

ROHDE & SCHWARZ

Make ideas real



SPECTRUM MONITORING ELEVATED TO A NEW LEVEL

R&S®AMS aerial monitoring system for spectrum monitoring and interference hunting

AT A GLANCE

- ▶ **Customer:** The Paraguayan regulator CONATEL (Comisión Nacional de Telecomunicaciones)
- ▶ **Task and requirement:** Efficiently verifying technical parameters and resolving interference for the ever-increasing number of microwave links in the country
- ▶ **Project start:** 2021
- ▶ **Project duration:** Successfully completed in 2021
- ▶ **Number of aerial monitoring systems:** 5 units
- ▶ **Project scope:** Extension of a nationwide radio-monitoring project to carry out regulatory activities in the field of spectrum management and monitoring
- ▶ **Solution/product:** R&S®AMS aerial monitoring system combined with R&S®ARGUS spectrum monitoring software



The customer

CONATEL (Comisión Nacional de Telecomunicaciones) is the Paraguayan regulator of its national telecommunications system. The agency verifies product compliance with applicable regulations and carries out national management and monitoring regulatory activities to ensure the best possible use of the available spectrum.

Customer situation and requirement

CONATEL implemented a nationwide radiomonitoring project with Rohde&Schwarz in 2005. The contract included a control center, a fixed and a mobile monitoring station. The system consisted of digital radio direction finders, monitoring receivers, direction finding antennas and monitoring antennas from Rohde&Schwarz. Over the years, the initial system has been systematically extended with more stations and more capabilities. In 2021, CONATEL decided to use the R&S®AMS aerial

monitoring system from Rohde&Schwarz, an efficient tool for measurements in the ever-increasing microwave links. New technologies such as 5G, the constant increase in transmitters and the need for ever larger bandwidths mean the use of higher frequencies. Wave propagation in the SHF and EHF ranges requires directional radio links/point-to-point connections. To measure this, the antenna must be positioned in the main lobe. This is often only possible with airborne systems. The R&S®AMS from Rohde&Schwarz brings a more cost effective and timely solution to the market.

For more information, visit
www.rohde-schwarz.com





The R&S®AMS monitoring payload can be carried by a commercial drone. It provides easy, economic, but effective measurements by flying inside the main lobe of microwave links that are hard to reach otherwise.

Rohde & Schwarz solution

The R&S®AMS light-weight, small size monitoring payload can be attached to a commercial drone for easy, economical, yet effective measurements. It flies inside the main lobe of difficult-to-reach microwave links.

The R&S®AMS helps mitigate or prevent interference. When network operators install or modify base transmitter stations (BTS), they may also change microwave links. R&S®AMS measurements include center frequency and bandwidth in line with ITU recommendations. It allows verification of antenna polarization, snapshots of band occupancy and can even home in on interferences in dense urban areas.

The R&S®AMS payload includes a spectrum analyzer, an antenna, a control computer and a Wi-Fi unit plus battery pack. The payload battery and data link make it

independent from the drone's infrastructure. The entire payload weights less than 5.2 kg and can quickly be connected beneath a commercial drone. With a directional horn antenna, it covers the frequency range from 4 GHz to 40 GHz (optionally from 300 MHz to 8 GHz) with selectable horizontal or vertical polarization.

Results and achievements

In 2021, CONATEL awarded Rohde&Schwarz a contract for the R&S®AMS aerial monitoring system. At CONATEL, two operators control the aerial monitoring system, i.e. one drone pilot and one system operator. The system can also operate autonomously, automatically running pre-flight configured measurements.

After take-off, the drone usually climbs up to the main microwave link lobe, where it remains hovering to perform the desired measurements. After a measurement flight,

CONATEL decided to use the R&S®AMS for the nationwide frequency management and monitoring regulatory program. Rohde & Schwarz has already delivered various systems and solutions and maintained a successful partnership with CONATEL over the decades.

the R&S®AMS system operator can simply transfer the collected data into the compatible R&S®ARGUS monitoring software database. Extensive analysis capabilities and statistical evaluations are available here. Standardized and user-specific reports can also be created.

As a reliable partner, Rohde&Schwarz supports CONATEL through all phases by providing an innovative and forward-looking service package.

