



# Microwave Backhaul Design

Comsearch offers the tools and experience necessary for successful planning, management, and implementation of wireless backhaul systems. Our engineers utilize industry leading software, databases and unique regulatory expertise to design reliable and scalable backhaul systems.

## Preliminary Design

Determine best topology for your network that meets connectivity, reliability and redundancy requirements. Ensure sufficient throughput on each network segment with scalability for growth. Evaluate LoS (line-of-sight) feasibility for each link based on clearance criteria and antenna height possibilities.

## Field Surveys

Conduct site visit with photo documentation to confirm existing equipment, site parameters, installed inventory and site feasibility. Confirm LoS with field survey that identifies any potential obstructions. Document site coordinates and possible antenna heights for input into final design.

## Final Design

Perform frequency band selection based on path length and reliability calculations considering multipath and rain outage. Using information from field surveys, conduct analysis to determine final equipment selection, antenna types and heights, transmission line lengths and other operating parameters.

## Frequency Engineering and Licensing

Perform interference analysis to assign appropriate frequencies to ensure system will not be degraded by interference. Conduct FCC required Prior Coordination with other wireless users; prepare FCC applications and submit for electronic filing.

## Site Audits

Perform a comprehensive audit to document existing equipment at the site prior to installation. This includes available rack space, AC and DC power, battery backup, transmission lines and generator.

## Installation

Includes procurement of equipment, installation of radios, antenna, transmission lines, interface equipment and power systems, as well as final acceptance testing.