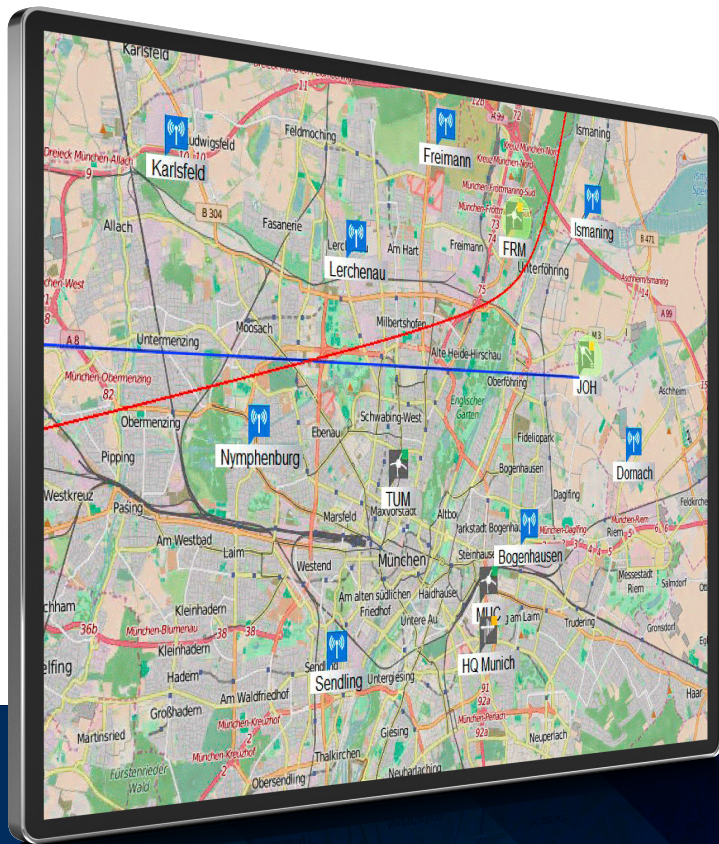


R&S[®] ARGUS 6.3

SPECTRUM MONITORING SOFTWARE

For monitoring solutions in line
with ITU recommendations



Product Brochure
Version 03.00

ROHDE & SCHWARZ

Make ideas real



AT A GLANCE

For over 35 years, regulators in over 100 countries have chosen R&S®ARGUS for ITU-compliant measurements and evaluations. R&S®ARGUS measures, analyzes and evaluates. Its measurement modes reflect typical workflows and support operators' day-to-day work. Numerous statistics help analyze data in depth for informative and concise reports. R&S®ARGUS 6.3 maintains the focus on complete workflows while adding even more vital monitoring capabilities.

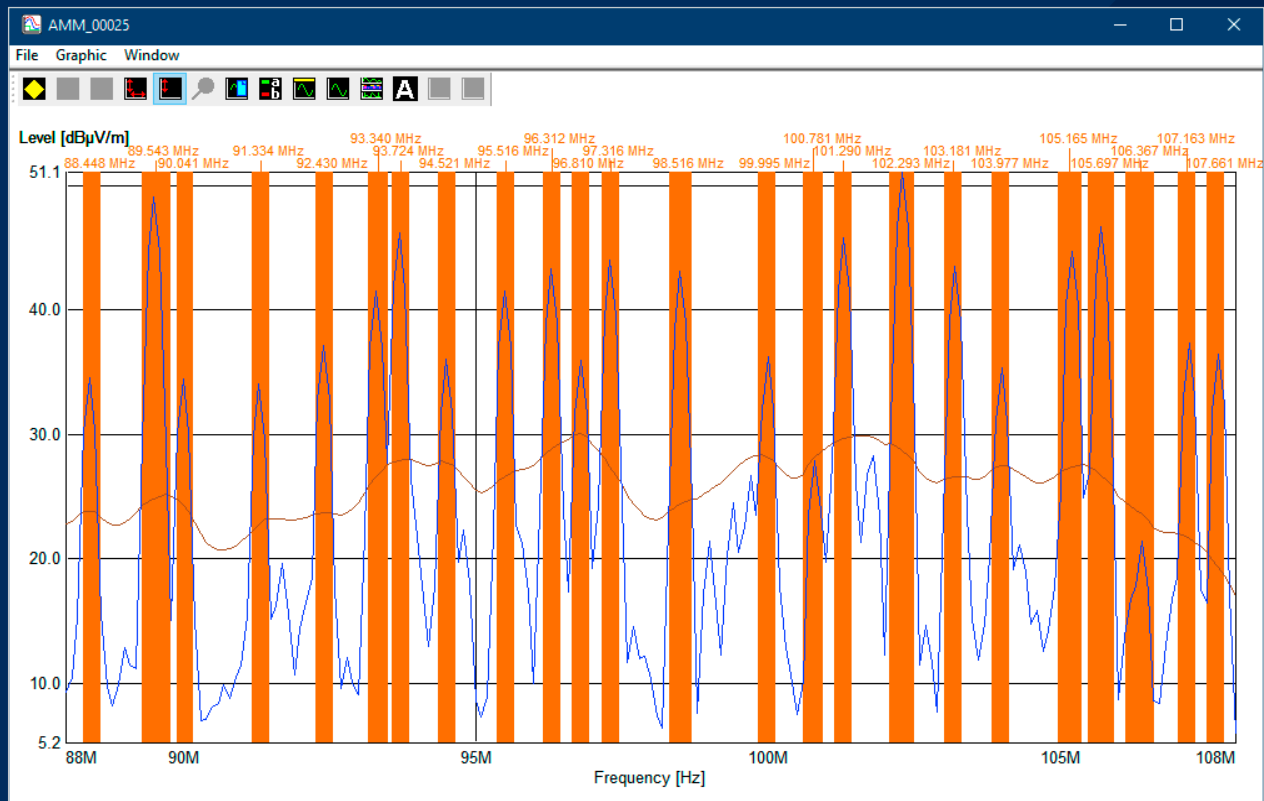
R&S®ARGUS has several monitoring and evaluation functions, from simple level measurements to sophisticated intermodulation analysis and examinations of vestigial sideband emissions. The software covers interactive, quick response operations and fully automatic procedures, standalone devices and nationwide monitoring networks. A central database makes R&S®ARGUS ready for the next big challenge in spectrum monitoring: large-scale data analysis.

R&S®ARGUS combines powerful spectrum monitoring tools with easy and efficient operation. It has improved versions of tried-and-tested features, such as reasonable default values and unique guided measurement modes, so that less experienced operators can perform demanding tasks quickly and reliably.

Maps show a detailed overview of a system's operational status and usage. Map based operations, such as defining and triggering monitoring and location missions for multiple remote stations make work easier and improve efficiency.

The modular structure makes it possible to configure a system to perfectly match individual requirements. Various open interfaces flexibly adapt to almost any customer demand. Subsequent expansions are easy, regardless of the number of instruments, enhanced measurement capabilities or additional monitoring stations.

R&S®ARGUS has been continuously extended and enhanced for over three decades with outstanding solutions to meet evolving challenges. A wide range of specialized equipment, numerous open interfaces and unrivaled monitoring capabilities make R&S®ARGUS ideal for applications far beyond ITU-compliant monitoring.



Automatic detection of active transmitters, based on integrated noise floor measurement

KEY FACTS

- ▶ Measurements and analysis in line with the ITU Handbook on Spectrum Monitoring and ITU recommendations
- ▶ Audio of digitally modulated signals
- ▶ Geolocation of emitters via angle of arrival (AOA), time difference of arrival (TDOA) and hybrid (combination of AOA and TDOA) as well as mobile locator (ML) technology
- ▶ Guided measurement procedures for maximum operator support
- ▶ Map based operation and system status display
- ▶ Open interface to exchange data with spectrum management applications
- ▶ Simple scalability with flexible license concept and modular software architecture

BENEFITS

- ▶ Broad range of dedicated devices
- ▶ Guided and structured measurements for efficient monitoring
- ▶ Comprehensive analyses and informative reports
- ▶ Open interfaces
- ▶ Map based display and operation

BROAD RANGE OF DEDICATED DEVICES

Powerful devices are at the core of every monitoring system. All-rounders such as ITU-compliant receivers and direction finders form the backbone of these systems. Spectrum analyzers and TV test receivers can be added for in-depth analyses of diverse modern communications signals. Systems can also be supplemented with antenna switching and rotator controls for directional antennas. Multiple filters, attenuators and amplifiers can be integrated to vastly improve mediocre sites. When combined with R&S®ARGUS, powerful systems result that meet all relevant ITU recommendations

GUIDED AND STRUCTURED MEASUREMENTS FOR EFFICIENT MONITORING

R&S®ARGUS has multiple options that provide operators with the best possible support in day-to-day operations.

Interference hunting is very interactive and operators need to be flexible. R&S®ARGUS has tools to quickly and efficiently analyze a situation, from high-speed scanning to advanced intermodulation analysis. Once an interference source is detected, a detailed analysis of the rogue signal helps identify it. Dedicated decoders and baseband classification have proven extremely useful in obtaining technical characteristics and audio content, even of digitally modulated signals. Various location techniques help pinpoint a culprit's true location. Operators can choose between smart homing, classical angle of arrival (AOA) and time difference of arrival (TDOA) or a combination of AOA and TDOA.

Detecting illegal transmitters, verifying license compliance and measuring occupancy are usually long-term operations, in which a system reacts automatically when an unexpected scenario is detected. Time and event triggered procedures allow the precise definition of time slots during measurements. R&S®ARGUS continuously compares live data to user-defined reference values. R&S®ARGUS sends notifications and performs predefined tasks, such as detecting illegal or unlicensed transmitters. As soon as suspicious activity is detected, R&S®ARGUS can trigger audio recording or baseband classification to identify a signal and initiate localization to determine its precise location.

R&S®ARGUS has a unique operator guidance feature that suggests the best device settings based on the task and frequency range. Less experienced operators can easily set up fully ITU-compliant procedures.

The screenshot displays the 'Classification Meas. Mode - <Untitled>' window. The interface includes a menu bar (File), a toolbar with various icons, and a control panel with fields for '136.100000 MHz', 'IF Bandwidth 30 kHz', 'Demodulator', and 'Symbol Rate'. Below the controls is a table with 12 columns: Time, Frequency, Confidence, Class. Center ..., Class. Bandwi..., Modulation, Prim. Mod., Level, Symbol Rate, Transmission ..., and Demod. Details. The table contains 10 rows of data, all showing FSK4 modulation and DIRECT primary modulation. At the bottom, there are buttons for 'Stop', 'Save', and 'Only Final Results'.

Time	Frequency	Confidence	Class. Center ...	Class. Bandwi...	Modulation	Prim. Mod.	Level	Symbol Rate	Transmission ...	Demod. Details
6/2/2025 3:54:32 PM	136.100000 MHz	98.00 %	136.099888 MHz	5.205 kHz	FSK4	DIRECT	44.3 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:31 PM	136.100000 MHz	98.00 %	136.099938 MHz	5.205 kHz	FSK4	DIRECT	44.3 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:30 PM	136.100000 MHz	98.00 %	136.099956 MHz	5.205 kHz	FSK4	DIRECT	44.8 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:29 PM	136.100000 MHz	98.00 %	136.100011 MHz	5.226 kHz	FSK4	DIRECT	44.5 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:28 PM	136.100000 MHz	99.00 %	136.099894 MHz	5.205 kHz	FSK4	DIRECT	45.0 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:27 PM	136.100000 MHz	98.00 %	136.099953 MHz	5.205 kHz	FSK4	DIRECT	45.0 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:26 PM	136.100000 MHz	98.00 %	136.099978 MHz	5.205 kHz	FSK4	DIRECT	44.7 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:25 PM	136.100000 MHz	98.00 %	136.099981 MHz	5.205 kHz	FSK4	DIRECT	44.7 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1
6/2/2025 3:54:24 PM	136.100000 MHz	97.00 %	136.099891 MHz	5.205 kHz	FSK4	DIRECT	44.7 dBµV/m	2400.0 /s	NXDN	SRC ID: 77; DST ID: 1

Classification results are used to automatically adjust settings, so that audio can be obtained from digitally modulated signals

OPEN INTERFACES

Information about licensed transmitters is very important for monitoring.

R&S®ARGUS can freely define queries of a spectrum management database to obtain the precise reference data needed for the task at hand. Via the SMDI open interface, R&S®ARGUS can import that information from all major spectrum management providers. Adaptations to customer-specific management solutions can also be done quickly.

If a spectrum management department does the comparison between licensed and measured data, another open interface is available. Third-party applications can define monitoring tasks that R&S®ARGUS will perform automatically. The results are sent to the requesting program for further evaluation.

While operators can export all data in standard Windows formats, another open interface provides direct access to the monitoring database. Obviously, access is controlled and the data is read only.



Simultaneous live control of four remote sites

COMPREHENSIVE ANALYSES AND INFORMATIVE REPORTS

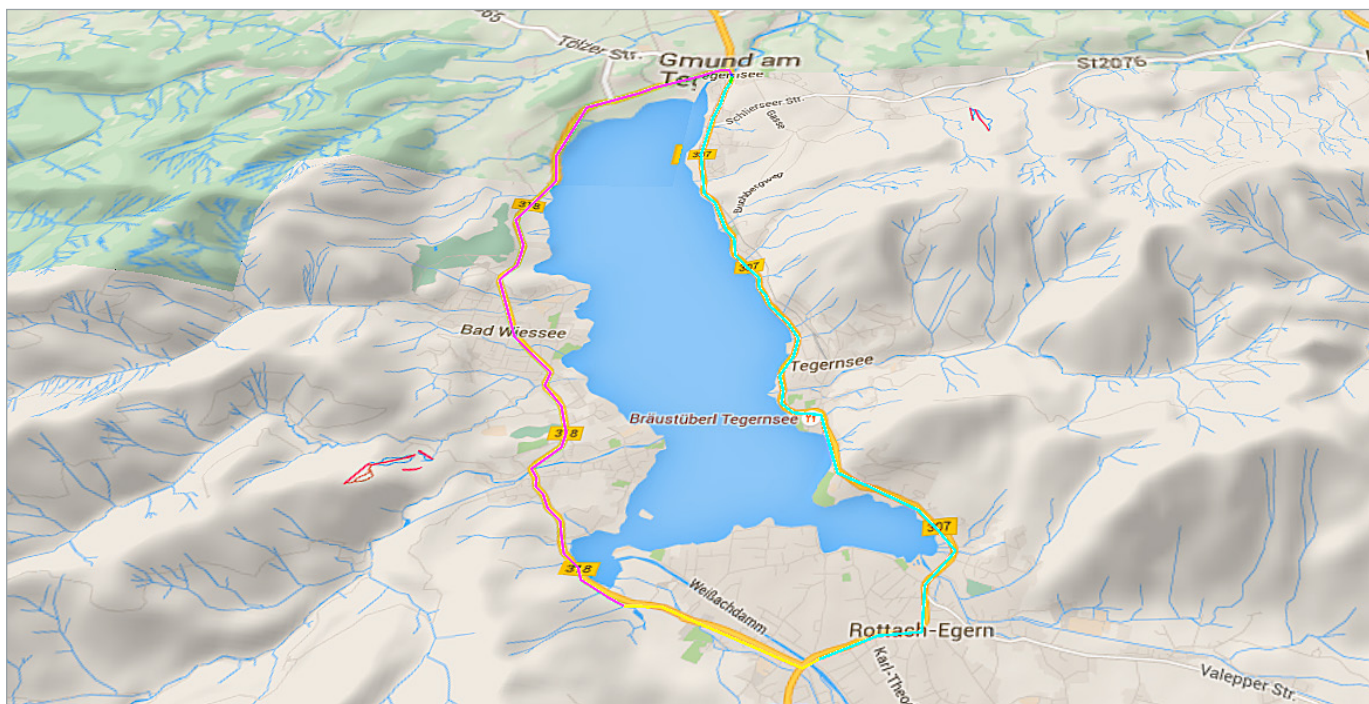
Raw data needs to be processed and analyzed for various tasks. Classical occupancy calculations reveal usage for a channel or a whole frequency band. Additional transmission statistics add more information about true availability. Further analyses, such as measurement value statistics, sub-audio tone occupancy and offline violation detection round off the evaluation capabilities.

Once a mission is finished, a report is usually created. All data types can be used to create relevant reports. Default and user-defined templates allow the efficient creation of comprehensive reports tailored to the individual recipients.

MAP BASED DISPLAY AND OPERATION

Standard data is always displayed, such as the location of transmitters. Further layers reveal the location of known transmitters and their most important license information, immediately revealing whether a measured location is identical to that of a legal transmitter.

R&S®ARGUS also displays location, capabilities, status and usage of all monitoring sites. Clicking on the map establishes connections to remote sites.



Result of a coverage measurement

ORDERING INFORMATION

Designation	Type	Order No.
Base module	R&S®ARGUS	3056.8758.02
Automatic measurement mode (AMM)	R&S®ARGUS	3056.8758.10
Location measurement mode (LMM-DF)	R&S®ARGUS	3056.8758.11
Location measurement mode (LMM-ML)	R&S®ARGUS	3056.8758.39
Location measurement mode (LMM-TDOA) ¹⁾	R&S®ARGUS	3056.8758.35
Location measurement mode (LMM-TDOAS)	R&S®ARGUS	3056.8758.38
Location measurement mode (TDOA-SRVL)	R&S®ARGUS	3056.8758.36
Coverage measurement mode (CMM)	R&S®ARGUS	3056.8758.12
Digital measurement mode (DM)	R&S®ARGUS	3056.8758.13
Guided measurement mode (GMM)	R&S®ARGUS	3056.8758.14
Interactive measurement mode (IMM)	R&S®ARGUS	3056.8758.15
Synchronous measurement mode (SYNC)	R&S®ARGUS	3056.8758.18
Classification measurement mode (CLMM)	R&S®ARGUS	3056.8758.19
Classification measurement mode (CLMM-ASM)	R&S®ARGUS	3056.8758.21
Digital audio (DA)	R&S®ARGUS	3056.8758.29
Evaluation module (EVAL)	R&S®ARGUS	3056.8758.25
Audio recording and replay (ARR)	R&S®ARGUS	3056.8758.30
Station information system (SIS)	R&S®ARGUS	3056.8758.31
Flexible remote access, 5 concurrent users (FRA5)	R&S®ARGUS	3056.8758.32
Flexible remote access, 10 concurrent users (FRA10)	R&S®ARGUS	3056.8758.33
Remote control interface (RCI)	R&S®ARGUS	3056.8758.40
Data exchange interface (DEI)	R&S®ARGUS	3056.8758.41
Spectrum management database interface (SMDI)	R&S®ARGUS	3056.8758.42
Order report module (ORM)	R&S®ARGUS	3056.8758.43
Device control interface (DCI standard)	R&S®ARGUS	3056.8758.44
Device control interface (DCI enhanced)	R&S®ARGUS	3056.8758.45
Device driver for receiver class (ARGUS-RX) ²⁾	R&S®ARGUS	3056.8758.50
Device driver for direction finder class (ARGUS-DF) ³⁾	R&S®ARGUS	3056.8758.60
Device driver for analyzer class (ARGUS-ANALYZER) ⁴⁾	R&S®ARGUS	3056.8758.70
Device driver for system devices class (ARGUS-SYSDEV) ⁵⁾	R&S®ARGUS	3056.8758.80
Open database access (ODA)	R&S®ARGUS	3056.8758.90
Macro recorder (MACRO)	R&S®ARGUS	3056.8758.92
Automatic data transfer (ADT)	R&S®ARGUS	3056.8758.94
Central database server (CDS)	R&S®ARGUS	3056.8758.95
Multistation operation (MSO)	R&S®ARGUS	3056.8758.97
Occupancy measurements (OM)	R&S®ARGUS	3056.8758.99
Automatic detection of active transmitters (ADAS)	R&S®ARGUS	3056.8758.98

¹⁾ The LMM-TDOA option is not to be made, used, sold or offered for sale in the USA or imported into the USA.

²⁾ The receiver class includes the R&S®EM200, R&S®ESMD, R&S®ESME, R&S®ESMW, R&S®PR200, R&S®EB500, R&S®EB510 receivers and RX extension of the R&S®DDF205, R&S®DDF255 and R&S®DDF260 direction finders.

³⁾ The direction finder class includes the R&S®DDF205, R&S®DDF255, R&S®DDF260, R&S®DDF550, R&S®DDF1GTX, R&S®DDF5GTS direction finders and DF extension of the R&S®ESMD, R&S®ESME, R&S®ESMW and R&S®EB500 receivers.

⁴⁾ The analyzer class includes the R&S®ETL TV analyzer.

⁵⁾ The system devices class includes the following devices: COMPASS, GPS, MIXER, R&S®FU129, R&S®GB127M, R&S®GB127MU, R&S®GB127S, R&S®HSRG, R&S®RD127, R&S®ZS125/126/127/128/129, R&S®MSD and R&S®OCB600.

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