

# CASE STUDY: CARLSBERG CITY DISTRICT

**Sustainable Environment Incorporates Wireless Innovation**



The TEKO DAS provides mobile communications for approximately 10,000 students and 800 staff at UCC.

## Carlsberg City District Turns to JMA Wireless for Powerful Cellular Connectivity

### Overview: Technically Advanced Solution Addresses Needs of Urban Development

The Carlsberg name has a rich heritage in Denmark. In 1847 J.C. Jacobsen founded Carlsberg Brewery. He named it after his son, Carl, and the hill (or berg) it was built on. Today the original site of this famous brewery is being transformed into a sustainable city district, located just minutes from the center of Copenhagen. Known as the Carlsberg City District, this area is comprised of 101,000 m2 of space, including 15,000 m2 for apartments, 3,500 m2 for commercial offices, 6,500 m2 for shops and restaurants, 19,000 m2 for underground parking, and

57,000 m2 dedicated to the new Carlsberg Campus for UCC University College.

This forward-thinking urban development includes several innovations, with one of them being a DAS (distributed antenna system). To ensure powerful mobile communications across this new city district, system integrator, KM Telecom, selected the TEKO DAS from JMA Wireless, a global leader of wireless communications solutions. The multi-carrier, multi-band TEKO DAS platform is the ideal solution for providing cellular coverage and capacity for the thousands of mobile subscribers living, working and going to school in the Carlsberg City District on a daily basis.

## Situation: Overcoming Challenges to Ensure Seamless Coverage

The Carlsberg City District has put in place a comprehensive energy strategy. Its long-term goal is to become carbon neutral and an ideal example of sustainability in a partly built-up area. It is being achieved with a combination of innovations such as solar cell systems, harvesting of rainwater, wind energy and low-energy window glass. In fact, all new buildings are being constructed as Class 1 low-energy structures. However, energy efficient buildings and low-energy window glass, in particular, impede cell signals from the macro network, making in-building mobile communications an issue.

Another type of in-building cell signal challenge involves interference from the macro site with the dominant coverage provided by the DAS. It is critical to design the DAS so it provides the dominant signal level indoors, without leaking it outside the building.

Not only was coverage inside the buildings an issue, but providing adequate mobile communications for the expansive outside courtyard was another concern. Many students congregate in this area in between classes and use their smartphones to make calls, text or catch up on the latest social media posts. With approximately 10,000 students at the Carlsberg Campus, and the residents living and employees working in the vibrant Carlsberg City District, adequate cellular coverage for the subscribers can lead to an issue mobile operators call densification. Densification is defined as a dense area of mobile subscribers with a high demand for cellular connectivity.

Finally, with the thousands of mobile subscribers on the wireless network, it was critical to support multiple bands and multiple carriers. In addition, it needed to be future-proof so the latest technologies could be supported readily too. When upgrading the network for these new innovations it was crucial that any downtime was minimal.





## Solution: TEKODAS Provides Optimal Mobile Communications

Supplying robust cellular capacity and coverage across an urban environment sprinkled with new and old structures, such as Carlsberg City District, required a powerful solution; therefore, KM Telecom chose the TEKODAS from JMA Wireless. This multi-band, multi-carrier platform easily supports the four mobile operators - TDC, 3, Telia, and Telenor. These operators did not join the network at the same time, but with the flexible TEKODAS this was not an issue. In addition, it supports the 1800 and 2100 bands along with 2G – 4G capabilities. Furthermore, the future-proof design of the TEKODAS enables new technologies readily. There is no need for extensive downtime to upgrade the wireless network. Instead it is plug and play as new operators and technologies are added.

During this initial phase, the TEKODAS platform supports three sectors with eight high-power remote units (RUs) and 191 antennas. With only two engineers, KM Telecom had the system up and running within four months. It was completed in time for the students on their first day of classes in September.



The TEKODAS platform is extremely efficient because only a single optical fiber is used per remote unit to connect it to the master unit (MU). Each fiber can deliver up to five European bands. Further time savings were achieved because each remote unit was configured from a single administrative interface at the MU. This same administrative interface can be used for future firmware updates too. These numerous savings resulted in installation costs that were at least 50 percent less than competitive solutions.

Finally, to overcome any issues regarding the interference between the macro and DAS networks the iBwave simulation tool was used. This in-building tool enabled smarter planning, design and deployment of the DAS.

The future-proof TEKODAS can readily support the expanding Carlsberg City District.

## Result: A Wireless Solution for Today and Tomorrow

Similar to the Carlsberg tagline of being “probably the best beer in the world”, JMA Wireless probably provides the best mobile coverage in the world. Even though the Carlsberg City District still has many expansion plans to implement, including a parking garage, a hotel, and additional residences, restaurants and shops, the TEKODAS will be able to easily fulfill the cellular connectivity needs of the additional mobile subscribers who will accompany this growth. Its flexible, future-proof platform will support any new sectors and upgrades cost effectively and with minimum disruption.

The modular TEKODAS fits easily and compactly in racks onsite.



#### **About JMA Wireless**

JMA Wireless is the leading global innovator in mobile wireless connectivity solutions that ensure infrastructure reliability, streamline service operations, and maximize wireless performance. Employing powerful, patented innovations their solutions portfolio is proven to lower the cost of operations while ensuring lifetime quality levels in equipment and unrivaled performance for coverage and high-speed mobile data. JMA Wireless solutions cover macro infrastructure, outdoor and indoor distributed antenna systems and small cell solutions. JMA Wireless corporate headquarters are located in Liverpool, NY, with manufacturing, R&D, and sales operations in over 20 locations worldwide. For more information see [jmawireless.com](http://jmawireless.com).



#### **About KM Telecom**

KM Telecom Denmark is known and respected in the telecommunications market for our complete solutions for both small and large businesses, including service and maintenance tasks. We are a leading specialist when it comes to the establishment of telecom and mobile sites because KM Telecom is one of the few vendors that can deliver a complete turnkey solution. We offer this same professional approach when it comes to design, assembly and installation of DAS platforms or customized Wi-Fi solutions. Our specially trained staff performs tasks on land, at sea and in the air, and are always updated on the latest technological developments and focusing on the individual customer's needs. Our unique experience and expertise means that today we can foresee all possible structural engineering, radio engineering, economic, legal and technological issues in both small and large projects. KM Telecom is working not only with the construction, design and installation, but we also provide service and maintenance of all types of plants - technical, mechanical and construction projects. Read more about KM Telecom's special skills on our website at [km-telecom.com](http://km-telecom.com).

“ We selected JMA Wireless not only because of the availability of local support, but also because of the team’s technical knowledge and expertise. In addition, the flexible, future-proof TEKODAS could be deployed with minimal disruption while many competitive offerings required that the system be down for weeks during the installation process.”

Michael Hermansen  
CEO – KM Telecom

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