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Call TMG if you need to organise repair and/or calibrate your unit.

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R&S® ETL TV Analyzer

The universal multi-standard platform for the analysis of TV and mobile TV signals



75 Years of
Driving
Innovation



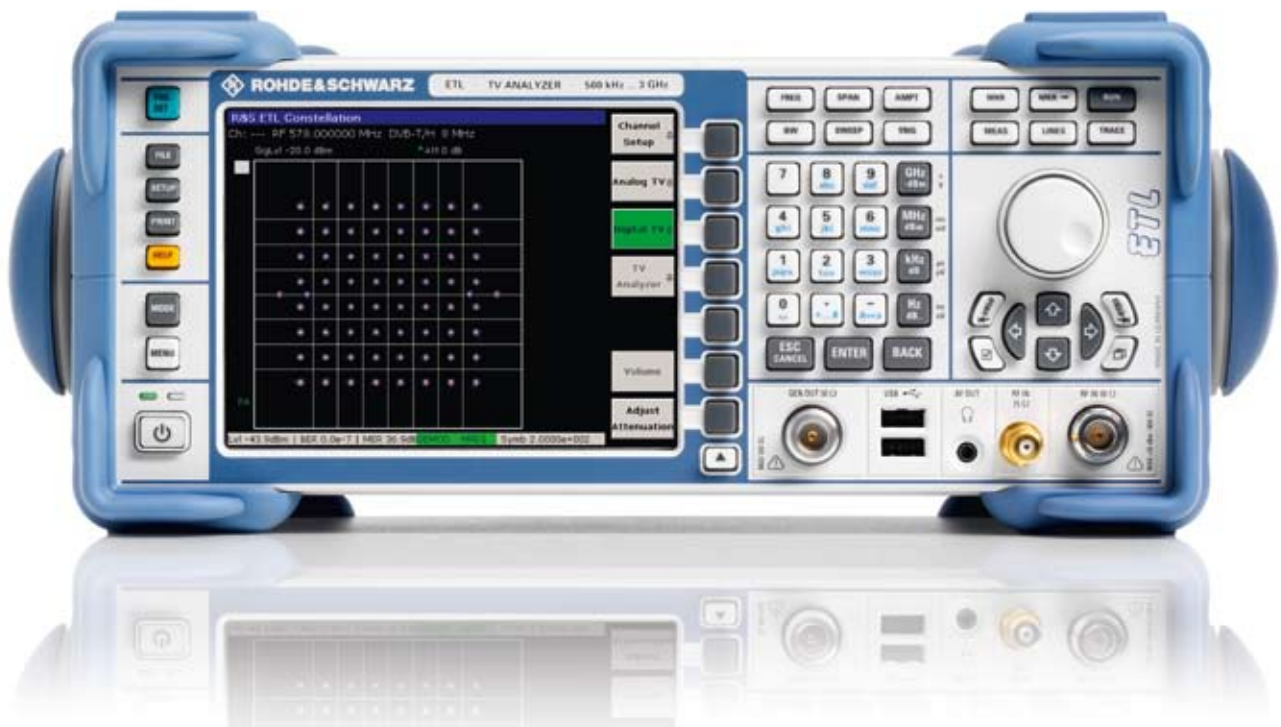
ROHDE & SCHWARZ

R&S® ETL TV Analyzer At a glance

The R&S® ETL TV analyzer from Rohde & Schwarz is a completely new, universal multistandard platform for the analysis of TV signals. It combines TV test receiver and spectrum analyzer functionality in a single unit while providing high measurement accuracy. An innovative instrument concept allows new TV standards to be implemented on a software and hardware basis. Both digital (e.g. DVB-T/H) and analog TV standards can thus be integrated in a single instrument. The R&S® ETL uses realtime demodulation throughout

The R&S® ETL TV analyzer platform has been mainly designed for the commissioning, installation, and servicing of TV transmitters, for carrying out coverage measurements on terrestrial TV networks, and for performing measurements on cable headends. Using only a single unit, broadcast transmitters or CATV systems can be installed easily and with high precision, and maintained cost-effectively. Due to its compact and robust design, the R&S® ETL is suitable for mobile applications, which greatly simplifies network coverage measurements.

- ▀ Multistandard-compatible
- ▀ Software- and chip-based demodulators
- ▀ All demodulators operating in realtime
- ▀ Baseband outputs
- ▀ Wide range of TV signal analysis functions
- ▀ Integrated spectrum analysis functions
- ▀ MPEG-2 analysis and monitoring (optional)
- ▀ Instrument design optimal for portable and stationary use
- ▀ Capable of handling analog TV standards as well as DVB-T/H, ATSC/8VSB, DTMB (China) and DVB-C (J.83/A/C) digital standards



Analog, DVB-T/H, ATSC, DTMB, DVB-C – the all-purpose instrument

Demodulation in realtime

The software- as well as the hardware-based demodulators are designed for realtime operation throughout. This makes the R&S®ETL the only TV analyzer in its class that performs BER measurements and complete analysis consistently in realtime. The use of realtime demodulators has the additional advantage that demodulated analog video and audio signals as well as digital MPEG transport streams are available for further processing.

Wide frequency range

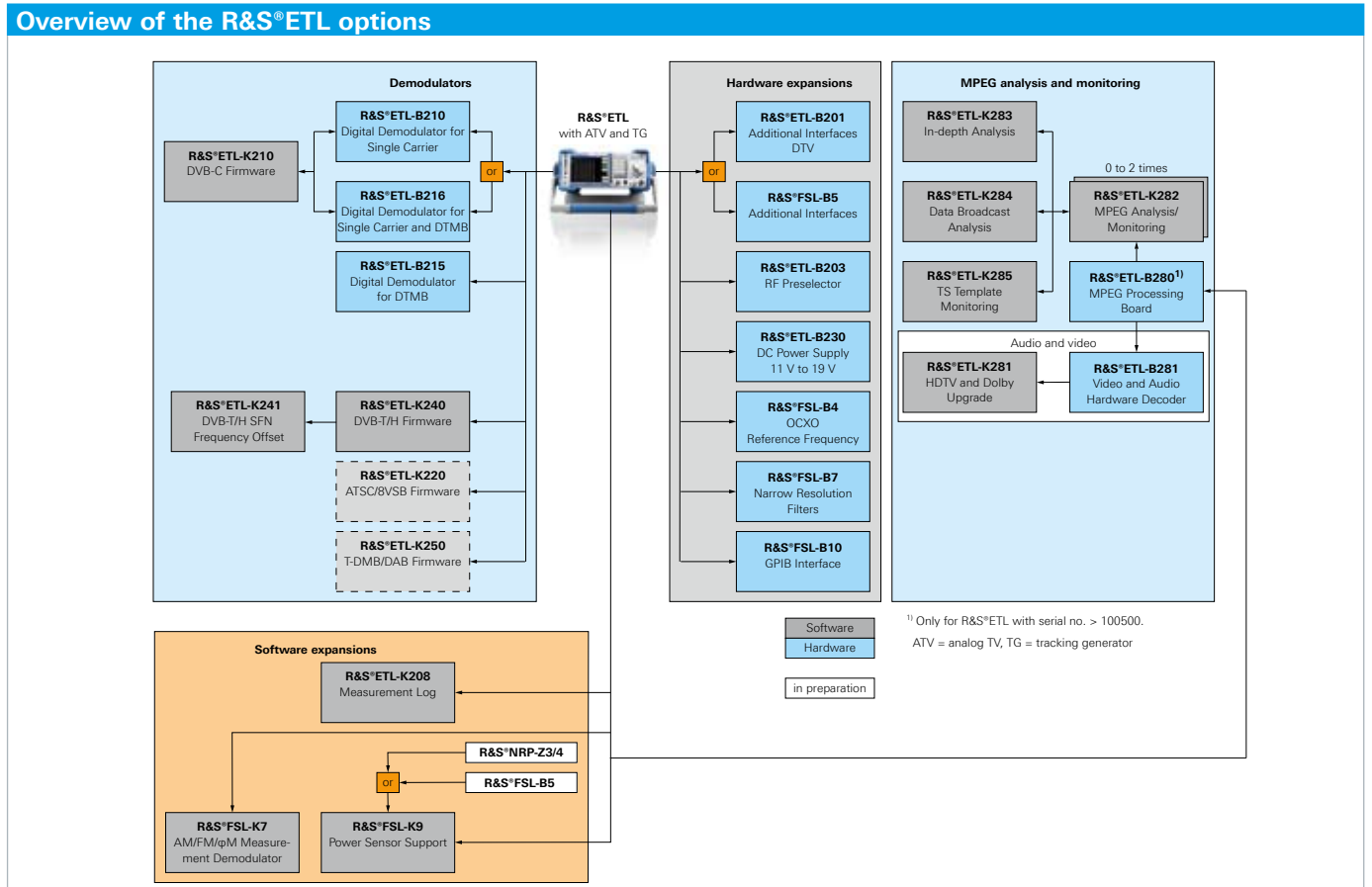
With a frequency range from 500 kHz to 3 GHz, the R&S®ETL covers not only the conventional broadcast frequencies but also the frequencies in the L and S bands, which are steadily gaining in importance. The TV analyzer's range of applications is thus considerably expanded.

Versatile measurements for ATV and DTV

The R&S®ETL offers a wide range of functions for measurements on digital TV signals. In particular, the constellation diagrams are displayed in very fine detail and build up at very high speed. As an alternative to the constellation diagram, the results of signal parameter measurements can be displayed together with the results of signal analysis in clear-cut tables. In the analog domain, the R&S®ETL offers as standard an extensive range of functions for measurements on vision and sound carriers. A video scope function, which is likewise provided as standard, enables further analysis in user-selectable video lines. Measurements such as C/N, CSO, and CTB have been implemented especially for CATV applications. The R&S®ETL can optionally be equipped with a preselector including an additional 75 Ω input.

The wide variety of TV-specific measurements provided by the R&S®ETL is complemented by measurements in the spectrum. Spectrum measurements such as shoulder distance in accordance with ETSI TR 101 290, channel power, and adjacent-channel power can thus be performed using a single instrument.

Special functions such as frequency counter and noise and phase noise markers round out the range of functions and turn the R&S®ETL TV analyzer into a real all-purpose instrument.



Analog, DVB-T/H, ATSC, DTMB, DVB-C – the all-purpose instrument

MPEG analysis and monitoring

In addition, the R&S®ETL may be equipped with MPEG options that provide detailed information about the MPEG-2 transport stream. Previously, this was possible only by using separate, highly specialized MPEG analyzers. You thus have a powerful tool at hand for verifying the accuracy of content that is pending transmission. The capability to send error messages over the integrated SNMP interface as soon as an error occurs in the transport stream expands the R&S®ETL's scope of applications to cover even long-term monitoring.

TV picture display

The quality of a TV picture often provides a very fast indication of the quality of the entire transmission path and its components. When equipped with the R&S®ETL-B280 und R&S®ETL-B281 options, the R&S®ETL can display TV pictures for analog TV as well as digital TV, thus increasing its already broad scope of analysis functions.



Specifications in brief

General data	
Frequency range	500 kHz to 3 GHz
Frequency accuracy	1×10^{-6}
With R&S®FSL-B4, OCXO	1×10^{-7}
Phase noise	typ. -103 dBc (1 Hz) at 10 kHz from carrier, 500 MHz
Displayed average noise level	
Preamplifier OFF	50 MHz to 3 GHz: ≤ -140 dBm (1 Hz)
Preamplifier ON	500 MHz: typ. -162 dBm (1 Hz) 3 GHz: typ. -158 dBm (1 Hz)
TOI	typ. +18 dBm
TV analysis	
Preselector	R&S®ETL-B203, internal, optional
RF input	N connector, 50 Ω , additional F connector, 75 Ω with R&S®ETL-B203
Prerequisite for analog TV (ATV)	none, analog TV already included in base unit
ATV standards	B/G, I, D/K, K1, M, N
Prerequisite for DVB-T/H	R&S®ETL-K240
Prerequisite for ATSC/8VSB	R&S®ETL-K220 (available from June 2008)
Prerequisite for DVB-C (J.83/A/C)	R&S®ETL-K210 with R&S®ETL-B210 or R&S®ETL-B216
Prerequisite for DTMB	R&S®ETL-B215 or R&S®ETL-B216
Prerequisite for T-DMB/DAB	R&S®ETL-K250 (available from December 2008)
Spectrum analysis	
Resolution bandwidths	
Standard	300 Hz to 10 MHz in 1/3 sequence, additionally 20 MHz with zero span
With R&S®FSL-B7	10 Hz to 10 MHz in 1/3 sequence, additionally 1 Hz (with FFT filter)
Video bandwidths	10 Hz to 10 MHz
I/Q demodulation bandwidth	20 MHz
Detectors	pos/neg peak, auto peak, RMS, quasi-peak, average, sample
Level measurement uncertainty	<0.5 dB
Tracking generator	included in base unit
Frequency range	1 MHz to 3 GHz
Output level	-20 dBm to 0 dBm
MPEG analysis and monitoring	
Prerequisite for MPEG analysis	R&S®ETL-B280 with R&S®ETL-K282
Broadcasting standards	DVB, ATSC, SCTE
TS input	1 (+1 internal)
Mode	ASI, SMPTE 310M
Max. data rate across all inputs	128 Mbit/s
Video and audio decoding	
Presentation of TV picture on R&S®ETL screen	
Prerequisite for analog TV	R&S®ETL-B280
Prerequisite for DTV (SD)	R&S®ETL-B280 with R&S®ETL-B281
Video formats	MPEG-2 (MP@ML) H.264/AVC (MP)
Audio formats	MPEG-1/MPEG-2 layer I
HDTV and Dolby	R&S®ETL-K281
Video formats	MPEG-2 (MP@HL) H.264/AVC (MP)
Audio formats	Dolby Digital AC-3

Ordering information

Designation	Type	Order No.
TV Analyzer, 500 kHz to 3 GHz, with tracking generator	R&S®ETL	2112.0004.13
Accessories supplied		
Power cable, quick start guide and CD-ROM (with operating manual)		

Options

Designation	Type	Order No.	Retrofittable	Remarks
Additional Interface DTV	R&S®ETL-B201	2112.0304.02	yes (customer)	SER-DAT out, SER-CLK out, I in, Q in, IF out (4.571428 MHz) (same slot as R&S®FSL-B5)
RF Preselector	R&S®ETL-B203	2112.0327.02	yes (service)	
Digital Demodulator for Single Carrier	R&S®ETL-B210	2112.0104.02	yes (service)	
Digital Demodulator for DTMB	R&S®ETL-B215	2112.0156.02	yes (service)	
Digital Demodulator for Single Carrier and DTMB	R&S®ETL-B216	2112.0162.02	yes (service)	
DC Power Supply 11 V to 19 V	R&S®ETL-B230	2112.0256.02	yes (customer)	
MPEG Processing Board	R&S®ETL-B280	2112.0362.02	yes (service)	only for R&S®ETL with serial no. >100500
Video and Audio Hardware Decoder	R&S®ETL-B281	2112.0356.02	yes (service)	requires R&S®ETL-B280
OCXO Reference Frequency	R&S®FSL-B4	1300.6008.02	yes (customer)	
Additional Interfaces	R&S®FSL-B5	1300.6108.02	yes (customer)	video out, IF out, noise source control, AUX port, R&S®NRP-Zxx power sensor (same slot as R&S®ETL-B201)
Narrow Resolution Filters	R&S®FSL-B7	1300.5601.02	yes (service)	
GPIO Interface	R&S®FSL-B10	1300.6208.02	yes (customer)	
Firmware/Software				
Measurement Log	R&S®ETL-K208	2112.0579.02		requires at least one digital TV option
DVB-C Firmware	R&S®ETL-K210	2112.0404.02		requires R&S®ETL-B210 or R&S®ETL-B216
ATSC/8VSB Firmware	R&S®ETL-K220	2112.0456.02		available from June 2008
T-DMB/DAB Firmware	R&S®ETL-K250	2112.0533.02		available from December 2008
DVB-T/H Firmware	R&S®ETL-K240	2112.0556.02		
DVB-T/H SFN Frequency Offset	R&S®ETL-K241	2112.0562.02		requires R&S®ETL-K240
HDTV and Dolby Upgrade	R&S®ETL-K281	2112.0604.02		requires R&S®ETL-B281
MPEG Analysis/Monitoring	R&S®ETL-K282	2112.0610.02		requires R&S®ETL-B280
In-Depth Analysis	R&S®ETL-K283	2112.0627.02		requires R&S®ETL-K282
Data Broadcast Analysis	R&S®ETL-K284	2112.0633.02		requires R&S®ETL-K282, available from September 2008
TS Template Monitoring	R&S®ETL-K285	2112.0640.02		requires R&S®ETL-K282
AM/FM/ϕM Measurement Demodulator	R&S®FSL-K7	1301.9246.02		
Power Sensor Support	R&S®FSL-K9	1301.9530.02		requires R&S®FSL-B5 or R&S®NRP-Z3/4

Recommended extras

Designation	Type	Order No.
Documentation of R&S®ETL Calibration Values	R&S®ETL-DCV	2082.0490.31
19" Rackmount Adapter	R&S®ZZA-S334	1109.4487.00
Lemo Triax connector (mono) with connecting cable (open)		2067.7451.00
Soft Carrying Bag	R&S®FSL-Z3	1300.5401.00
Protective Hard Cover	R&S®EVS-Z6	5201.7760.00
Matching Pad 75 Ω, L section	R&S®RAM	0358.5414.02
Matching Pad 75 Ω, series resistor 25 Ω	R&S®RAZ	0358.5714.02
Matching Pad 75 Ω, L section, N to BNC	R&S®FSH-Z38	1300.7740.02
SWR Bridge 5 MHz to 3 GHz	R&S®ZRB2	0373.9017.52
SWR Bridge 40 kHz to 4 GHz, 50 Ω	R&S®ZRC	1039.9492.52
SWR Bridge 40 kHz to 2.5 GHz, 75 Ω	R&S®ZRC	1039.9492.72
Mouse with USB Interface, optical	R&S®PSL-Z10	1157.7060.03
Keyboard with USB Interface (US assignment)	R&S®PSL-Z2	1157.6870.04
Spare F Adapter, female/female	R&S®FSHTV-Z61	2111.7111.02

Power sensors supported by R&S®FSL-K9

Designation	Type	Order No.
USB Adapter (active) (required for using power sensors with the R&S®ETL, if the R&S®FSL-B5 is not installed)	R&S®NRP-Z3	1146.7005.02
USB Adapter (passive) (required for using power sensors with the R&S®ETL, if the R&S®FSL-B5 is not installed)	R&S®NRP-Z4	1146.8001.02
Average Power Sensor 10 MHz to 8 GHz, 200 mW	R&S®NRP-Z11	1138.3004.02
Average Power Sensor 10 MHz to 18 GHz, 200 mW	R&S®NRP-Z21	1137.6000.02
Average Power Sensor 10 MHz to 18 GHz, 2 W	R&S®NRP-Z22	1137.7506.02
Average Power Sensor 10 MHz to 18 GHz, 15 W	R&S®NRP-Z23	1137.8002.02
Average Power Sensor 10 MHz to 18 GHz, 30 W	R&S®NRP-Z24	1137.8502.02
Average Power Sensor 9 kHz to 6 GHz, 200 mW	R&S®NRP-Z91	1168.8004.02
Thermal Power Sensor 0 Hz to 18 GHz, 100 mW	R&S®NRP-Z51	1138.0005.02
Thermal Power Sensor 0 Hz to 40 GHz, 100 mW	R&S®NRP-Z55	1138.2008.02
Wideband Power Sensor 50 MHz to 18 GHz, 100 mW	R&S®NRP-Z81	1137.9009.02

Service options

Designation	Type	Order No.
One-Year Repair Service following the warranty period	R&S®RO2ETL	please contact your local Rohde & Schwarz sales partner
Two-Year Repair Service following the warranty period	R&S®RO3ETL	please contact your local Rohde & Schwarz sales partner
Four-Year Repair Service following the warranty period	R&S®RO5ETL	please contact your local Rohde & Schwarz sales partner
Two-Year Calibration Service	R&S®CO2ETL	please contact your local Rohde & Schwarz sales partner
Three-Year Calibration Service	R&S®CO3ETL	please contact your local Rohde & Schwarz sales partner
Five-Year Calibration Service	R&S®CO5ETL	please contact your local Rohde & Schwarz sales partner

Service you can rely on

- | In 70 countries
- | Person-to-person
- | Customized and flexible
- | Quality with a warranty
- | No hidden terms

About Rohde & Schwarz

Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

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For data sheet, see
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and www.rohde-schwarz.com
(search term: ETL)

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