

Airborne 3G

SIEMENS



3G takes off in air transport

From basestation and terminal design, to the definition of international systems and standards, Roke Manor Research has played an instrumental role in the development of Siemens' UMTS portfolio.

UMTS is a third generation (3G) mobile communications system. Representing a fusion of technologies, which will deliver low-cost, high-capacity mobile communications services to people on the move, it opens up a host of applications in both the defence and commercial arenas.

TDD Testbed Development

In 1999, Japanese telecommunications operator NTT DoCoMo placed a contract with Siemens and NEC to develop a UMTS TDD-mode testbed, with the development of basestations and mobile stations entrusted to Roke Manor Research. Timescales were tight, but our skilled team of hardware and software engineers completed the design, manufacture, testing and delivery of the system, comprising six units, on time – in just over one year. Seven more systems were built and delivered over the next eight months and four of these were fitted into 20ft purpose-built containers, each accompanied by a vehicle equipped with a mobile station.

The testbeds were designed to demonstrate the viability and performance of 3G mobile networks, and to show examples of mobile Internet applications operating over real networks. In August 2000, we successfully transmitted high quality video over TDD – a world first - and the testbeds have since been trialled by operators and exhibited in 30 countries throughout the world.



3G “takes off”

Europe’s skies have never been busier, and as a consequence the aviation industry is running short of radio spectrum for communications. When Eurocontrol, the organisation in charge of air navigation in Europe, began exploring the potential of 3G wideband technology as an alternative medium, they were able to minimise costs by drawing on Roke Manor Research’s investment in the TDD testbed.

The first trials took place in December 2001 on board a BAC1-11 research aircraft. Together with Eurocontrol we demonstrated in-flight the potential of 3G to enhance safety, security and air traffic management, and its capability to support airline operations and passenger services. Live video of activities in the cockpit and cabin was transmitted to the ground along with still photographs, taken by a web-cam. Simultaneously, a voice call was made while another passenger browsed the Internet and

watched a video streamed from a server on the ground. A total user data rate of 1.2mbps was sustained and seamless handover between basestations was demonstrated consistently at speeds approaching 600 km/hour.

By working together, Eurocontrol and Roke Manor Research have given real credibility to the concept of 3G wideband technology as an aviation tool. In addition to its application for security purposes, the potential benefits of this technology to enhance Air Traffic Management, and to provide Airline operational and passenger services are substantial.

To learn more about our expertise in this area, please contact one of the representatives below or visit our website at www.roke.co.uk

“Roke Manor Research has been very flexible and offered good advice, especially when suggesting cost beneficial solutions. The company has achieved a lot in a very short time”

Geoffrey Bailey
Head of Communications, Eurocontrol



This image taken from a live video recording was sent successfully over a third generation high frequency wideband network in a trial that could pave the way for improved safety and security on flights in European skies by allowing live transmissions from the cabin and cockpit to ground staff

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