



Portable SAT/TV/FM Test Receiver R&S EFL 100

Measurement features for analog TV, digital TV and FM radio in a single unit

- ◆ Easily portable due to compact, robust design and integrated battery
- ◆ User-friendly interface for fast measurements
- ◆ Built-in printer for documentation of measurement results and spectrum
- ◆ On-screen TV picture
- ◆ Control signals for LNBS of satellite antennas

Description

A cost-efficient, mobile solution for installing, checking and maintaining transmitters, antennas and signal distribution equipment is needed. The Test Receiver R&S EFL100 from Rohde & Schwarz meets all requirements. In many cases, the R&S EFL100 is also the ideal complement to a high-end TV test receiver used for more in-depth signal analysis.

Depending on the specific requirements, users can choose between three models. With the fully equipped model 04 of the R&S EFL100, detailed quality measurements of DVB-C, DVB-S and DVB-T signals can be carried out along with level measurements of analog and digital TV, FM radio and satellite reception signals.

The R&S EFL100 comes with a built-in battery. The battery is rechargeable via the integrated power supply unit (110 V AC to 240 V AC).

Four different detectors for peak, average, maximum and minimum values are available for level measurements of analog and digital signals. Correction values are determined by the level calibration of the R&S EFL100 and stored in a memory. This allows precise level measurements to be performed with the R&S EFL100.

The R&S EFL100 has been developed for the standards B/G, D/K, I, L, M, N, M Korea, M Japan and NICAM. The video signal can be processed and reproduced in line with the colour TV standards PAL, SECAM and NTSC.

The front-panel display provides a bargraph that helps the user to locate transmitters. In addition, a level-dependent acoustic tracking signal simplifies antenna alignment without requiring a look at the screen.

The LNB (low-noise block) supply voltage is 10 V DC to 20 V DC for max. 500 mA in increments of 0.1 V DC. For control of the receiving system, the 22 kHz signal as well as the commands for DiSEqC 2.0, UFO μ -DiSEqC or V-SEC can be produced.

Level values, frequencies and the entire frequency spectrum can be printed out via the integrated dot-matrix printer.



Constellation diagram of a QAM64 signal

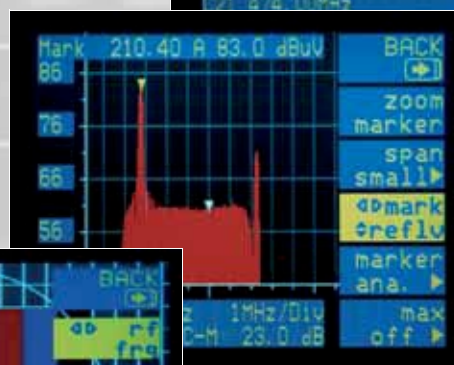


Constellation diagram of an OFDM signal (16QAM)



OFDM parameters

RF spectrum of an analog TV signal



On-screen TV picture

Specifications

| | | |
|--|---|---|
| Frequency range | SAT – analog, digital TV DVB-T FM IF – analog, digital RP | 920 MHz to 2150 MHz 44.75 MHz to 867.20 MHz 178 MHz to 227 MHz / 474 MHz to 858 MHz 88 MHz to 108 MHz (45.75 MHz to 867.20 MHz) 38.9 MHz 4 MHz to 80 MHz |
| Channel plan | TV | standard B, 7 MHz standard D/G/I/K, 8 MHz standard M, 6 MHz |
| Frequency setting | SAT – analog, digital TV/FM RP | in 0.125 MHz steps in 50 kHz steps in 50 kHz steps |
| Test error/level | SAT – analog, digital TV/FM RP | max. ± 2 dB max. ± 2 dB max. ± 2 dB |
| Slope | TV (BT/TT) | ≤ 1.5 dB except S41 (461.25 MHz) ≤ 4 dB C70 (863.25 MHz) ≤ 2.5 dB |
| RF input | | coaxial BNC 75 Ω |
| RF input attenuation | | 0 dB to -60 dB in 4 dB steps |
| RF level range | SAT/TV/FM IF/RP | 30 dB μ V to 130 dB μ V 70 dB μ V to 130 dB μ V / 30 dB μ V to 130 dB μ V |
| Level measurement bandwidth | SAT – analog, digital TV – analog, digital FM RP RP DVB | 8 MHz 1 MHz 200 kHz 1 MHz 1 MHz / 200 kHz (depending on system rate setting) |
| Measurement detector | SAT – analog TV – analog FM DVB-C/S/T RP analog RP digital | mean value display peak value display mean value display mean value display (corrected) peak value display mean value display (corrected) |
| Return loss | TV SAT – analog, digital | ≥ 10 dB (typ. 15 dB) ≥ 8 dB |
| Audio IF bandwidth | SAT TV FM | 130 kHz / 280 kHz 200 kHz 200 kHz |
| Audio de-emphasis | SAT TV/FM | 50 μ s / DNR 75 μ s / J17 50 μ s |
| Audio carrier measurement and demodulation | SAT | FM audio processing 4.99 MHz to 9.01 MHz in 10 kHz steps |
| | TV | standard B/G TT1 = 5.5 MHz, TT2 = 5.74 MHz standard D/K TT1 = 6.5 MHz, TT2 = 6.26 MHz standard I TT1 = 6 MHz standard M/M _{Korea} TT1 = 4.5 MHz, TT2 = 4.72 MHz standard L AM = 6.5 MHz, NICAM = 5.85 MHz standard B/G NICAM = 5.85 MHz standard I NICAM = 6.552 MHz |
| | FM | FM audio processing 45 MHz to 867 MHz |
| NICAM audio BER | TV | 0 to 1.5×10^{-2} |
| Video output | SAT | 1 V pp / 75 Ω $\leq \pm 3$ dB |
| | TV | 1 V pp / 75 Ω $\leq \pm 1$ dB |

| | | |
|--|---------------------|--|
| LNB supply voltage | SAT | 0.10 V to 20 V, max. 500 mA |
| LNB control | SAT | 22 kHz, DiSEqC, simple DiSEqC, tone burst, V-SEC, UFO μ -DiSEqC |
| SAT analog measurements | LNB current | 0 mA to 500 mA \pm 10 mA |
| | LNB voltage | 0 V to 30 V DC \pm 100 mV |
| | C/N | 0 dB to 35 dB \pm 2 dB |
| | S/N | 35 dB to 50 dB \pm 2 dB (weighted) |
| TV analog measurements | cross-polarization | 0 dB to 30 dB \pm 2 dB |
| | remote feed current | 0 mA to 500 mA \pm 10 mA |
| | remote feed voltage | 0 V to 30 V DC \pm 100 mV |
| DVB-S measurements (QPSK) | S/N | 35 dB to 47 dB \pm 2 dB (weighted) |
| | MER | up to 12 dB |
| DVB-C measurements (QAM64, QAM128) | BER | 1×10^{-2} to 1×10^{-8} (0) |
| | MER | up to 32 dB at QAM64 |
| DVB-T measurements (2k/8k mode) | BER | 1×10^{-2} to 1×10^{-8} (0) at QAM64 (BER better than 1×10^{-8} for level >57 dB μ V) |
| | MER | up to 32 dB |
| Display | BER | 5×10^{-2} to 1×10^{-8} (0) |
| | | 5.5" TFT screen 320 x 240 pixel pixel error max. \leq 6 with a distance of \geq 6.5 mm \varnothing |
| Power supply Mains operation Battery operation Power consumption DCP _{max} Power consumption ACP _{max} | | 100 V AC to 250 V AC / 50 Hz to 400 Hz lead battery 12 V DC / 3.5 Ah 50 W 62 W |
| Dimensions (W x H x D) | | 275 mm x 130 mm x 350 mm |
| Safety standards | | CE symbol protection class I VDE EN 61010 |
| Operating temperature range | | +5 °C to +45 °C |
| Storage temperature range | | -20 °C to +70 °C |
| Weight | | approx. 7 kg |

RP = return path; BT = vision carrier; TT1, TT2 = sound carrier 1, 2



All models at a glance

| | R&S EFL100 model 02 | R&S EFL100 model 03 | R&S EFL100 model 04 |
|---|---------------------|---------------------|---------------------|
| Equipment | Basic model, analog | Model 02 + QAM/QPSK | Model 03 + DVB-T |
| Analog TV/ FM basic module | ✓ | ✓ | ✓ |
| QPSK/QAM module | | ✓ | ✓ |
| DVB-T module | | | ✓ |
| MPEG-2 decoder module | | ✓ | ✓ |
| Return path module | | ✓ | ✓ |
| MPEG-2 TS parallel output | | ✓ | ✓ |
| SCART connector | ✓ | ✓ | ✓ |
| Modem connector | ✓ | ✓ | ✓ |
| Earphone connector | ✓ | ✓ | ✓ |
| 12 V DC input | | ✓ | ✓ |
| Features | | | |
| Signal level min./max. | ✓ | ✓ | ✓ |
| S/N measurement (video) | ✓ | ✓ | ✓ |
| NICAM audio | ✓ | ✓ | ✓ |
| Spectrum representation via monitor and printer | ✓ | ✓ | ✓ |
| Scope function | ✓ | ✓ | ✓ |
| DVB carrier level | ✓ | ✓ | ✓ |
| BER | | ✓ | ✓ |
| MER | | ✓ | ✓ |
| Constellation diagram | | ✓ | ✓ |
| Analog TV program on screen | ✓ | ✓ | ✓ |
| DVB program on screen (free TV) | | ✓ | ✓ |
| Memory for 100 settings | ✓ | ✓ | ✓ |
| Teletext | ✓ | ✓ | ✓ |
| Date and time | ✓ | ✓ | ✓ |

Ordering information

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|---|------------|--------------|
| Portable SAT/TV/FM Test Receiver ANALOG | R&S EFL100 | 2111.2055.02 |
| Portable SAT/TV/FM Test Receiver ANALOG, DVB-C, DVB-S, MPEG-2, RETURN PATH | R&S EFL100 | 2111.2055.03 |
| Portable SAT/TV/FM Test Receiver ANALOG, DVB-C, DVB-S, DVB-T, MPEG-2, RETURN PATH | R&S EFL100 | 2111.2055.04 |

Recommended extras

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| Leather Bag | R&S EFL100-Z1 | 2111.2103.00 |
| Antiglare Device | R&S EFL100-Z2 | 2111.2110.00 |

