Thailand's NBTC relies on R&S®ARGUS spectrum monitoring system
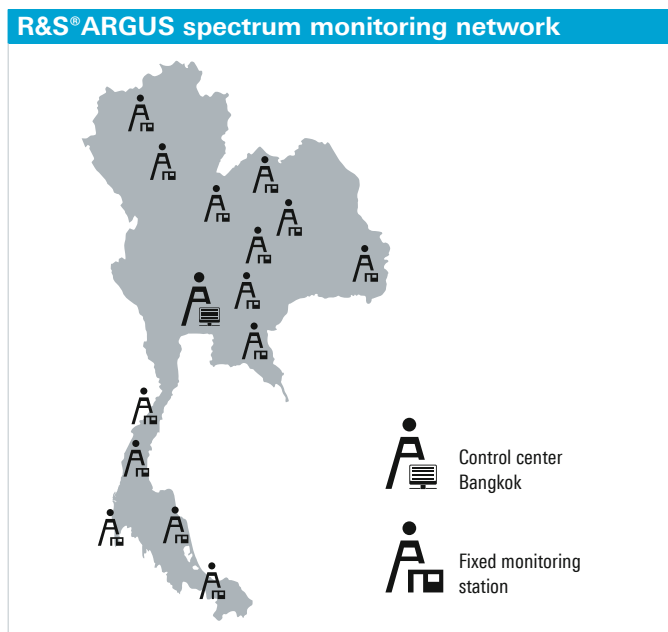
Thailand's National Broadcasting and Telecommunications Commission (NBTC) extended its R&S®ARGUS spectrum monitoring network in 2018. The 15 new fixed stations can be controlled on site or remotely from the authority's headquarters. The system allows manual and automatic measurements, recordings and evaluations in line with ITU recommendations. It supports the NBTC in interference hunting applications, planning the spectrum, assigning new frequencies and other tasks that help to optimize the use of the spectrum.

In 2018, Thailand's regulatory authority NBTC replaced existing stations with new R&S®ARGUS spectrum monitoring systems. Their technical parameters as well as their measurements completely comply with ITU recommendations. These include measurements for frequency, bandwidth, field strength and modulation as well as evaluations for spectrum occupancy and frequency occupancy. Besides direct control, the R&S®ARGUS monitoring software provides operators with automatic measurements. These measurements start and stop as needed, recording data and audio signals and triggering warnings when measured values exceed reference levels. This allows the authority to verify compliance with the licensed parameters and guidelines for transmitter systems. Any violation or radio interference source can be detected, identified and followed up.

Khon Kaen monitoring station

R&S®ARGUS spectrum monitoring network

Control center Bangkok

Fixed monitoring station

ROHDE & SCHWARZ

NBTC operators control the 15 stations locally or from headquarters. There, the R&S®ARGUS software provides several open interfaces that offer great benefits. For example, one interface allows spectrum-planning officers to create measurement tasks within the spectrum management system. This enables them to obtain actual data about the use of certain frequencies or the spectrum. R&S®ARGUS takes over the tasks, transfers them to the corresponding remote station and automatically returns the measured results. This way, the officers receive the real information in the spectrum management system. Another interface works the other way around. It allows monitoring operators at remote stations or in the control center to retrieve data from the spectrum management database. This enables them to verify the spectrum compliancy in a specific band in the area of the remote station. The system verifies conformity of licensed transmitters and detects unauthorized emissions.

The monitoring stations cover the frequency range from 20 MHz to 3 GHz. The R&S®ESMD wideband monitoring receiver, controlled via computer or via front panel, serves as the core of each station. The R&S®ESMD receivers get the signals from a set of omnidirectional antennas on top of the masts. The antenna heights along with the systems' sensitivity enable wide coverage ranges. However, due to the proximity to broadcast stations and mobile network infrastructure, some stations have to cope with dense signal environments. Despite this, the receivers' high dynamic range and the antennas' passive character allow excellent linearity and receiving capabilities. At particularly difficult sites, additional attenuators, tunable notch filters for mobile radio bands and additional FM band notch filters make the systems adaptable to such areas of high field strengths.

Before delivery of the 15 fixed stations, Rohde & Schwarz supplied the NBTC with a total of nine mobile R&S®ARGUS monitoring stations since 2010. All these spectrum monitoring stations allow the NBTC to keep pace with advances in communications technology and the growth of available radio services.
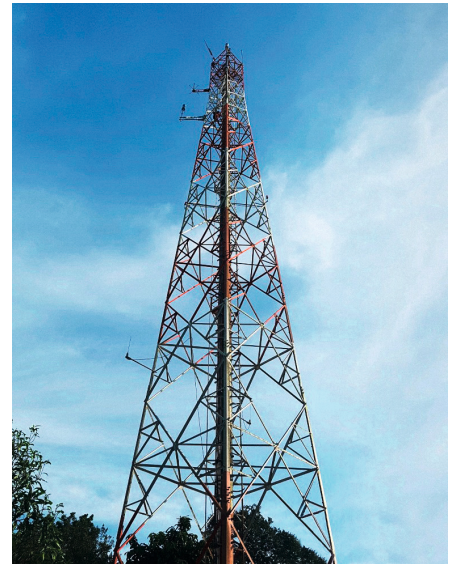
R&S®HK309 and R&S®HF902 monitoring antennas overlooking Thailand's landscape

The R&S®HK033 omnidirectional monitoring antenna

Several monitoring antennas mounted on a mast

3609362032