

## Spectrum Monitoring and Management System R&amp;S® ARGUS-IT

# Nationwide radiomonitoring system for Greece

**The Olympic Summer Games 2004 in Athens were a great success not just from an athletics point of view; enormous communications challenges were also successfully mastered with the contribution of the new nationwide radiomonitoring system from Rohde & Schwarz.**

## Powerful system for sophisticated tasks

Long before the Olympic Games in Athens were opened, the National Telecommunications and Post Commission (EETT) decided to establish a nationwide spectrum monitoring and management system. During the international invitation to tender, Rohde & Schwarz won out against very strong competitors in November 2002. Just over a year after the order had been placed, the system started operation and excelled in every aspect.

The spectrum monitoring system consists of five fixed stations (three in the Athens area and two in the Thessalonica area), seven test vehicles plus several portable and transportable systems. National headquarters and a regional control center were set up in the Athens area.

Tried-and-tested equipment from Rohde & Schwarz such as the R&S®ESMB and R&S EB 200® receivers, the R&S DDF®195 direction finder and the R&S®FSP 30 spectrum analyzer are used. In addition, transportable monitoring systems of type R&S®TMS 210, R&S®TMS 500 and R&S®TMS-C are employed for mobile applications. In conjunction with the appropriate antennas, the system covers the frequency range from 9 kHz to 30 GHz.



Seven test vehicles support headquarters; they can also be connected via the GSM network.



## Thoroughly tested at the Olympic Summer Games

Even during "normal" times, radiomonitoring a city the size of Athens is an immense task for the regulatory authorities. During large events such as the Olympic Games, it becomes a veritable challenge since radiocommunications drastically increase.

Systems for the wireless transmission of audio, video and data streams are the key to successfully presenting the Games in the media. These systems include innumerable cameras and microphones at the sports venues, transmission vehicles that forward the information via satellite all over the world, as well as laptops with *Bluetooth*<sup>®</sup> or WLAN access. And, of course, all visitors want to send their families and friends live reports via mobile phones. The security of all persons involved was paramount. A large number of special forces monitored the Games. Secure and reliable communications had top priority.

In view of the above, EETT started planning and coordinating the frequency requests well in advance. Anyone who wanted

to use such equipment professionally during the Olympic Games could easily and conveniently apply for a temporary transmission license via the Internet. A total of 7860 license requests from 108 countries were licensed by EETT. A significant number of unauthorized transmissions, which could have influenced the smooth operation of the Olympic Games, were successfully located and managed.

To also meet all tasks in terms of staff, the number of EETT employees was considerably expanded; approx. 60 additional employees were trained on the new system within a minimum of time. Throughout the Games, approx. 150 employees worked virtually round the clock at all sports sites. They were supported by experienced specialists from Rohde & Schwarz who were present at all times.

The outcome was impressive – the new spectrum monitoring and management system met all requirements: The numerous media representatives and other users were able to work without significant technical glitches; unavoidable minor problems were immediately eliminated. During the Paralympics, which were held soon after, the EETT employees were again involved and once more excelled at their task.

All equipment is controlled via Monitoring Software R&S<sup>®</sup>ARGUS, which has been used in numerous countries for nearly two decades and is, of course, continuously updated and always state-of-the-art. Automated measurement sequences and communications with the national frequency management database for mutual use of data are feasible.

The unattended fixed stations can be remote-controlled via radio links with data rates of up to 6 Mbit/s. National and regional headquarters in Athens and Thessalonica are connected via leased lines. The vehicles can be integrated via the GSM network, which is important if several direction finders have to be operated synchronously for exact localization of interferers, for example.

Rohde & Schwarz was the overall project leader. The project was implemented in close cooperation with the company's Greek representative Mercury. Subcontractor LStelcom supplied the entire spectrum management system.

In February 2004, the project was presented to the Greek public during a ceremonious event. In their speeches, the Greek Prime Minister, the Minister of Transportation and Communications at that time as well as the President of the Regulatory Authority emphasized the importance of the system. It had to master its first acid test during the Olympic Summer Games and the Paralympics (box above).

The next Olympic Summer Games will be held in Beijing in 2008. The Chinese regulatory authority is already using a spectrum monitoring network from Rohde & Schwarz.

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More information about the entire radio-monitoring portfolio from Rohde & Schwarz at [www.rohde-schwarz.com](http://www.rohde-schwarz.com)