CASE STUDY

NELSON MANDELA SQUARE: PROVIDING WIRELESS COVERAGE TO SOUTH AFRICA'S TOP BUSINESS AND ENTERTAINMENT HUB

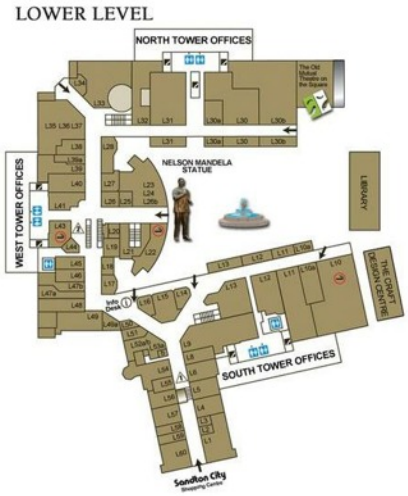
The Challenge

Nelson Mandela Square is a commercial, entertainment and business hub, positioned in Sandton; one of Johannesburg's most upmarket suburbs. Consisting of office blocks, a variety of upmarket restaurants, a five-star hotel and a clutch of high-end apartments, the area hosts around one million visitors every month.

With the mass proliferation of smartphones, all these visitors expect to make calls, text and browse the internet while moving between the sites on the square. Therefore it was vital that coverage was provided inside and outside all the buildings to cater for its customers.

Radio Network Solutions, a service provider to the telecoms market, approached Axell Wireless to provide the equipment required for comprehensive 2G, 3G and 4G coverage across the site, replacing an existing active DAS (Distributed Antenna System) already installed.

The floorplan of Mandela Square



The Solution

The solution provided needed to support two leading South African Operators simultaneously and would be replacing a legacy DAS.

A DAS is the obvious choice for providing the most cost-effective and efficient wireless coverage in a mixed-use environment like Mandela Square.

A DAS can be fed using a base station close-by, a base-station located off-site, or alternatively it can be fed using an off-air digital repeater. A master unit then takes the Radio Frequency (RF) signal and converts it into optical signal, then re-distributes it through fibre optic cable to a series of optical remotes. The signal is then converted back at the remote unit and distributed to the network users via a series of coaxial cables, antennas or leaky feeder cable.

In this deployment, a base station hotel onsite was used to feed the DAS. The DAS consisted of 23 MBF-40 remote tri-band units, working on 900, 1800 and 2100MHz (supporting GSM and LTE) and an additional 3 MBF-40 remote units working on 1800MHz only. The remote units were all connected to several Optical Master Units (OMUs) located in various places onsite.

The remote units supplied on this project provide an exceptionally low noise figure which reduces any interference transmitted to the base station. As a result it ensures optimum performance on the network and the maximising of throughput.

The Benefit

"Mandela Square is a complex environment that needed comprehensive, seamless wireless coverage in order to serve all its occupants. Working with Axell Wireless meant that we could provide the latest in RF-over-fibre technology while future-proofing the system for future expansion".
Radio Network Solutions

Mandela Square and its visitors and occupants now benefit from a state-of-the-art in-building wireless coverage system.

In many locations like this, outdoor cellular coverage is blocked by **high penetration loss** of modern buildings. The materials used to build such structures often shield wireless signals from outside so the in-building Fibre DAS used around Mandela Square helps the property owners to overcome this problem.

Dominant **cell definitions are often disturbed by multiple cells from outside** but by providing designated coverage within the building itself this problem is eliminated completely.

Compared to other technologies in this space, an Axell Wireless Fibre DAS is a **multi-band, multi-operator system** that works in any frequency combination that is required. This flexibility means systems are able to cope with growth as and when it is required. It also means less equipment needs to be deployed, resulting in a smaller footprint within the building and savings on both CAPEX and OPEX - as well as simplifying the network design, of course.

From repeaters to quad-band in-building solutions, RNS plans, supplies and deploys for every telecoms requirement. They offer a full range of RF components, mobile BTS, wind and solar green sites, specialized combining solutions and the PIM Pro family of test sets. Customers vary from small private networks to some of the world's biggest telecommunications companies. Visit www.radionetworksolutions.com for more information.