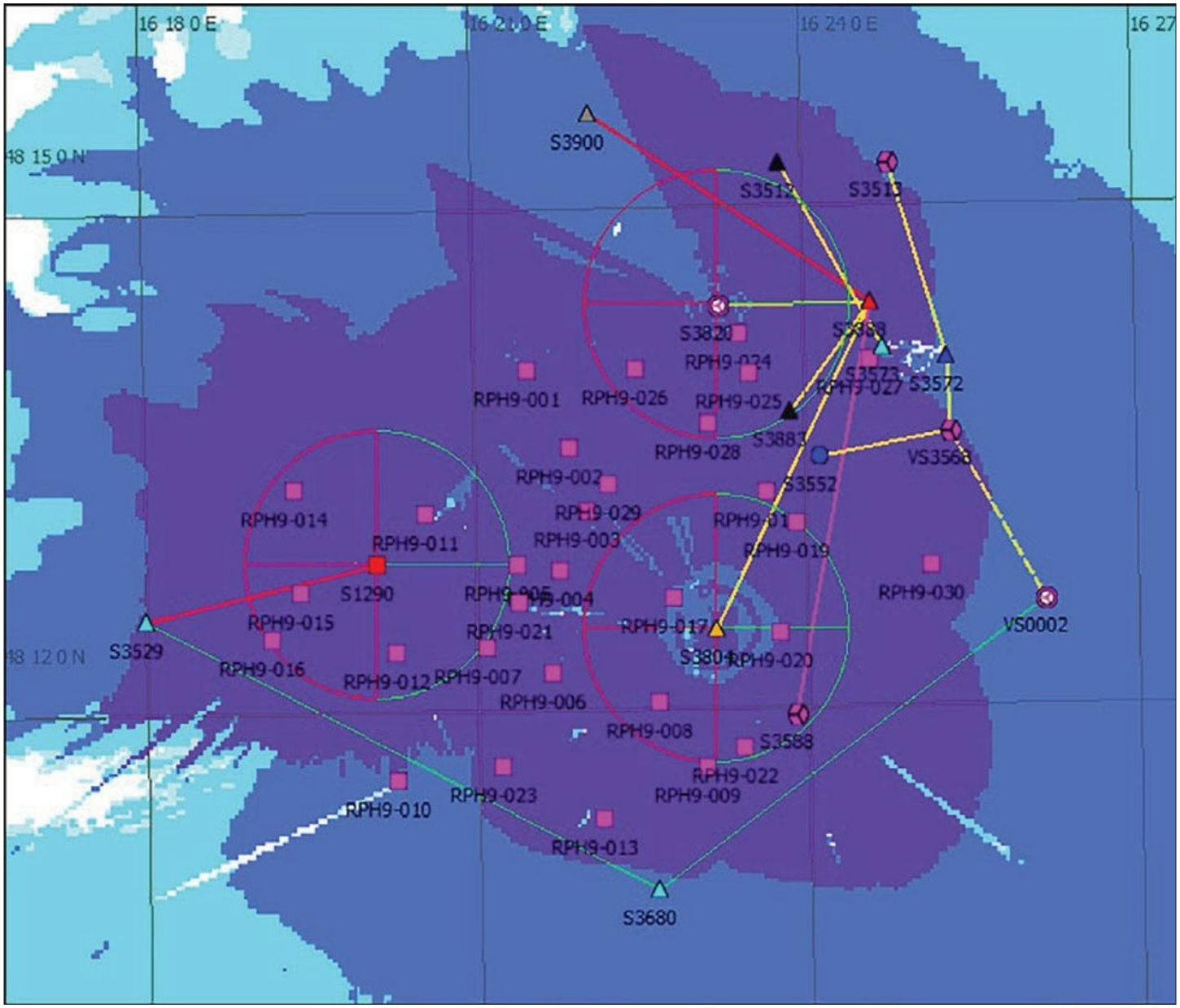
3.5 GHz RSL Plot using traditional ITU loss model



3.5 GHz RSL Plot using Comsearch nLOS model

PMP / FWA Design Functionality

iQ·link supports the design of hub-subscriber links that are required to implement such networks as FWA, local multipoint distribution service (LMDS), and other PMP applications.



Utility Programs

iQ·link comes with several utility programs so administrative tasks can be performed easily and with controlled access.

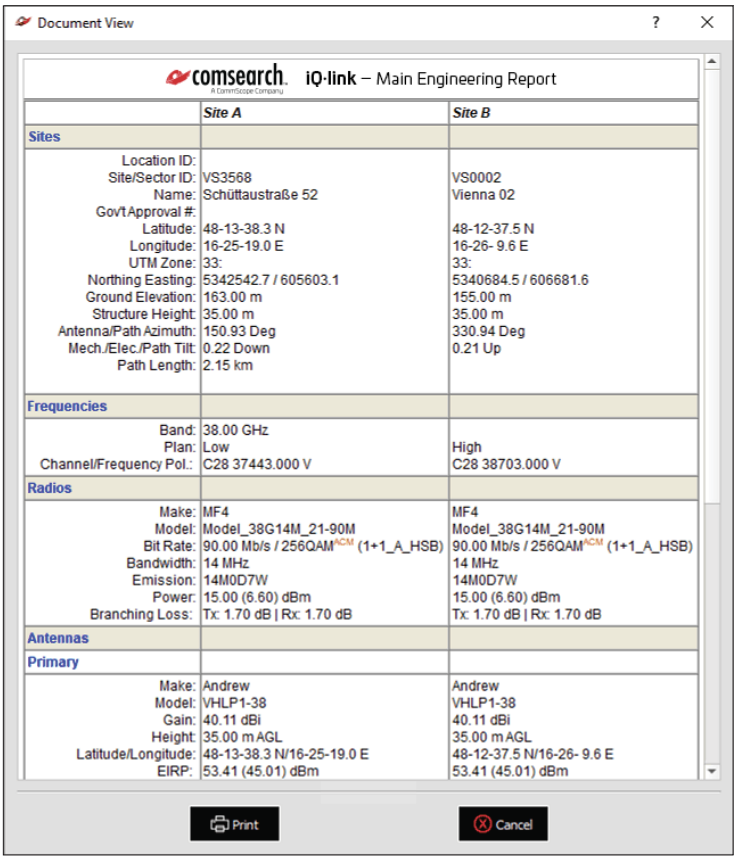
Utility features include:

- Easy import capability for sites, antennas, radios, links, network and Pathloss files
- Coordinate conversion
- Find-point algorithm
- System administration
- Google Earth KML export

Reports

iQ·link offers several reports, which are built on HTML templates and Database Views. They can be fully customized, including the addition of your own company logo.

These reports can be saved in PDF, EXCEL or CSV formats.



Third Party Application Integration

iQ·link offers the option to integrate with third party applications for both unidirectional and bidirectional workflows.

This allows iQ·link to update external applications and vice versa.

comsearch
A CommScope Company

COMMSCOPE®

comsearch.com

Telephone: +1 703 726 5500 | Toll-free: 1 800 318 1234 | Email: customersupport@comsearch.com