

# Automatic monitoring

of radio signals at airports  
interfering with radio services

## MONITORING

All airports around the world make use of extremely sensitive radiocommunications in air traffic control, automatic landing systems and local radiocommunications systems. This applies to the entire airport area, both inside and outside buildings. In a worst-case scenario, plane crashes cannot be ruled out – for example, if radio-controlled landing systems fail. In order to react quickly, airport authorities are consequently forced to install their own local monitoring devices in addition to the public regulatory authority systems. The task is to automatically monitor the frequency spectrum in question, detect overshoots of defined thresholds at specific frequencies,

and forward an alarm to an airport monitoring control center (MCC), where operators can decide what further steps to take. To detect the radio signals of interest, the monitoring devices have to be placed outside and inside the buildings. The monitoring units used must meet several requirements:

- ◆ Wide frequency range
- ◆ Fast and simple installation
- ◆ Small outdoor units that do not require a special room
- ◆ Easy network integration (LAN, wireless or phone lines)
- ◆ Automatic operation and alarm signaling
- ◆ Cost effective

### Monitoring solution



The compact R&S®UMS100 outdoor monitoring system is the optimal solution for automatically monitoring all frequency ranges and the RF radiation of interest if it is placed around the airport area and near or inside the buildings or rooms in question.

All R&S®UMS100 systems are remote-controlled and administered from an MCC. The R&S®UMS100 can be linked to the MCC via a LAN/WAN or via a wireless connection

using mobile phone data services based on standards such as GSM or CDMA.

In the automatic mode, the R&S®UMS100 immediately compares the live measurements with user-defined reference spectra. If one of the alarm criteria is met, an alarm message is automatically generated and forwarded to the MCC. Furthermore, audio recording can be initiated.

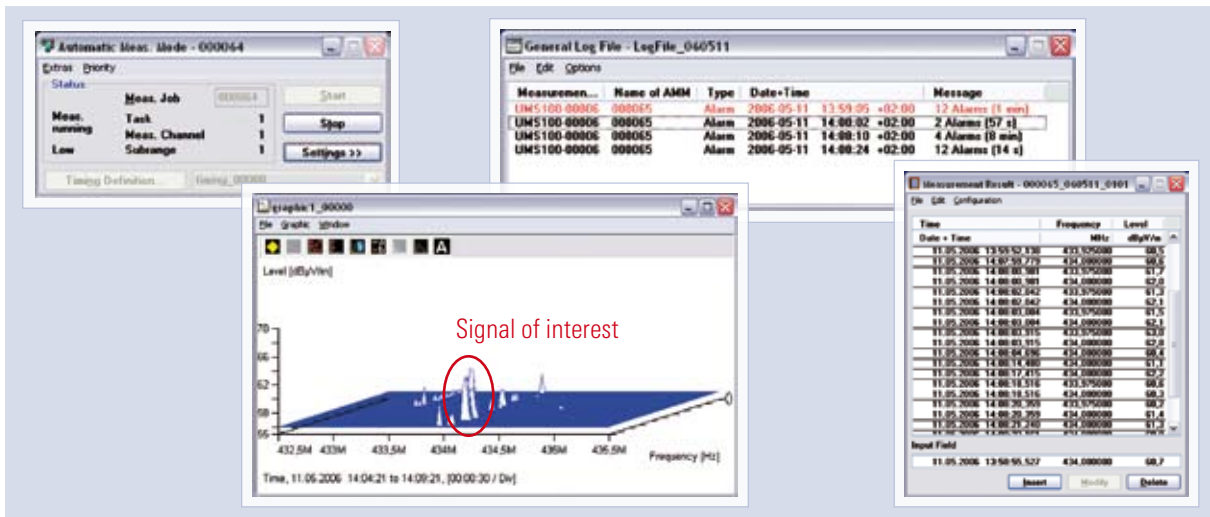
## Application

The MCC runs the powerful R&S® ARGUS platform to provide easy access to all R&S® UMS100 systems. Besides direct interactive access, the preferred mode of operation is automatic measurements. Once a measurement is defined, it will run automatically on the internal processor of the R&S® UMS100, either continuously or within selected time-slots, without requiring any further action on the part of the operator or a network connection. Thus, operating costs will be clearly reduced. Measurement results can be saved and displayed as tables and graphics. All alarm messages created by the R&S® UMS100 are listed in the general log file in the MCC, as shown below (unprocessed entries marked in red). Depending on operational preferences, the MCC can either routinely poll the R&S® UMS100 to request measurement results or wait for alarm messages automatically generated and forwarded by the R&S® UMS100 after a suspicious signal has been detected.

Upon receiving an alarm, the operator in the MCC must decide what further steps need to be taken:

- ◆ Use the R&S® UMS100 to listen to the demodulated audio frequency
- ◆ Perform dedicated measurements on the signal that triggered the alarm
- ◆ Send personnel with special monitoring instruments to the area of interest

The R&S® UMS100 has been designed as a very cost-efficient, compact, robust, standalone monitoring system. It reliably detects signals with a minimum duration of typically one to two seconds.



## Ordering information

Type	Description	Order number
R&S® UMS100	20 MHz to 1300 MHz	3030.3013.02
R&S® UMS100HF	0.1 MHz to 20 MHz	3030.3020.02 (option)
R&S® UMS100SHF	1.3 GHz to 6 GHz	3030.3036.02 (option)
R&S® ARGUS-UMS	Control Software	3034.0090.02



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