

## COVERAGE SYSTEMS

## Torre Mayor

### Powerwave Technologies Supplies Wireless Coverage System for Torre Mayor

*Latin America's tallest building, the 55-story Torre Mayor reaches the height of 225 meters and encompasses 84,135 square meters of office and meeting space, shops and services, and parking*

In today's 24/7 business climate, wireless connectivity in the workplace is no longer a luxury – it is a necessity. Many companies require workers on the go to maintain constant contact through their BlackBerry® devices and other personal communications tools. Thankfully, innovations in wireless coverage and capacity solutions have made it possible to bring connectivity to even the most difficult to reach locations, including high-rise office buildings such as Mexico City's Torre Mayor, also known as the "Great Tower."

Located on Mexico City's Paseo de la Reforma, a grand boulevard modeled after the Champs Elysées in Paris, Torre Mayor is perhaps the most prestigious corporate address in the region. When construction began in 1999, it was envisioned that Torre Mayor would provide tenants with office facilities that supported the highest levels of worker efficiency and productivity. One of the ways that Torre Mayor has achieved that goal is through a state-of-the-art wireless communication system designed by Powerwave Technologies.

#### A Tall Order

Shortly after construction began on Torre Mayor in 1999, Unwired Solutions de Mexico, a leading neutral host in Mexico, was hired to design, build and host a wireless coverage system that would support multiple commercial wireless communications frequencies within the 55-story office building and four-story underground parking garage.

After receiving proposals from several manufacturers, Unwired Solutions de Mexico chose Powerwave Technologies to design the wireless communications system. "Prior to Torre Mayor, we had leveraged Powerwave's antenna and repeater solutions in other projects, and were very confident in their ability to design and build an end-to-end wireless coverage system that would meet the needs of Torre Mayor and its tenants," said Pilar Caudillo, President Unwired Solutions de Mexico.

Installation of Powerwave's wireless coverage system at Torre Mayor began in 2000. Because only a quarter of the building had been completed by this time, much of the initial system design for the wireless coverage system was based on architectural specifications. Recognizing that the specifications would likely change throughout construction due to tenant- or ownership-driven modifications to the layout and design, Powerwave and Unwired Solutions de Mexico outlined a three-phase installation plan to better manage this large-scale implementation.



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## Onward and Upward

Construction on Torre Mayor took four years to complete; when the building opened to the public in 2003, Powerwave Technologies and Unwired Solutions de Mexico had completed phase one of the wireless coverage system, which included five upper floors occupied by some of Torre Mayor's first tenants.

As more tenants began to populate Torre Mayor's higher floors, some found that they had limited access to wireless voice and data services due to signal propagation from the first phase of the project. They wanted more, and lobbied Torre Mayor's building management to extend the wireless coverage system to additional floors. Soon after, Unwired Solutions de Mexico began installation on the second phase of the project, bringing connectivity to the lower half the building's 55 above ground floors.

It was during this second phase that Powerwave and Unwired Solutions de Mexico encountered the most difficulties in terms of wireless signal propagation. This phase consisted of providing coverage for two very different sections of the tower – the parking garage, retail stores and lower level office space, and the top floor of the tower, Heliport and VIP suite – with each section presenting its own set of challenges.

For example, in the lower section of the tower, the large volume of signals caused dropped calls as signals were transferred between cell sites. Working as a team, Powerwave and Unwired Solutions, along with the operators developed various strategies for tackling these problems. In some cases, Powerwave's design engineers had to modify part of the original system design by adding or reorienting antennas. In other cases, the operators optimized the base stations around and inside Torre Mayor to maximize the capacity and performance of their networks. Unwired has an excellent relationship with the operators, providing invaluable support in coordinating between the operators and Powerwave's design engineers during the entire process.

Once the issues faced during the second phase of the project were solved, Unwired Solutions de Mexico began the third phase, which outfitted the remaining floors of Torre Mayor with Powerwave's wireless coverage system.

## Achieving New Heights

The build-out of Powerwave's wireless coverage system at Torre Mayor was completed in early 2008. The neutral host system, which is monitored and serviced by Exitel SA DE CV, currently supports GSM1900, iDEN800 and CDMA800 communications frequencies for three of the four wireless operators serving the Mexico City region.

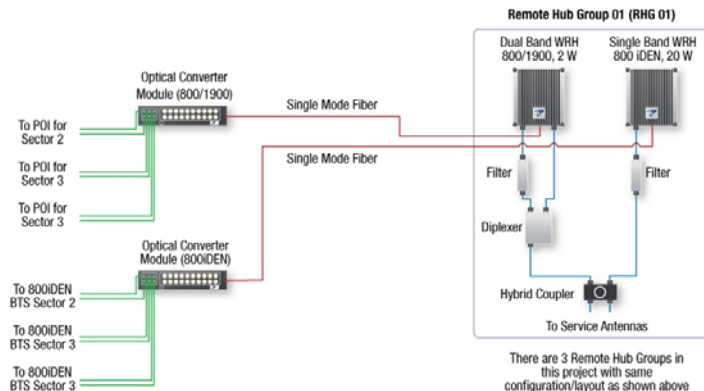
One of Torre Mayor's main requirements for its wireless coverage system was that it adhere to a series of strict building regulations and aesthetic guidelines that prevented the use of large, or obtrusive equipment within public areas of the building. As such, the system consists of a series of indoor antennas and repeaters with hubs discretely located throughout the inside of the building's communications closets.



Powerwave Wideband Coverage System (WCS) product line is a flexible platform for wireless enhancement remote of the base station. This line of products can be coaxially or fiber optically fed to provide capacity to underserved areas of the network. Applications for this versatile product are indoor distributed antenna systems and outdoor coverage challenges. Same reliable, field proven technology as Powerwave's Repeater products, as well as the same O&M software for complete OMS and OM-Online compatibility.

### Key Benefits

- Ultimate flexibility
- Proven technology
- Fiber or Coaxial feed
- Ease of installation
- Output Power options
- Standard O&M platform



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The system's other components, which reside outside of public view, incorporate a fiber optic conversion module located within the centralized Base Station Hotel. Using a common fiber-optic and coaxial backbone among the operators, the system is highly efficient and provides substantial cost savings over other competing solutions due to fewer initial infrastructure requirements and maintenance routines, shorter installation times, and more streamlined technology upgrades.

In addition to Torre Mayor, Powerwave has expertise in creating DAS systems for large venues such as the Alberta Children's Hospital in Calgary, Alberta, Canada; the Moscone Center in San Francisco; and, the Athens Athletic Center (Greece).

"Powerwave has designed coverage solutions for many complex environments including airports, trains and subway systems, tunnels, sports arenas and other indoor and outdoor facilities worldwide," said Dave Quinn, vice president, Global Wireless Solutions, Powerwave Technologies. "Our multi-technology platform is specifically designed to be the most reliable and cost-effective method of providing access to wireless communications services in indoor environments such as Torre Mayor. With the design and implementation phase of the building's wireless coverage system now complete, workers and visitors to the building can now experience seamless connectivity anytime, anywhere throughout the coverage areas."

#### About Powerwave

Powerwave Technologies is a global source of end-to-end wireless solutions for wireless communications networks. Powerwave designs, manufactures and markets antennas, boosters, combiners, filters, repeaters, multi-carrier RF power amplifiers, tower-mounted amplifiers and advanced coverage solutions, all for use in cellular, PCS and 3G networks throughout the world. Corporate headquarters are located at 1801 E. St. Andrew Place, Santa Ana, Calif. 92705. Telephone (714) 466-1000. For more information on advanced wireless coverage and capacity solutions, call (888)-PWR-WAVE (797-9283) or visit [www.powerwave.com](http://www.powerwave.com). Powerwave, Powerwave Technologies and the Powerwave logo are registered trademarks of Powerwave Technologies, Inc.



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