About Remotek

Remotek Corporation specialized in Research, Design and Production of radio coverage solutions for all types of mobile radio network, RF components and the provision of relevant services. It has become a leading force in the field of cellular repeater R&D, manufacturing and coverage systems for service providers of mobile communication globally.

Remotek Corporation began in 1990, an ISO 9000 certified firm, and since then we have acquired extensive knowledge and experience in the mobile communication application filed, enabling us to provide state-of-the-art wireless communication products backed by professional consulting services to our customers. The company's philosophy is to continuously provide our customers with the best products and technical support.

Remotek's Advantages

Customer Satisfaction -

Customer satisfaction is the cornerstone of our organization; it's part of our culture. Every care is taken to ensure quality-control procedures are followed so that you receive right product at the right time always.

Superior Quality -

Remotek believes in supporting its customers through the concept of superior quality. We supply our distributors with nothing but the utmost superiority in products and services. We as a company strive to achieve quality, not just in our practices, but in our services as well.

Customized Products -

At Remotek we understand that "One product doesn't fit all" , so we have established specialized team of engineers to ensure products are tailor' designed and manufactured to customer specification.

On-Site Training -

As a company involved in the high-tech industry, training is one of the most important factors in a firm's success. Remotek conducts seminars and offers on-site training courses on related knowledge in order to assist and elevate the business performance of our partners.

Solutions

Introduction

Cellular repeaters are the most cost-effective solution to enhancing the coverage of a mobile network, whether in traditional usage such as shadowing areas or specialized application such as in-building or outdoor coverage. Other than the immediate increase in the coverage footprint, other benefits of coverage enhancement are improving network performance and improving utilization of the BTS capacity. With continuous deployment of mobile networks, especially in suburban and rural highways, coverage is most often more important than capacity. In such a situation, an economical mixture of BTSs and repeaters can be employed to offer mobile operators an optimized network with maximum coverage at minimal cost. Because repeaters are simpler than BTS and require much less physical infrastructure, not only capital expenditure costs are minimized, but also operational costs as well. Cellular repeaters can be employed to help mobile operators to spread their coverage and BTS capacity to a wider geographical area, thus enabling operators to reach a more subscribers while at the same time, conserving your upfront investment.

Repeater for The Latest Technology

Remotek repeaters currently support the following mobile systems: GSM, CDMA800, PCS, CDMA2000 and WCDMA system.

Repeater Introduction

1. RF Repeater

A RF repeater is a bi-directional amplifier that allows for the reception of RF signals, amplifies the signal and re-transmits into areas where there is no or very low signal level coverage enabling a mobile user to establish a call connection.

For outdoor areas, BTS' s generally have low utilization of capacity. The surplus capacity can be re-directed to other poor signal coverage area through implementation of a RF repeater. RF repeater can be deployed in towns and rural areas where there are relatively lower numbers of mobile subscribers.

In comparison to a BTS installation, a RF repeater can virtually be installed anywhere that provides a suitable mounting area with a power supply, therefore eliminating the need for an equipment room.

2. Fiber Optic Repeater

A fiber optical repeater is a combination of a RF repeater and optical transceiver modules enabling signal transmission through fiber optical cables to achieve coverage into low signal areas over a fiber distance of 20km. Consisting of a master and remote unit(s), the master unit is usually installed at the BTS site where the RF signal is coupled from the BTS. From the master unit, the RF signal is converted to an optical signal for transmission over the fiber cable to the remote unit. The remote unit receives the optical signal and re-coverts the optical signal back to a RF signal. The signal is then amplified to a higher power level for transmission to the mobile in the low signal coverage area. From the mobile, the signal will be transmitted back to the BTS through the reverse process.

Fiber Optical Repeater is an ideal solution for areas where the geography does not allow for line of sight between the BTS and repeater, the intended coverage area is far from the BTS or for high-rise indoor coverage extension. Typically application areas include villages or sight seeing areas in the mountains, rural or farming areas, underground subways and high-rise building to building groups

3. Frequency Shift Repeater

A Frequency Shifting Repeater is a combination of two RF repeaters with built-in frequency translating module(s) enabling the original frequency to be shifted to a new frequency used as the transmission link between the two repeaters (master and remote repeater units)

The master unit is installed next to the BTS where the signal is coupled from the BTS. Following frequency shifting, the signals are transmitted on a link antenna and received at the remote unit where signals are shifted back to the original frequencies. Finally, the signals are amplified in the remote unit and then transmitted on a service antenna.

By shifting the frequency, the isolation requirements are reduced. In other words, the necessary separation between the pick-up and service antennas at remote site can be low, which means short masts can be used. As the isolation is much easier to achieve through operating on two different frequencies, the gain in the remote unit can be significantly increased so that higher output power is easier obtained and allows the use of antenna(s) to cover 360 degrees at the remote area.

This equipment can be implemented in large areas including lakes, tunnels, highways, small islands, visiting spots, or rural areas.

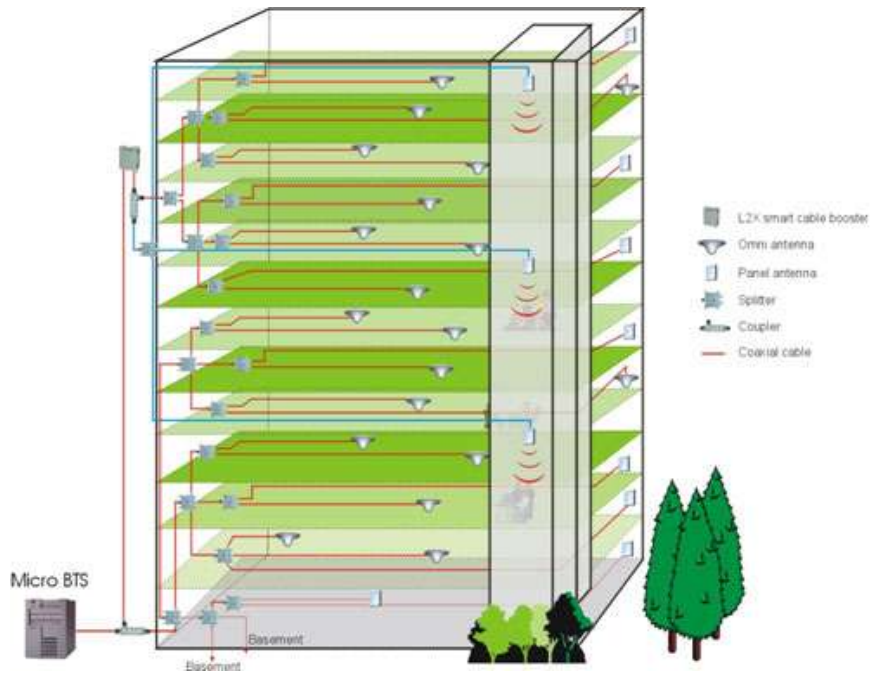
Applications

The deployment of repeaters for the most part provides operator with the cost-effective solution for coverage extension of indoor or outdoor applications, or to provide coverage to blind areas where communication can not be established.

In-Building

Above diagram illustrates how a repeater extends signal coverage to every corner of the building. The exterior yagi donor antenna placed outside of the building where it has easy access to a BTS. Signals from the donor BTS are then introduced into the repeater. After amplification by the repeater, signals are divided into several parts by splitters or couplers and sent to the interior service antennas. The service antennas are placed inside the building where it can extend radio coverage to the dead zones. Therefore, the subscribers have seamless access to mobile signal from every corner of the building. Through a high-tech, reliable repeater made by Remotek and the applicable system design, the QoS for applications like voice call, video call, video streaming, and data services will be guaranteed to each customer.

High-Rise Building



The diagram illustrates signal coverage extension for a high-rise building. Suppose the facility has 13 levels, 11 floors and 2 basements. For example of a scenario, Floors 9th to 13th level suffering the " Ping Pong Effect " . The first to 8th level will be the " signal fades " areas. The basement and inside the elevator are " dead spot " which can not access any signal from base stations. A way of solving this problem is to install a micro base station, a cable booster and indoors distributed antennas to extend the coverage of mobile signal within this kind of large building. Users will see a noticeable increase in the range of their mobile networks as the repeater is indeed putting out a stronger signal.

Highway

Highways provide a good example where deployment of new BTS' s is not only cost ineffective but under utilization of BTS capacity. In most practical situations providing coverage to highways provides convenience and for emergency purposes, but BTS capacities along highways are extremely under utilized. Also with growing intolerance from subscribers to call drops, operators are force to provide coverage along the full stretch of the highway.

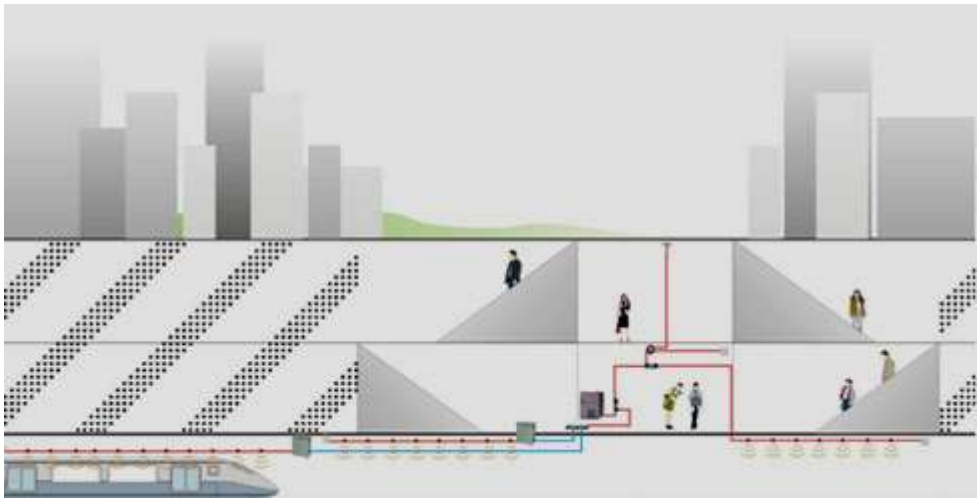
The diagram illustrates a simple deployment of a repeater to extend coverage to a road around a mountain. Highways tend to be long winding roads obstructed by hills in between, leaving blinds spots where the BTS signals can not reach. Installing a repeater will provide coverage into this area, without a repeater to extend coverage; mobiles traveling around the hill will result in a call drop.

Tunnels and Subways

Delivering a reliable and seamless mobile communications for underground subway and tunnels presents operators with many challenges due to the limitation of RF propagation and penetration. For the most part subscribers in these areas are unable to receive mobile signals to establish a call connection. In order to provide coverage to these areas, a cost effective and reliable solution may come from a RF or fiber optical repeater.

Deployment example 1: A 4km tunnel is served with two 5W repeaters.

As the diagram illustrates, donor antennas are located on both ends of the tunnel. Signals received from the BTS are amplified and then projected into the tunnel through the service antenna, providing coverage to the length of the tunnel.



Solution to provide coverage to underground sub-ways, a mix of micro-cell and fiber optical repeater will enable an operator to provide full coverage to the underground subway network.

With the fiber optical repeaters, consisting of a master and a remote unit, signal is tapped from the micro-cell, where the master unit will convert to an optical signal for transport down the fiber cable to the remote unit; in turn the remote unit will re-convert the optical signal back to RF signal and boost the signal for distribution via antennas or leaky cables providing further coverage in the subway.

BTS Optimization

During coverage optimization, total coverage cannot always be achieved due to shadowing and blind spots. If optimization is carried out by simply adjusting antenna direction or height, it can be a time consuming process of trial and error until the coverage is achieved. Adding a cable booster, a separate optimization process can be carried out while the whole interrelated parameters between systems remain unaffected.

Deployment example 1:Creating an additional sector.

As the diagram illustrates, changes to an environment may affect the original coverage area of the BTS e.g. newly constructed building located in an area where there are low signal levels. Using a cable booster to couple signal from the BTS will allow the creation of an extra sector to provide coverage to this new building or area.