

# R&S® ETL TV Analyzer

Your measurement  
solution for analog  
FM radio



# R&S® ETL

## TV Analyzer

### At a glance

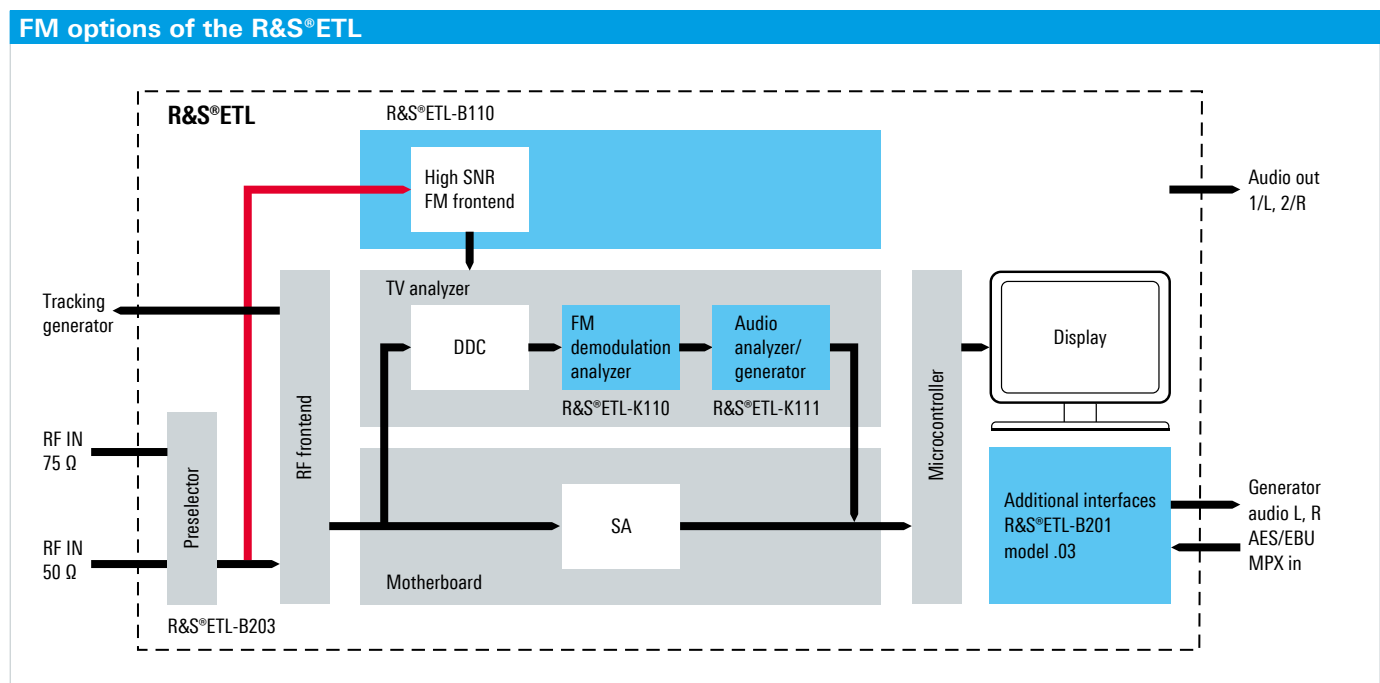
Despite the emergence of digital audio broadcasting, analog FM has continued to maintain its popularity and is widely deployed in many countries. Analog FM is still extensively used in radio reception in vehicles and homes. Nevertheless, there is phenomenal growth in mobile phones and PDAs with integrated FM chipsets. Today, existing FM transmitters are maintained and new FM transmitters are being installed. FM broadcasters and manufacturers of FM modules need a comprehensive test and measurement instrument like the R&S® ETL when installing, servicing, maintaining and manufacturing audio broadcasting equipment.

The R&S® ETL offers a complete solution for these applications, both at the FM transmitter site and in the field.

Equipped with the FM option, the R&S® ETL TV analyzer can be used to measure and analyze FM radio technology. The FM options enable users to perform various tasks such as analysis of receive level, center frequency, frequency deviation in the audio signal, and to obtain additional information about the pilot tone and carriers. The audio spectrum display provides a graphical overview of the modulated FM (radio) signal. The high quality SNR measurement offers sufficient margin to verify high SNR requirements at FM radio transmitters. The integration of an audio analyzer and generator facilitates testing procedures by eliminating the need for a separate instrument. The TxCheck software performs automatic measurements in line with a defined measurement profile. The analysis and overall result are displayed graphically and as a polychrome bar, providing users with a clear overview of signal quality at a glance.

#### Key facts

- Detailed FM signal analysis
- Optional high SNR measurement  $\geq 80$  dB with RF frontend option
- Integration of audio analysis and generator function
- Long-term measurements with measurement log option
- TxCheck software for automatic FM and audio measurements



# Detailed FM signal analysis with the R&S® ETL-K110 option

- Analysis and demodulation of FM broadcasting signals
- Overview of level, frequency offset, frequency deviations, pilot information and RDS analysis
- Audio spectrum display and audio oscilloscope
- Measurement of MPX power and peak deviation in line with the ITU-R SM.1268-1 standard
- Analysis of RDS information and extended RDS analysis



FM (radio) overview.



FM (radio) audio spectrum.



MPX deviation and MPX deviation distribution.



RDS analysis.

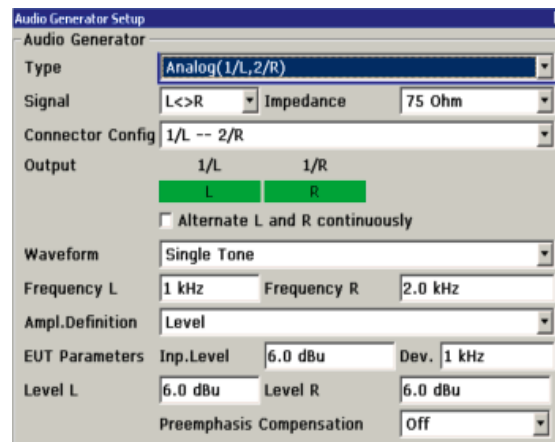
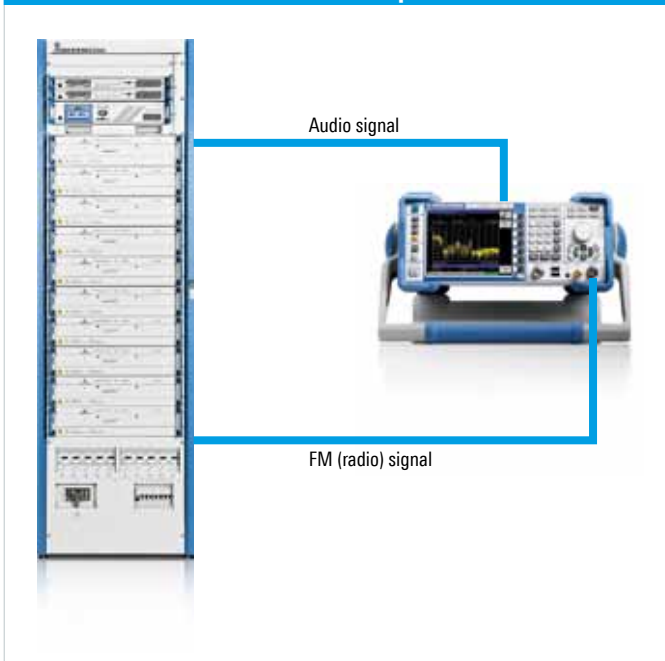
# High SNR measurement with the R&S® ETL-B110 option

- ▀ Extended SNR measurement performance to  $\geq 80$  dB for high-quality measurements at FM transmitter sites
- ▀ Higher dynamic range for measurements in the field
- ▀ Additional RF frontend to operate for 75 MHz to 110 MHz operation

# Integrated audio generator with the R&S® ETL-K111 option

- ▀ Generation of signals needed for commissioning FM excitors and transmitters after installation or service
- ▀ Generation of both normal audio and complex MPX signals that are fed into the exciter for testing
- ▀ Generation of single-tone and two-tone signals from 1 Hz to 100 kHz via analog or digital interface
- ▀ Stereo signals output over digital interface
- ▀ Attractive, cost-effective solution

R&S® ETL with transmitter setup

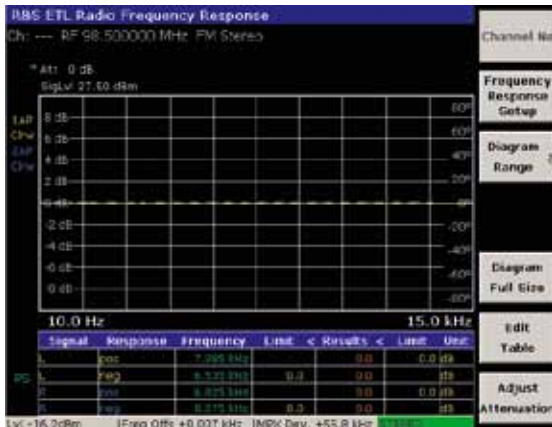


Audio generator settings.

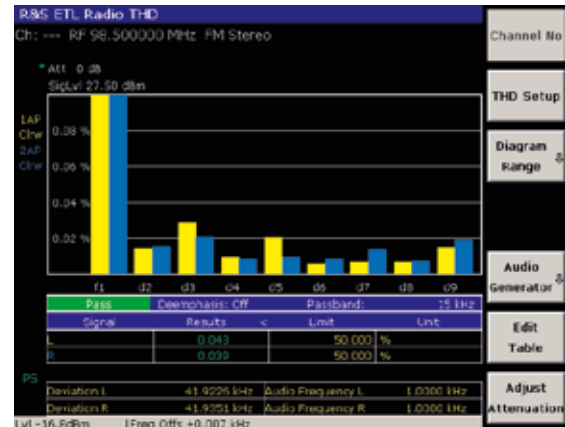
# Integrated audio analysis with the R&S® ETL-K111 option

When also equipped with the R&S® ETL-B201 universal interface option:

- Analysis of audio frequency response, crosstalk, THD (total harmonic distortion)
- No need for separate audio analyzers



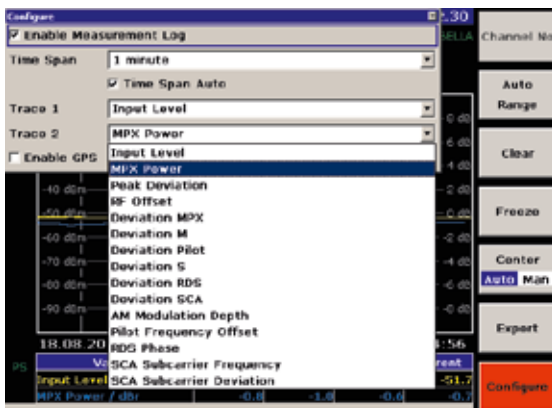
Audio frequency response measurement.



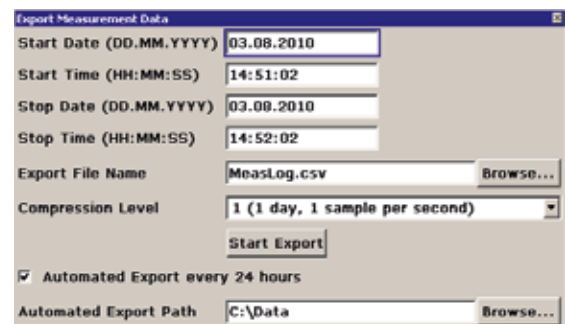
Total harmonic distortion (THD) measurement.

# Long-term measurements with the R&S® ETL-K208 option

- Ideal for long-term documentation of measured values, e.g. for 24 hour test
- Essential parameters are permanently saved in a database
- Graphical display of parameters and specified time domain
- CSV format for external analysis or recording



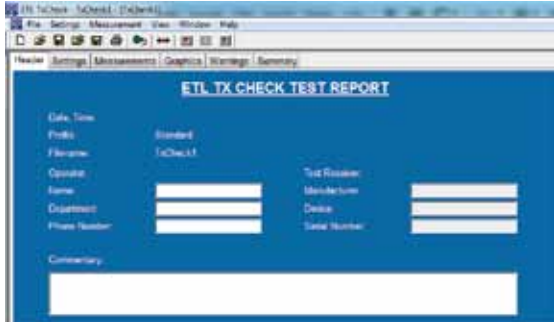
Configuration of the measurement log function.



Measurement log export function.

# TxCheck automatic measurement

- ▀ Definition of required FM measurements for automatic measurements (in measurement profiles or user-defined)
- ▀ Automatically executed measurement by just pressing the start button
- ▀ Graphical and color bar representation display quality parameters and overall result at a glance
- ▀ Remote control TxCheck for measurements from remote locations
- ▀ Report creation with measurement parameters, analysis result and graphs; transfer to a PC via a storage medium



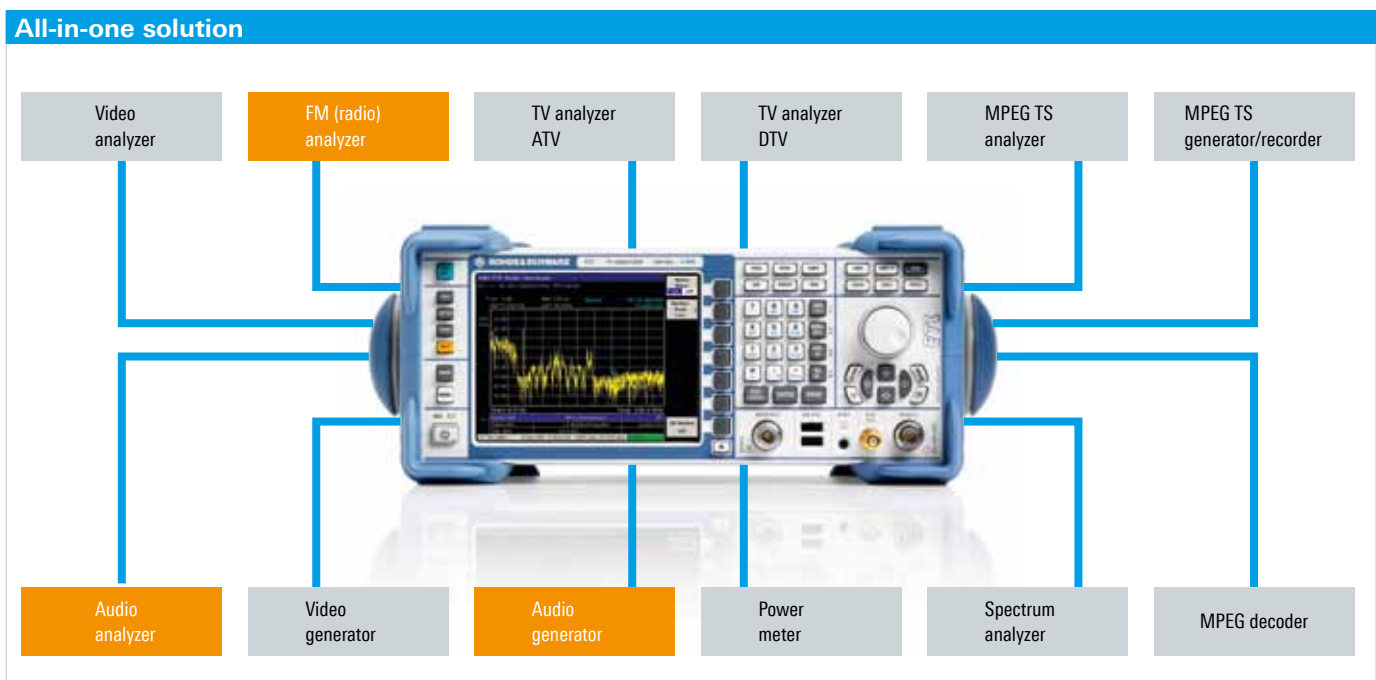
TxCheck report header.



Overview of measurements.

# R&S® ETL: the universal reference

The R&S®ETL is the most professional and cost-effective solution on the market. The R&S®ETL provides much more than the FM options. It offers TV and radio network operators all the advantages of a universal reference signal analyzer.



# Ordering information

Designation	Type	Order No.
<b>Base unit</b>		
TV Analyzer, 500 kHz to 3 GHz, with tracking generator	R&S®ETL	2112.0004.13
<b>Options</b>		
RF Preselector	R&S®ETL-B203	2112.0327.03
High SNR FM Frontend	R&S®ETL-B110	2112.0233.02
DTV, ATV, FM Universal Interface	R&S®ETL-B201	2112.0304.03
FPGA External Board, High SNR FM	R&S®ETL-B310	2112.0340.02
FM (radio) Firmware	R&S®ETL-K110	2112.0410.02
FM (radio) Audio Analyzer/Generator	R&S®ETL-K111	2112.0427.02
Measurement Log	R&S®ETL-K208	2112.0579.02
R&S®NRP-Zxx Power Sensor (requires R&S®FSL-B5)	R&S®FSL-K9	1301.9530.02
<b>Power sensors supported by R&amp;S®FSL-K9</b>		
USB Adapter, active (required for using power sensors with the R&S®ETL if the R&S®FSL-B5 option 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 option is not installed)	R&S®NRP-Z4	1146.8001.02
Universal Power Sensor, 10 MHz to 8 GHz, 200 mW	R&S®NRP-Z21	1138.3004.02
Universal Power Sensor 10 MHz to 18 GHz, 200 mW	R&S®NRP-Z11	1137.6000.02
Universal Power Sensor, 10 MHz to 18 GHz, 2 W	R&S®NRP-Z22	1137.7506.02
Universal Power Sensor, 10 MHz to 18 GHz, 15 W	R&S®NRP-Z23	1137.8002.02
Universal Power Sensor, 10 MHz to 18 GHz, 30 W	R&S®NRP-Z24	1137.8502.02
Universal 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

**For more information about additional features, options and data of the R&S®ETL, see product brochure PD 5213.7748.12 and data sheet PD 5213.7748.22.**

Service options		
Extended warranty, one year	R&S®WE1ETL	Please contact your local Rohde&Schwarz sales office.
Extended warranty, two years	R&S®WE2ETL	
Extended warranty, three years	R&S®WE3ETL	
Extended warranty, four years	R&S®WE4ETL	
Extended warranty with calibration coverage, one year	R&S®CW1ETL	
Extended warranty with calibration coverage, two years	R&S®CW2ETL	
Extended warranty with calibration coverage, three years	R&S®CW3ETL	
Extended warranty with calibration coverage, four years	R&S®CW4ETL	

## Service you can rely on

- | Worldwide
- | Local and personalized
- | Customized and flexible
- | Uncompromising quality
- | Long-term dependability

## 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 more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

## Environmental commitment

- | Energy-efficient products
- | Continuous improvement in environmental sustainability
- | ISO 14001-certified environmental management system

Certified Quality System  
**ISO 9001**

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