

R&S® TE1 LIQUID-COOLED TRANSMITTER SERIES

Specifications

Model overview

UHF DTV models			
Number of amplifiers per transmitter	Output power (AVG) for COFDM and ATSC	Dimensions (W x H x D)	Number of cabinets
2	3.6 kW	600 mm x 2000 mm x 1100 mm (78.74 in x 23.62 in x 43.31 in)	1
3	5.4 kW		
4	7.2 kW		
5	9.0 kW		
6	10.8 kW		
7	12.6 kW		
8	14.4 kW		
10	18.0 kW		
12	21.5 kW		
14	24.5 kW		
16	28.0 kW	1200 mm x 2000 mm x 1100 mm (149.48 in x 23.62 in x 43.31 in)	2
20	35.0 kW		
24	42.0 kW		
28	49.0 kW		
30	52.0 kW	1800 mm x 2000 mm x 1100 mm (224.22 in x 23.62 in x 43.31 in)	3
36	62.0 kW		
42	72.0 kW	2400 mm x 2000 mm x 1100 mm (298.96 in x 23.62 in x 43.31 in)	4
48	82.0 kW		
56	96.0 kW		

Specifications | Version 01.00

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General data

Frequency range	UHF band V/IV	470 MHz to 700 MHz (700 MHz to 862 MHz on request)
Maximum installation height		2000 m above sea level (higher on request)
Operating temperature range	indoor	+1 °C to +45 °C
	heat exchanger	≤ +45 °C
Relative humidity	indoor	max. 95 %, noncondensing
	with R&S®SCP100 option	max. 90 %, noncondensing
Liquid cooling system	power amplifiers incl. power supplies and power combiner	liquid-cooling of all power components
	max. operating pressure	≤ 3.5 bar, inside cabinet
	pressure relief valve rating for valve of the integrated pump unit	6 bar; A station cooling system requires the integration of a pressure relief valve.
Dissipated heat into the room	per transmitter	
	1 to 3 amplifiers	< 600 W
	4 amplifiers or more	≤ 5 % of total power consumption
Mains voltage		230 V/400 V ± 15 % (L1/L2/L3/N/PE), 50 Hz to 60 Hz ± 5 %, OVC II (IEC 60664)
Mains power factor (PF)		> 0.95
Mains harmonics		I _{THD} < 20 %
Immunity	to fast transient and burst	
	AC mains supply, limited by internal type 2 SPD	< 4 kV
	signal inputs	< 1 kV
	to surges, limited by internal type 2 SPD	
	symmetrical	< 4 kV (e.g. L1 to N)
asymmetrical	< 2 kV (e.g. L1 to L2)	
VSWR	with full power	≤ 1:1.33
	with reduced power	1:1.33 ≤ VSWR ≤ 1:3.0
Noise	per transmitter	
	indoor	< 60 dBA, at 30 °C
	outdoor	< 45 dBA, at 20 °C
RF output connector	depending on number of amplifiers	EIA 1 3/8", EIA 1 5/8", EIA 3 1/8", EIA 4 1/2", EIA 4 1/16", EIA 6 1/8"

Digital TV specifications

Standards		ATSC, ATSC3.0
Channel bandwidth	ATSC, ATSC3.0	6 MHz
Feeding interfaces	ATSC	<ul style="list-style-type: none"> 2 × TSolP (Gigabit Ethernet) 2 × SMPTE 310M or ASI (BNC, 75 Ω)
	ATSC3.0	2 × STL or TSolP (Gigabit Ethernet)

Synchronization

Reference interfaces		
Reference input	1 pps	1 Hz, TTL (BNC)
Reference via IP networks	precision time protocol (PTP)	PTPv2
GPS receiver		optional

Monitoring and control

Local operation		<ul style="list-style-type: none"> via web GUI (HTML5) exciter displays
	optional	<ul style="list-style-type: none"> system touch display via smart devices (iOS, Android), provided by operator
Remote operation		<ul style="list-style-type: none"> SNMPv2 via web GUI (HTML5)
	optional	HTTPS (TLS v1.2 or older)
Parallel remote operation	optional	floating contacts for messages and commands

Protection mechanisms

Monitored states	on transmitter level	<ul style="list-style-type: none"> mains liquid temperature (inlet and outlet) liquid flow liquid pressure RF output power (forward and reflected) modulation inputs main state of components
	on amplifier level	<ul style="list-style-type: none"> mains output (forward and reflected) temperature transistor failure RF input failure RF output failure transistor currents reflection DC and AC voltages power supply failure

Standards

General standards		EN 300019-1-3 environmental conditions, indoor class 3.2 reduced temperature range, noncondensing, outdoor class 3.2 reduced temperature range
EMC standards		EN 301489-1/EN 301489-53 electromagnetic compatibility
	with bandpass filter	EN 302296 radio spectrum
	< 16 A	EN 61000-3-2 mains harmonics
	> 16 A	EN 61000-3-12 mains harmonics
	Korea	KS C 9610-4-11:2020 EMC immunity testing
Safety standards		EN 62368 safety requirements

Ordering information

Designation	Type	Order No.
Liquid-cooled transmitter	R&S®TE1	2517.0006K02



R&S®TE1 liquid-cooled transmitter

Rohde & Schwarz GmbH & Co. KG
www.rohde-schwarz.com

Rohde & Schwarz training
www.training.rohde-schwarz.com
Rohde & Schwarz customer support
www.rohde-schwarz.com/support

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

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