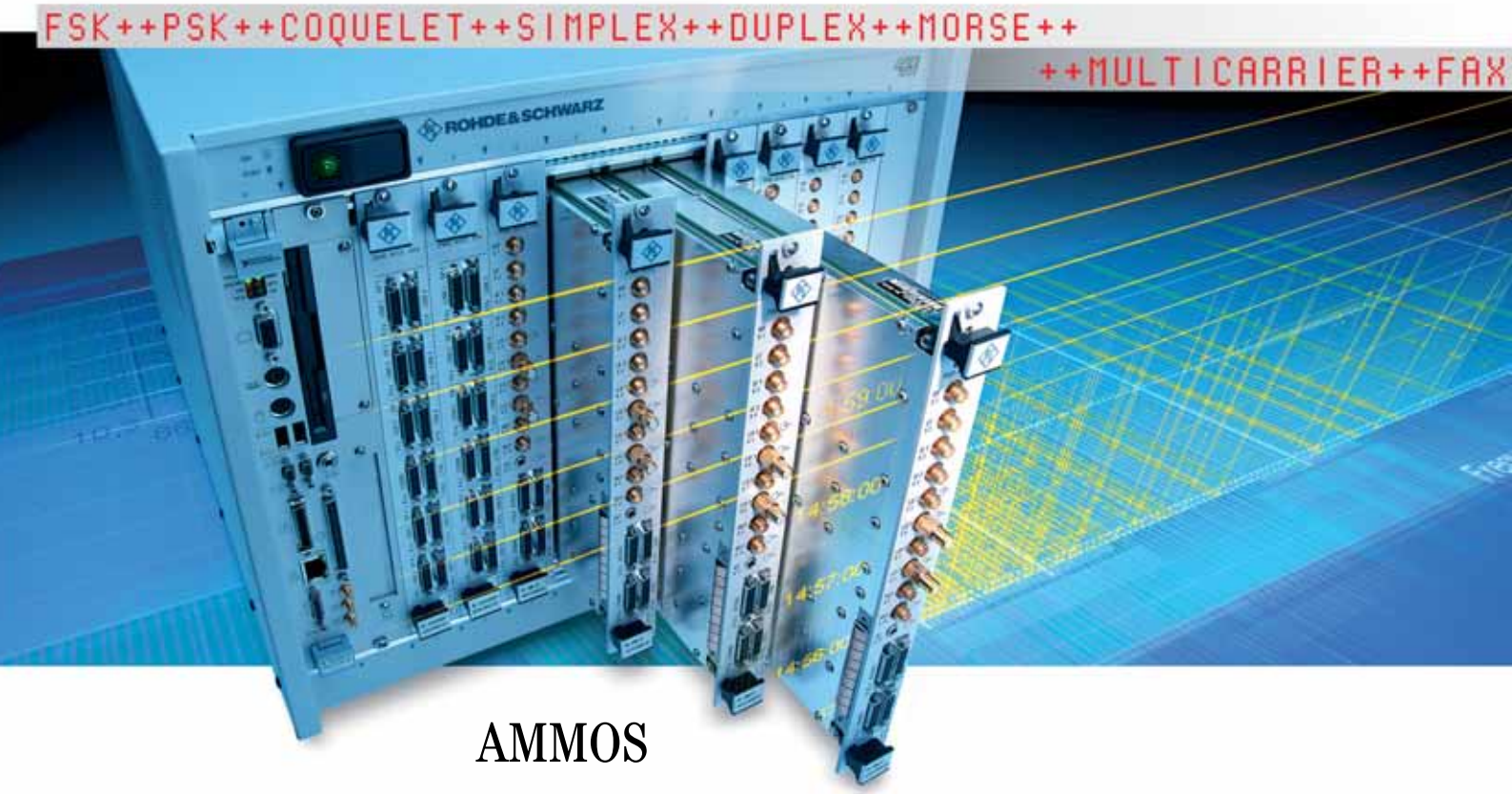


AMMOS

Automatic Modular Monitoring of Signals

The world of communication scenarios has significantly changed in the past years. The changes affect not only the communications radio scenarios; many new, often complex, transmission methods have been added to those already in existence. In addition, an increasing amount of complex information has to be processed by a decreasing number of staff.

This is where AMMOS (automatic modular monitoring of signals) provides unique solutions for simultaneously intercepting, analyzing, demodulating, and decoding several channels and documenting the results in databases. Complex new methods can be integrated, enabling the AMMOS system to be adapted to changing user requirements whenever necessary.

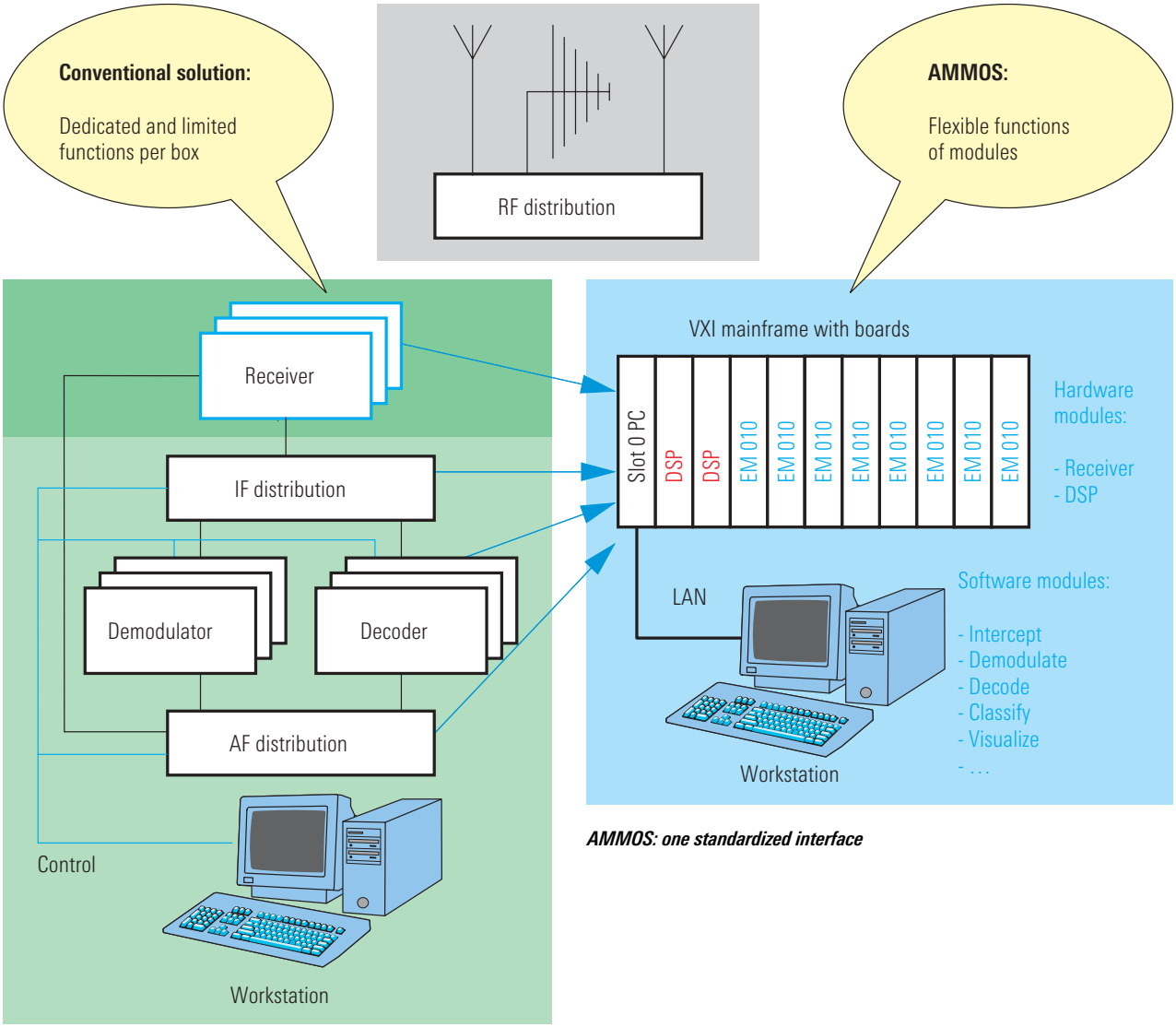
Signals are automatically processed down to the decoded text, so that the user is relieved of routine tasks and can concentrate on treeting the content of technically complex signals.

Want to know more about AMMOS? Just turn the page...

ROHDE&SCHWARZ

Radiomonitoring with AMMOS

Comparison of previous radiomonitoring systems with AMMOS



AMMOS: one standardized interface

Previously: dedicated equipment with many different, highly specialized interfaces

The new radiomonitoring and analysis system AMMOS (automatic modular monitoring of signals) from Rohde&Schwarz can be adapted by users to carry out their specific radiomonitoring tasks for security at home and abroad.

The AMMOS system is suitable for spectrum control and for **strategic and tactical intelligence** alike.

It can be used in **search and signal production** as well as in **technical signal analysis**. AMMOS provides unique radiomonitoring and technical signal analysis solutions for voice and data transmission.

Previous monitoring systems consisted of a variety of special individual units with different tasks and functions. The customized software allowed only rigid workstation configurations with fixed cabling, **whereas AMMOS features versatile functions:** the use of standard hardware components in conjunction with a set of flexible standard software modules enables the AMMOS system to perform a large variety of tasks for the interception, analysis, demodulation, decoding, and visualization of the signals on the workstation.

AMMOS provides unique solutions for ...

Flexibility and modularity

The AMMOS system covers the total frequency range from 300 Hz to 3.6 GHz. Modular HF and VHF/UHF receivers as well as DSP boards allow expansion of an existing system any time by adding further receivers, switchover between narrowband and wideband analysis, integration of new signals by downloading special software, and networking of differently configured workstations via a uniform WAN or LAN interface.

Multichannel system/realtime operation

The multichannel capability of AMMOS allows parallel handling of several interception processes. Internally stored interception procedures and settings ensure high speed. Fast search and detection of signals, spectral display, working with handoff receivers, narrowband and wideband analysis, demodulation and decoding, classification, identification of radio stations, as well as technical analysis of different frequencies and channels can be carried out in parallel. The results obtained can be visualized and stored for documentation or further processing.

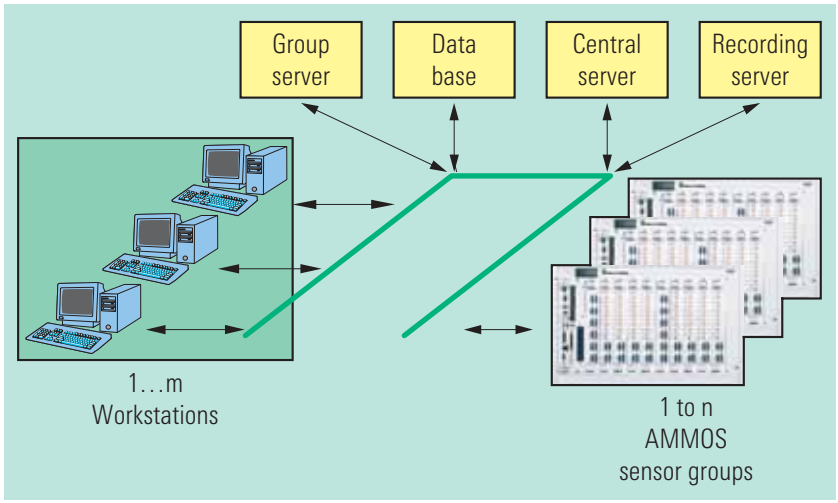
Automatic signal processing

Fully automatic signal processing includes blind or controlled classification of a signal; that is, identification of the modulation mode, subsequent demodulation and, if necessary, decoding of a message, and finally display of the signal content (readable text). Another essential feature of automatic signal processing is the control of the time-coordinated and logical interplay of the individual tuner (receiver) modules and DSP boards, allowing intermediate storage, determination of the spectrum and further conversion.

Signal processing also includes automatic monitoring of a signal for compliance with the selected signal class.

Radiomonitoring of digital signals

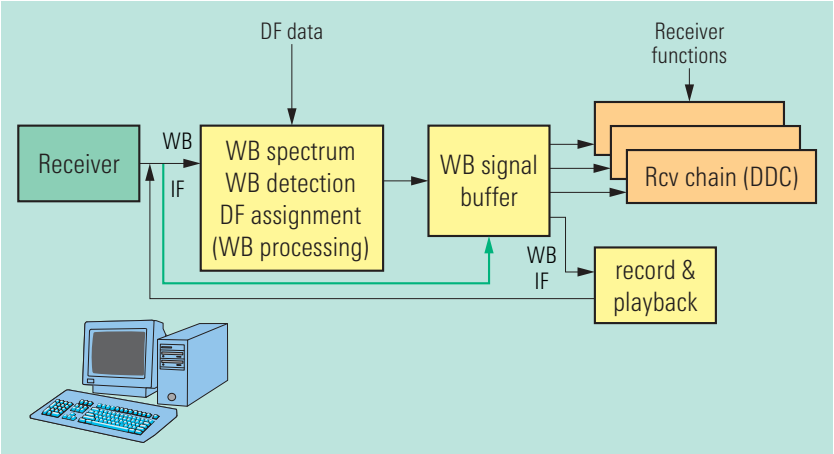
Not only analog, but in particular also digitally modulated signals, are searched for with high speed and sensitivity; the signals are then demodulated, decoded and displayed with very high quality.



... radiomonitoring and technical signal analysis

Comprehensive visualization and technical signal analysis

First of all, whole frequency ranges are clearly displayed; complex realtime display modes such as spectrum and waterfall display can be selected. The AMMOS system searches in a certain frequency range or with the aid of frequency lists or exclusion lists. The search criteria can be stored and reused for new search tasks. The digital IF and AF data streams can be recorded for single channels or multichannels. A report containing the receiver settings plus the associated date and the current time (time stamp) can thus be generated.



Wideband radiomonitoring and technical signal analysis

Wideband receiver sweep functions, IF filters and A/D converters, as well as fast FFT calculation, allow rapid interception of frequency-agile signals, for example. Relationships between various frequency-agile and time-agile signals can thus be analyzed much quicker. In this realtime system, perfectly smooth changeover between wideband search and narrowband analysis is possible any time.

The AMMOS interception processing channel concept

An AMMOS radiomonitoring system comprises the following VXI modules:

- Mainframe
- Controller
- HF and VHF/UHF receivers
- DSP boards
- Software modules for controlling the receivers and for demodulation, decoding and further analysis of the analog and digital signals, as well as fully automatic interception
- AMMOS-IT as remote-control software for the total system (external workstation)

The sensor group consists of various hardware and software modules and can be used for a variety of applications. The relevant settings are combined in data sets and transferred to virtual devices, the interception processing channels (IPC). Each interception processing channel can be specified with several parameter sets.

The following IPC types are available:

- Tuner IPC
- Speech IPC
- Digital communication IPC
- Classification IPC
- Digital communication IPC with automatic classification support

Further IPC types are in preparation.

The AMMOS IPC concept classifies, demodulates and decodes complete signals fully automatically or partly manually, depending on the requirements. Classic signals with known modulation and coding are stored as reference signals in a database. The modulation and coding parameters of new signals can be integrated in AMMOS by the users themselves.

The resource manager handles the flexible assignment of interception processing channels to the users and continuous automatic interception, where required.

The tuner IPC serves to control VXI receivers in a sensor group. The speech IPC is additionally used for storing the digital IF and AF data streams. In the digital communication IPC, the digital signals are demodulated, decoded and analyzed, while the classification IPC first checks an unknown signal for its parameter characteristics, and routes it to a special demodulator. Fully automatic signal processing is ensured by the digital communication IPC with classification support.

The AMMOS sensor group with the interception processing channels can be reconfigured by the operator whenever necessary and adapted to specific requirements.

Sensor group (including controller), consisting of 2 DSP boards and 8 HF receivers (fully equipped)

Certified Quality System
ISO 9001
DQS REG. NO 1954

Certified Environmental System
ISO 14001
REG. NO 1954

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ROHDE & SCHWARZ GmbH & Co. KG · Mühldorfstraße 15 · 81671 München · Germany
P.O.B. 80 14 69 · 81614 München · Germany · Telephone +49 89 4129-0 · Fax +49 89 4129-13247
www.rohde-schwarz.com · E-mail: comint@rsd.rohde-schwarz.com

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