OptiConcepts

Active and Passive Optical Simulation Systems

OptiConcepts specializes in the design and construction of specialty optical test platforms to accurately simulate your optical system or situation. These precision systems are used to develop and evaluate electronics and optoelectronics while providing a stable, reliable reference to evaluate equipment performance. In addition, a better understanding of your system will help you make the most informed decisions regarding network development.

Your Network, Our Passion

At OptiConcepts, we work directly with your engineers to create an optical test platform that meets your exact requirements. Precise spans of optical fiber are used to achieve a given length, delay, or loss and are mounted in a portable or stationary fixture. Optical switches, couplers, splitters, filters, and simulated events (such as fusion splices, connectors, macrobends, etc.) are added to route and condition optical signals to achieve the desired effect. Customized interfaces can be integrated to control the system accordingly.

Have Knowledge, Will Travel

Occasionally, complex systems may require the on-site expertise of optical network professionals. Our knowledgeable engineers will travel to your location, assess your needs, and gather the pertinent information required to develop your optical test platform.

An Entire System in a Box

We take pride in our ability to design and create test fixtures that are both neat in appearance and optimize space in order to provide the smallest product possible. In fact, we can install over half a million meters of optical fiber (that's well over 300 miles) in an assembly that will fit into a standard seven foot equipment rack.

From OptiConcepts To You

Before we ship your system, we thoroughly review the final product and rigorously test against your requirements as well as our own stringent standards. Upon receipt of your order, you will find an array of documentation and test results to ensure your system will serve you well. At OptiConcepts, our utmost desire is to provide you with the best quality products and services available.

Enclosure Style/Simulation Platform:

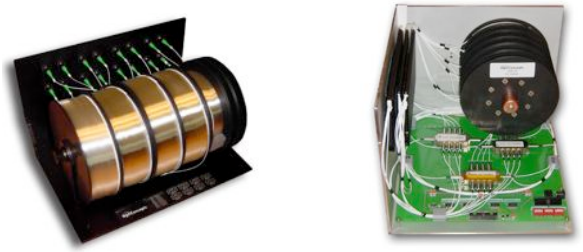
1. **Small Portable Boxes:** Designed to accommodate up to 5km of optical fiber and hold as many as three events, such as connector pairs and fusion splices. These boxes typically include 2-two meter connectorized pigtails for easy connection to test equipment. These units are ideal for OTDR training.

Small Portable Boxes

2. **Large Portable Boxes:** Designed to accommodate up to 50km of optical fiber and hold as many as six events, such as connector pairs and fusion splices. These units will house up to six individual fiber spans terminating with either pigtails or adapter plates.

Large Portable Boxes

3. **Tabletop Assemblies:** Custom designed based on individual needs. Typically, Tabletop Assemblies are open designs that allow viewing of the individual components. Various access points are made available to provide points of measurement throughout the system. Passive and active optics, as well as electronics can be accommodated as required.



Tabletop Assemblies

4. **Mobile Half-Racks:** These units are similar to the Tabletop Assemblies, but fully encapsulate the simulated network within a half-height equipment enclosure mounted on casters. Access to the inner components is possible, but not as easily accessible as the tabletop concept. Mobile Half-Racks are ideal for transporting the optical system to various locations.

Mobile Half-Racks

5. **Mobile Full Racks:** Identical to the Mobile Half-Racks, but provide twice as much space for more comprehensive systems. These portable racks are ideal for adding rack mountable electronics and opto-electronics such as transmission, switching, and monitoring equipment.

Rack-Mountable Enclosure Example

6. **Stationary Full-Height Racks:** Similar to the Mobile Full Racks, but designed to be immobile. Additional features offered in the stationary design are equipment cooling and improved lighting/illumination systems.

Stationary Full-Height Rack

7. **Full Lab Designs:** These are full-room optical simulation systems that are designed to provide a combination of real-world network hardware and equipment in a fully functional, simulated optical environment. These systems are targeted for classroom environments where students are interested in both network functionality and interaction with actual field hardware and equipment.

Fiber Types:

-Single-mode (Corning SMF-28)
-Multimode 50um (Corning InfiniCor 600)
-Multimode 50um (Corning SX+ Laser Optimized)
-Multimode 62.5um (Corning InfiniCor 300)
-LEAF
-Other types available

Connector Interface:

-SC Ultra & Angled
-FC Ultra & Angled
-ST Ultra

-LC

-MTRJ

-MTP

- Other types available upon request

Passive Components:

1. **Coupler/Splitter:** splits and combines optical signals; configurations can range from 1 x 2 up to 1 x 32
2. **Filters/WDM:** combine and separate individual wavelengths
3. **Attenuators:** reduce signal strength

Optical Events:

1. **Connectors:** common joining points, typically exhibiting phenomenon of loss and reflectance
2. **Fusion Splices:** used to permanently join spans of fiber
3. **Mechanical Splices:** used to join spans of fiber with a removable, mechanical device
4. **Macrobending:** the bending of fiber, exceeding the minimum bend radius and in turn causing an adverse effect on fiber attenuation

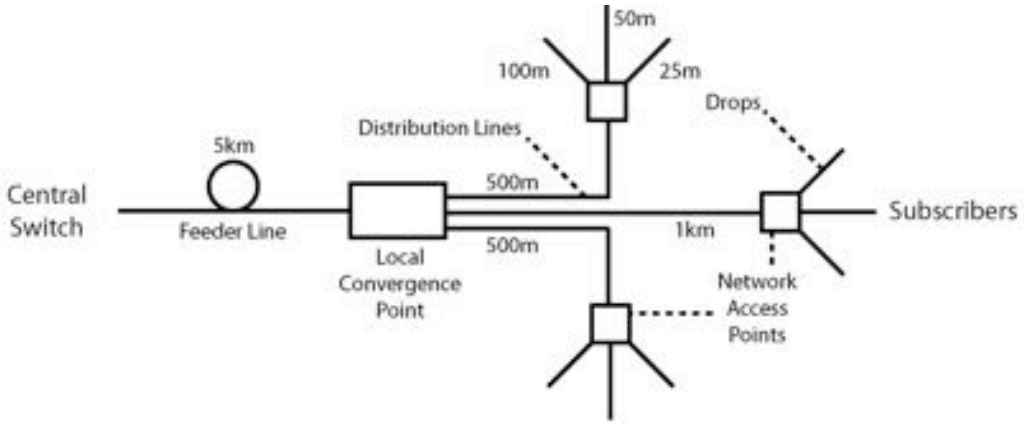
Electronic (Active) Components:

1. **Switches:** route optical signals and provide a method of fiber concatenation
2. **Data Transmission Equipment:** optical signal-generating equipment at a specific or variable frequency
3. **Data Receiving Equipment:** optical signal receiving equipment

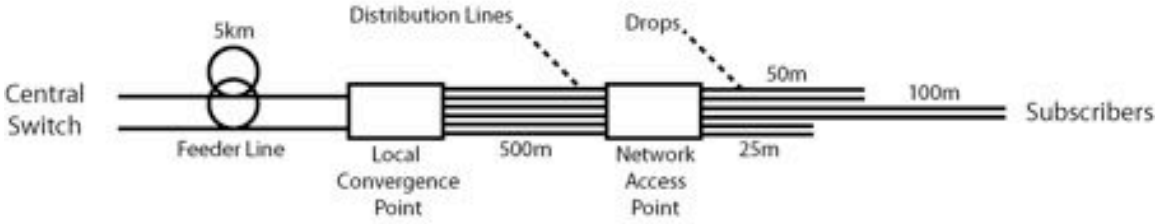
Test and Monitoring Equipment:

1. **Power Meter/Light Sources**
2. **Optical Time Domain Reflectometers**
3. **Ethernet Testers**
4. **Return Loss Meters**
5. **Spectrum Analyzers**
6. **Dispersion Measurement Equipment**

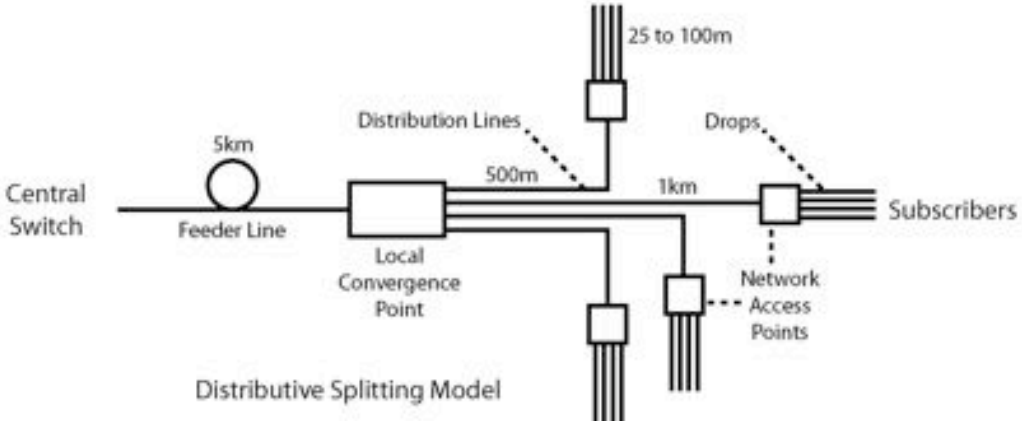
Sample FTTH System Schematics:



Generic Passive Optical Network (PON) Model



Local Convergence (LC) Model



Distributive Splitting Model