

50 % more output power due to innovative amplifier technology

New power amplifiers offer new capabilities. Based on the R&S®NH/NV8200 family of air-cooled, medium-power transmitters, which have been well established on the market for some years now, a new family of transmitters has been developed: the R&S®NH/NV8300 (FIG 1). Although it has an identical footprint, this new family offers 50% more output power for analog and digital television in band IV/V.



Increased output power and higher efficiency

Compared to the predecessor model (the R&S®VH8200A1, which was used in the R&S®NH/NV8200 medium-power transmitters), the new R&S®VH8300A1 power amplifier module (FIG 2) generates 50% more output power for all digital and analog television standards. This increase in output power and the accompanying 15% improvement in efficiency are due to innovative circuit technology and advanced LDMOS transistors. These transistors have proven their worth for one year now in the R&S®VH8600A1 liquid-cooled amplifiers. The resulting reduction in power dissipation made it possible to retain the tried-and-tested transmitter cooling concept used in the R&S®NH/NV8200 medium-power transmitters despite the significantly higher output power. Since the new power amplifier module has identical dimensions and connectors to its predecessor, it is possible to increase the output power of already installed R&S®NH/NV8200 medium-power transmitters by up to 50% simply by replacing the existing amplifiers with the new generation.

Optimized decoupling of all transistors and RF modules in the amplifier prevents changes in the overall transmitter characteristic in case one of these components fails. All the power transistors maintain their precisely specified operating point so that the set transmitter pre-correction does not need to be adjusted. All the operating parameters of the transmitter output stage are sent to the R&S®NetCCU800 transmitter control unit where they can also be accessed remotely.

FIG 1 The R&S®NV8306V is equipped with six amplifier modules and provides an output power of 1.8 kW for DVB-T / -H.

Easy connection: single-phase or three-phase

Two different power supplies are available for the new power amplifier modules for three-phase or single-phase AC networks. The power supply for public single-phase networks is useful in cases where no three-phase power is available, e.g. in outdoor applications, when using the equipment as a gap filler or in shelters.

The transmitters can be shipped with single-phase or three-phase power distributions. The single-phase power distribution is used for operation with asymmetrical systems, i.e. with 230 V AC (L1 to N) common in Europe and also with symmetrical systems with 240 V AC (L1 to L2), which are common in the United States, for example. The three-phase power distribution is designed for 400 V three-phase systems.

Keeping what already works

The new generation of air-cooled transmitters is designed for use in transmitter stations with forced-air cooling, but can also be operated with ambient-air cooling. In such cases, the air filter is built into the transmitter. For digital TV, output powers up to 1.8 kW are available. For analog TV, output powers up to 2.7 kW (analog combined) are available. The bandpass required for analog TV is integrated into the transmitter rack.

Condensed data of the R&S®NH/NV8300

Standards	
Analog	B/G, I, M, N, K
Color transmission	PAL, NTSC, SECAM
Sound modulation	IRT dual sound, mono, stereo, NICAM
Digital	DVB-T/-H, ATSC, MediaFLO™, ISDB-T, AVSB, ISDBT _B
Output power	
Digital TV	300 W to 1800 W
ATSC	400 W to 1800 W
Analog TV	600 W to 2700 W
RF connector	EIA 1 ⁵ / ₈ "
Dimensions (W x D x H)	600 mm x 800 mm x 2000 mm
Power connector	
Three-phase supply	400 V ±15%, 50 / 60 Hz
AC supply	230 V ±15%, 50 / 60 Hz, L1 to N 240 V ±15%, 50 / 60 Hz, L1 to L2

In addition, the transmitters come with all the features already included in the R&S®NH/NV8600 high-power transmitters, including active efficiency improvement, frequency-response-compensated directional couplers, exclusively broadband RF modules for band IV/V and a modular amplifier concept. Of course, all the normal redundancy systems (e.g. active, passive, (n + 1) standby) are also available.

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FIG 2 The R&S®VH8300A1 amplifier module has identical dimensions and connectors to its predecessor but produces 50% more output power.