

## Modular system of UMTS micro-cells coverage

### Features

- Possibility of connecting up to 10 antenna repeaters on 300 meters of coaxial cable.
- Management system and centralized monitoring of the park equipment by web interface or SNMP.
- Local, remote IP or wireless GSM/GPRS system-wide management through a Windows application.
- Connection to the base station directly via coaxial cable or wireless UMTS, allowing great flexibility on the site location.
- Power measurements of the input signal received from the mobile operator.
- Structure of the system completely independent of the operator.
- System continuously monitored with alarm management for all repeaters.
- Autonomous system configured with the default settings without the intervention of the management system.
- Support for high-speed protocols: HSDPA and USDPA.



Antenna Repeater

MicroU is a system of microcells for UMTS coverage. Over a coaxial cable for distribution of TV signal, provides UMTS coverage by installing radiant heads up to 10 (repeater antenna) along 300 meters of coaxial cable. Being a transparent repeater, it on all kinds of UMTS protocols can be distributed, such as HSDPA or USDPA. It is highly recommended system for the inside of buildings where the penetration of mobile UMTS operator's signal is often very poor or areas where the signal is attenuated by elements of the environment and is not received correctly.

#### Benefits

The microU system consists of a Node-B repeater, plant coaxial cable, and the various repeater antennas. It is, therefore, a modular and scalable system that can evolve according to the needs of each client. The coaxial cable selected for the connection between the Node-B repeater and repeater antennas is domestic TV distribution cable and double shielded 75 ohm impedance, which is a considerable lowering of the metal carrier system cost, compared to other systems based on fiber.

#### Fully manageable system

MicroU entire system can be managed through a central console (PC application) via IP/SNMP Ethernet port on the Node-B repeater. It is also possible to manage through a serial port or through a wireless GSM/GPRS connection.

MicroU (Node-B repeater)



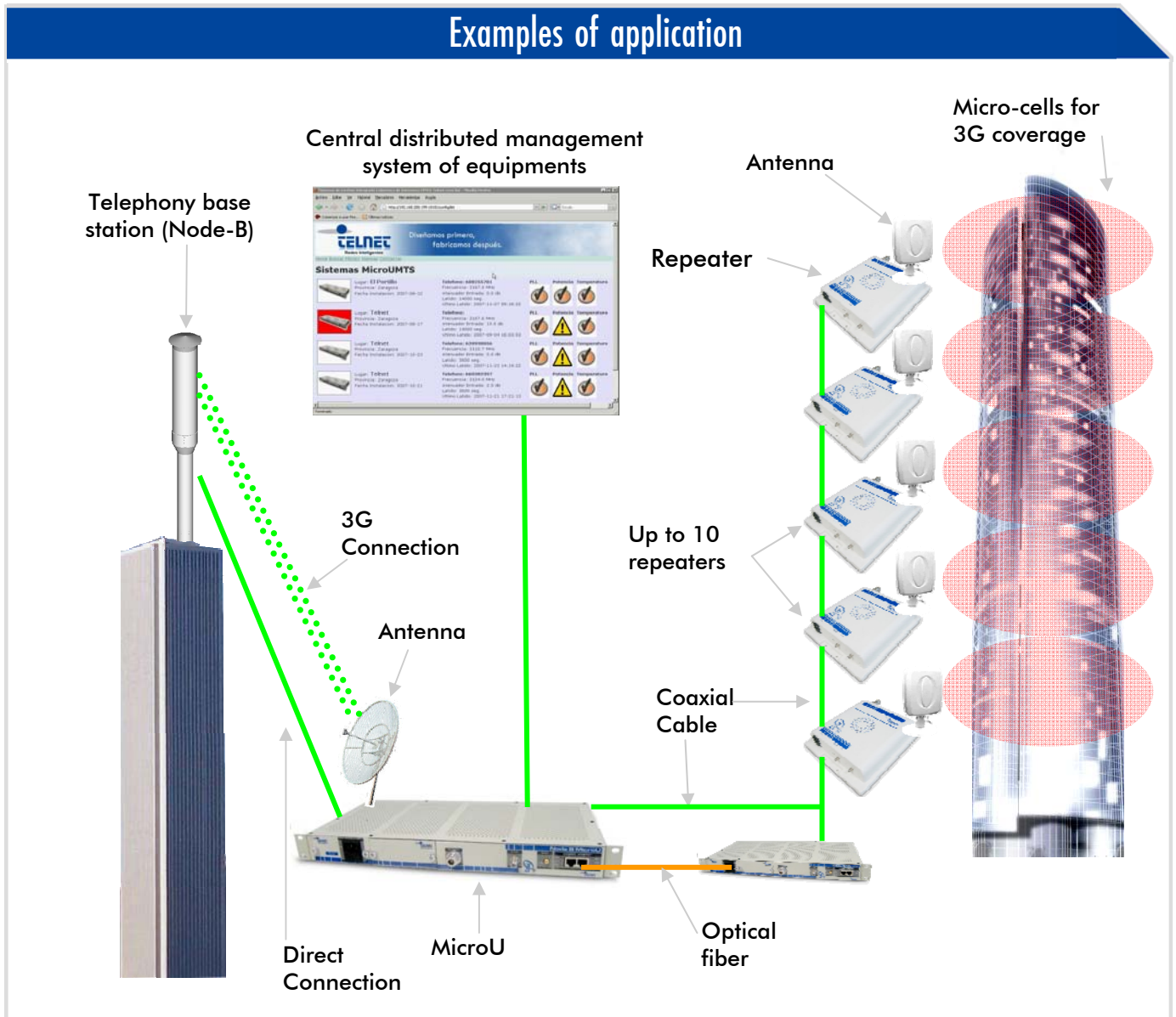
#### Multioperator system

MicroU system is thought to be an operator independent UMTS coverage repeater and can be customized in the frequency of the selected mobile operator.

### Other Features

- Possible remote update of the firmware.
- Sensitivity or antenna input power from -107dBm to -40dBm.
- Noise figure (NF) UMTS uplink around 5dB.
- Possibility of redundancy in power supply in the Node-B repeater as both VDC and VAC.
- Antenna repeater with 220VAC power supply.
- Mural installation.

## Examples of application



In this sample application can be seen how to provide UMTS coverage to a building through a number of UMTS micro-cells created by repeaters that are connected together over a coaxial cable and to the MicroU.

The microU can connect directly to the base station or it can be done via 3G, enabling the system to be placed wherever there is this kind of coverage, making solutions for indoor UMTS coverage, or to fill shadow areas in urban or rural areas.

Up to 10 heads of signal repeaters can be connected, each creating a 3G micro-cell. The connection between the repeater and the microU is done over coaxial cable. Also, to increase the distance that the repeaters are

placed in, microU can connect 2 equipments over optical fiber, thus giving more flexibility to the location of the node-B repeater.

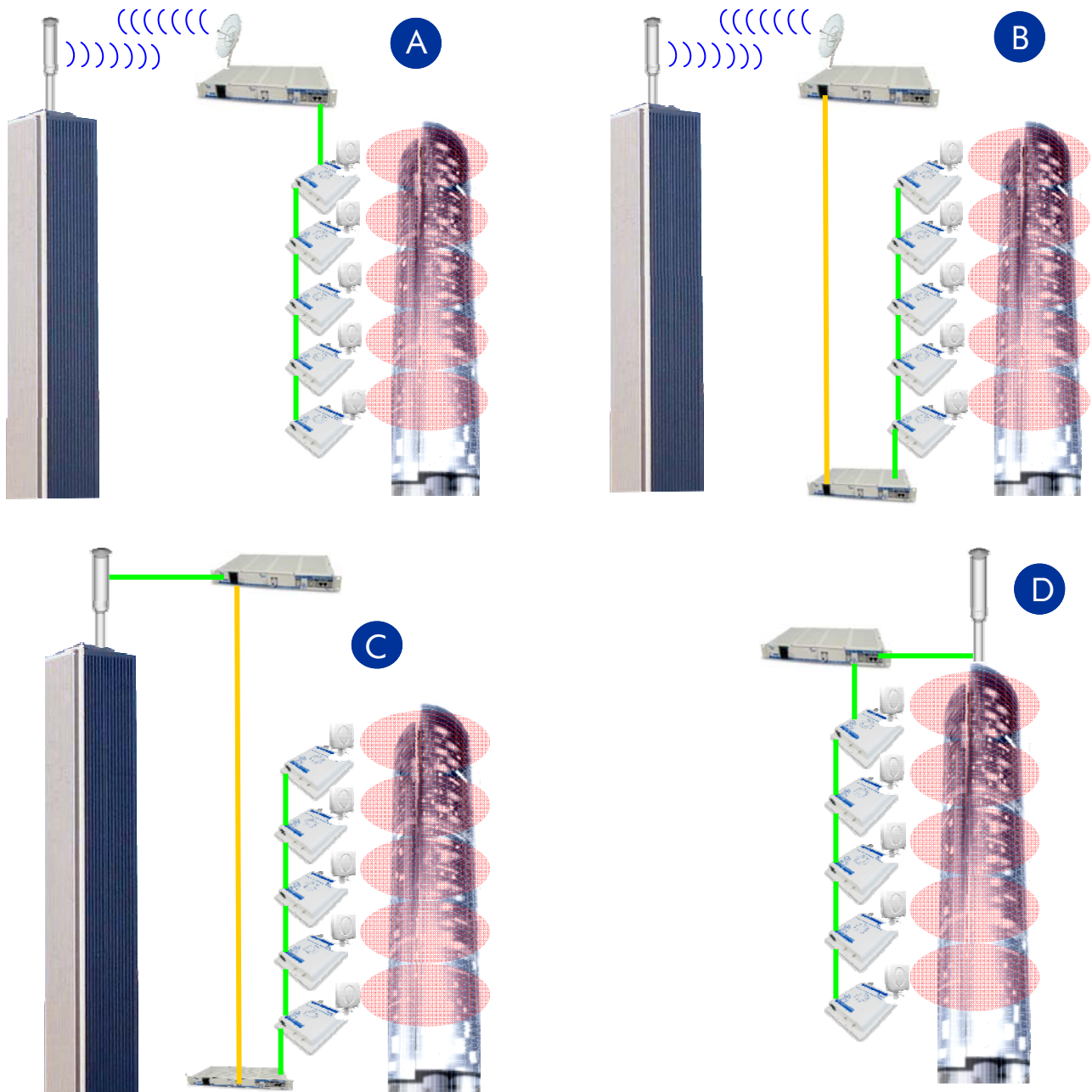
More over, the microU connects via Ethernet or GPRS to a global and distributed configuration service, getting all the settings of the MicroU equipments that the client has. This way all of them can be managed and monitored through a centralized web interface or SNMP.

In addition, microU also offers an application for easy installation and setup on site, providing a detailed set of parameters and locations of the repeaters and antennas.

### Possible applications

- Interior of buildings with low signal coverage .
- Basements, garages or parking lots .
- Shopping malls or places with large amount of people and low UMTS signal .
- Streets or urban areas where urban elements or geographic area creates a shadow in the UMTS coverage .
- Rural areas in which they wish to provide UMTS coverage without the need to install a dedicated Node-B, antennas or panels .

## Topology examples



**A.** The access mode to the 3G base station is through the air interface, the internal topology is a coaxial cable connection between the Node-B repeater and repeater heads.

**B.** The access mode to the 3G base station is through the air interface. Internal topology is divided into two ways, first through fiber-optic link to a hybrid team that changes its way to increase the distance to the inside plant, and after it connects directly to the coaxial cable of the repeater heads.

**C.** The mode of access to the 3G base station is done through a wired connection through directional couplers to the mobile base station. Internal topology is divided into two ways, first through fiber-optic link to a hybrid team that changes its way to increase the distance to the inside plant, and after it connects directly to the coaxial cable of the repeater heads.

**D.** The mode of access to the 3G base station is done through a wired connection through directional couplers to the phone base station, the internal topology is a coaxial cable connection between the Node-B repeater and repeater heads.