

Southern African International Airport upgrades to digital with KENWOOD DMR.



A major airport in Southern Africa completes the first phase of its upgrade from analogue to DMR digital communications.



As part of its expansion, the airport's main terminal building has been renewed and further land earmarked to meet the forecasted growth in passenger numbers from 1.9 million today to over 4 million by 2022.

But the sustained growth of passenger numbers has served to highlight the limitations of the analogue radio system that was in use and the need to replace it with a digital solution to add more users and user groups while enhancing safety, security and operational efficiency.

The airport's management team worked with external consultants to explore the radio communications technology best suited to their current and future needs. DMR two-slot, 12.5kHz TDMA technology was selected and the requirements detailed in a tender document.

Global Communications, a subsidiary of Hudaco Industries is awarded the new DMR digital radio system project.

Following a competitive formal tender process and presentations, Global Communications were awarded the project which due to the need for additional UHF frequencies would be delivered in two distinct phases:

Phase 1: Voice only using the two existing frequencies.

Phase 2: Voice, Short Data Messages (SDM) and GPS to be implemented when two additional frequencies are granted

Once the system design and programming specifications were finalised and the acceptance test signed-off, it took under 5 months for Phase 1 to be completed.

The challenges faced in delivering this phase was that it had to be implemented 'live' in parallel with the existing analogue system and with minimum disruption to the airport's operations.

This resulted in the Global Communications team having to work around the limited access to vehicles to install mobile units, the logistics of scheduling numerous training sessions with users from multiple departments around their duties and ensuring that everything and everyone would be ready for the switchover to digital at the same time. Other issues, resulting from the limitations of only having two frequencies available were addressed by reprogramming equipment

Kenwood DMR delivers a simple yet flexible and scalable radio communications solution.

The Kenwood DMR solution employed at the airport is a digital conventional multisite system with two repeaters per site and all repeaters connected.

The key operating requirements from the client included:

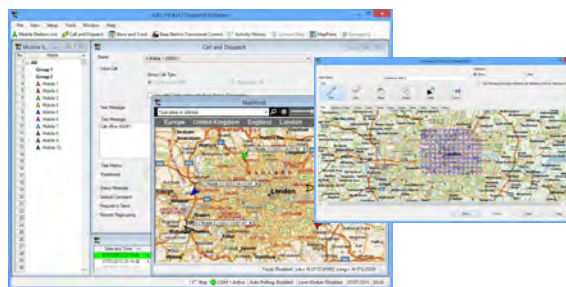
- Clear audio reception in noisy environments
- Good coverage across entire airport site indoors and out – extending to 250 km² in total
- Live switchover from analogue to digital operation
- Detailed implementation plans covering Phase 2
- System and equipment support 24/7
- Separate, 'private' channels for each of the 16 user groups:

Airline 1	Airline 2	Airline 3	Emergency Services
Apron Services	Security	Baggage Handling	IT
Quality Control	Car Parks	Operations	Management
Fuelling Services	Maintenance	Emergency / Panic Alarm	Radio & Nav System Maintenance

On completion of Phase 2



The addition of two new frequencies will see the implementation of Phase 2 and a second site with two repeaters, 4-channels (8 slots) which brings voice, SDM and GPS capabilities to the system.



It will also see the installation and commissioning of Kenwood KAS-10 software for the management of departmental traffic and the KAS-20 suite across airport operations. Together, they will allow improved system usage analysis and provide safety and operational enhancements, specifically in:



To take advantage of these capabilities the two sites will be linked, and all radios connected to the system will be reprogrammed.

Operations-critical support

The safe and efficient operation of the airport relies on clear communications around the clock and the radio communications system is fully supported to ensure system availability at all times.

System Details

System: KENWOOD DMR

Type: Digital Conventional

Technology: Digital

Channel Access: 2-slot 12.5 kHz TDMA

Air Interface Protocol: DMR

Antennas: Repeaters: Kathrein – Collinear with down tilt – X2 (2 more in phase 2)

Mobiles: WEBB ZARA 450 collinear mobile antennas (1/4 wave and 5/8 wave with impedance coil in centre, all steel)

Mobile Radios:

22 pieces NX-3820 and TK-D840



Hand-Portable Radios:

76 pieces NX-3320 and TK-D340

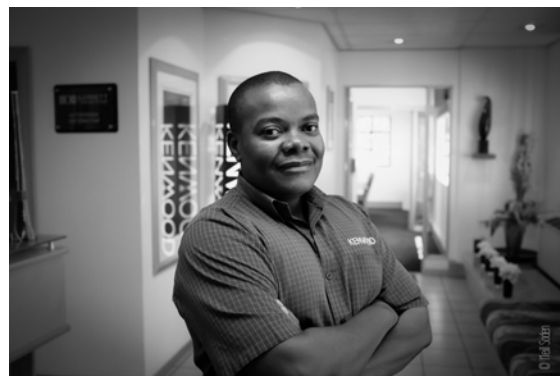


Repeaters:

4 pieces TKR-D810



Final words



Dumisani Nosi, Manager Public Sector at Global Communications reported: “The client’s requirement for a reliable, scalable radio solution that provides the range, clarity, capacity, channels and ability to flex around changing needs have been more than met by the Kenwood DMR solution installed. We’re delighted that they are happy with the improvements it brings over the analogue system it replaced”.



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