The new generation of air-cooled R&S®SR8000 FM transmitters covers a power range from 100 W to 2.5 kW. The transmitters feature outstanding technical parameters, an optimum cost/benefit ratio, high reliability, plus compact design.

The transmitters include the following components:

- Power amplifier
- Housing with integrated cooling system

Digital exciter

The exciter is based on the successful concept of the R&S®SU800 [1]. All aspects of signal processing — from the detection of the input signals to the integrated stereo coder and frequency modulation — are handled purely digitally.

Digital audio data can be fed in via the built-in AES/EBU interface. Tried-and-tested analog left/right interfaces as well as multiplex (MPX) are available for connecting external stereo coders. Opti-
mal use is made of the interfaces due to the digital filters for suppressing interfering signal components and due to the fact that the input level can be adjusted.

If multiple signal feeds are applied simultaneously, standby can be implemented. It is possible to switch to standby feed either automatically or from a remote location.

Automatic limiters provide mechanisms to check peak deviation and average modulation power in line with ITU-R SM168-1. They are user-configurable and can also be switched off. The limiters monitor both values and dynamically adapt the level of the audio component in the MPX signal. Other components of the MPX signal such as pilot tone or RDS remain unchanged.

RDS or SCA signals can be fed in via two additional analog signal inputs. A pilot tone output for synchronizing external RDS coders is of course provided. XLR for analog left/right, AES/EBU, MPX, as well as BNC for additional signals are included as interfaces. For future applications such as operation in single frequency networks, the transmitter can be synchronized to external frequency references (10 MHz) or time references (1 pps).

Transmitter control unit

The operating concept is based on the R&S®NetCCU 800 control unit from the R&S®NR8000 transmitter platform [2]. This standardization significantly reduces the effort for training the operating personnel as well as for operation and maintenance.

The transmitter can be controlled and monitored remotely by means of a web browser and the SNMP protocol via the Ethernet interface on the rear panel. All parameters required for operating and maintaining the transmitter can be retrieved. The Ethernet interface on the front panel can be used to connect the transmitter to a local PC, which only needs to have a web browser installed. No special operating software has to be installed.

The transmitter can be operated locally via the keyboard and the menu system on the display (FIG 2). The menu system has the same structure for both local and remote operation.

A floating parallel remote control interface is available for simple control tasks and to operate the transmitter’s basic functions such as ON/OFF. Relay contacts are used to signal operating states such as “Output power present”.

Systems with \((n+1)\) standby and passive standby can be set up without any problem. This is achieved by connecting the transmitter with an R&S®NetCCU 800 control unit that serves as an arbiter.

Power amplifier

Owing to their state-of-the-art MOSFET technology, the power amplifiers feature high efficiency and compact design. The amplifiers are equipped with harmonics filters to ensure compliance with the specifications for harmonics suppression. They are completely self-monitoring and self-protecting against overtemperature, VSWR that is too large, and transistor failure. Of course, lightning protection is integrated.

Housing with integrated cooling system

The transmitters are housed in compact 19" units with integrated cooling. The partly redundant fans on the rear panel of the instrument draw cooling air from the front through the housing. The transmitter control unit continuously monitors the fans, and any reduction in speed or failure is signaled. The fans can be accessed from outside the transmitter, thus allowing them to be easily replaced.

The transmitters of the R&S®SR8000 family comply with the R&TTE Directive 1999/5/EC and meet the following standards: EN60 215 for protection of personnel, EN 301489-1 and EN 301489-11 for electromagnetic compatibility (EMC), as well as EN 302018-1/-2 for RF requirements.

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FIG 2 Main menu of the R&S®SR8010 transmitters.

More information and data sheet at www.rohde-schwarz.com (search term: SR8000)

REFERENCES