

## CASE STUDY

# GOING UNDERGROUND IN GAUTENG



Optical Master Unit II

### The Challenge

The Gautrain is a rail network that serves the cities of Johannesburg and Pretoria, including O.R. Tambo International Airport and was opened in June 2010.

The Gautrain comprises of 80km of track, serving 10 stations, of the 80km, 18km are underground.

Axell Wireless in collaboration with Radio Network Solutions designed, supplied and implemented a safety radio network System into the complete tunnel and underground station Network.

In underground locations like this one, heavily used by the public, robust wireless communication networks are crucial for the provision of continuous communications during emergencies. However, with new standards and regulations changing the public safety network landscape, the technology that is chosen has to continuously evolve to keep pace.

### The Solution

To meet the high reliability requirements of the Gautrain tunnel and station network, RNS deployed a Radiating cable (Leaky Feeder) system.

Using this method, the Gautrain system required 2 fibre-optic master sites (using Axell's latest Optical Master Unit, or OMU II) and 22 remote units. Each remote unit is placed at an underground station and emergency Shafts, connected through optical fibres.

Leaky feeder cables then run from the remote units providing coverage inside the tunnel itself.

The use of these repeaters allows base station coverage to be boosted and extended over great distances to remote locations; removing the issues associated with continuous communications underground.

A reliable public safety system must continue performing despite any failures to the system itself. This problem is solved by providing a fully redundant design underground. Each base station is configured to feed several repeaters, and overlapping coverage exists between two adjacent repeaters. If a repeater fails, the repeater sited next to it will provide ongoing coverage.



