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Test & Measurement

- sales
- rentals
- calibration
- repair
- disposal

Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

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

If you click on the "Click-to-Call" logo below, you can all us for FREE!

TMG Corporate Website **TMG Products Website**

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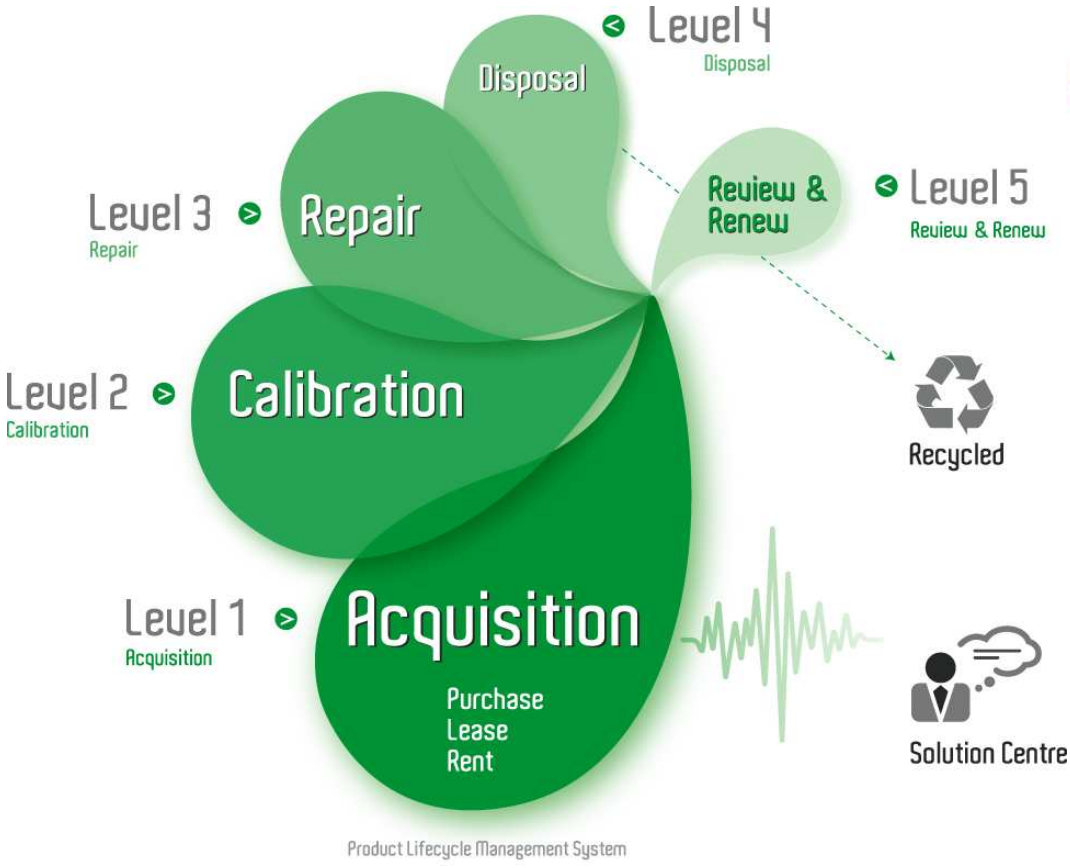


Data sheet

Version 02.00

August 2003

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

ROHDE&SCHWARZ

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).

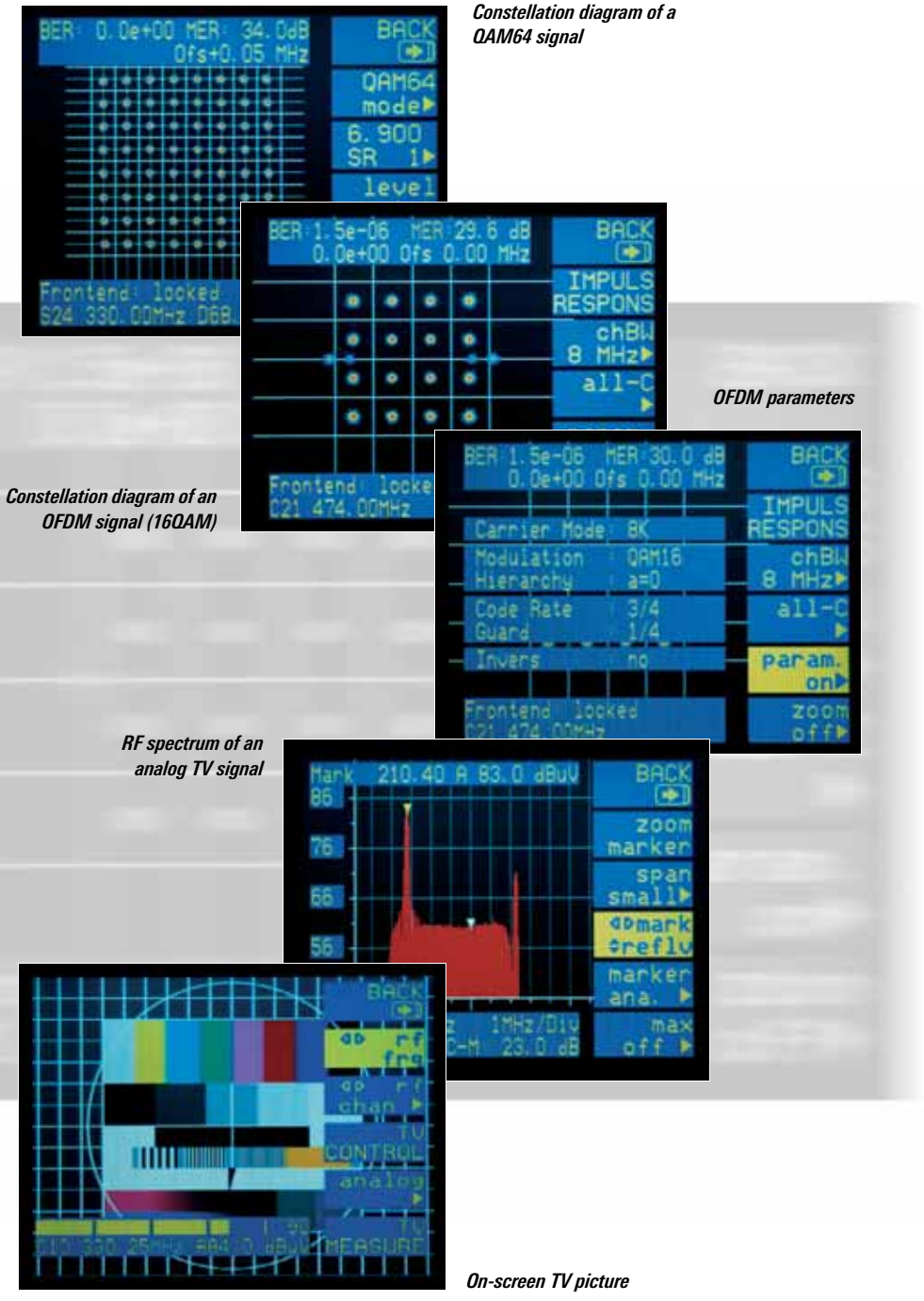
Four different detectors for peak, average, maximum and minimum values are available for level measurements of analog and digital signals. Correction values are determined by the level calibration of the R&S EFL100 and stored in a memory. This allows precise level measurements to be performed with the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

OFDM parameters

Constellation diagram of an OFDM signal (16QAM)

RF spectrum of an analog TV signal

On-screen TV picture

Specifications of base unit

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 dBµV to 130 dBµV 70 dBµV to 130 dBµV / 30 dBµV to 130 dBµV
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 µs / DNR 75 µs / J17 50 µs
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 x 10^{-2}
Video output	SAT	1 V pp / 75 Ω ≤±3 dB
	TV	1 V pp / 75 Ω ≤±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, UFOµ-DiSEqC
SAT analog measurements	LNB current	0 mA to 500 mA ±10 mA
	LNB voltage	0 V to 30 V DC ±100 mV
	C/N	0 dB to 35 dB ±2 dB
	S/N	35 dB to 50 dB ±2 dB (weighted)
	cross-polarization	0 dB to 30 dB ±2 dB

TV analog measurements	remote feed current	0 mA to 500 mA ±10 mA
	remote feed voltage	0 V to 30 V DC ±100 mV
	S/N	35 dB to 47 dB ±2 dB (weighted)
DVB-S measurements (QPSK)	MER	up to 12 dB
	BER	1 x 10^{-2} to 1 x 10^{-8} (0), before Viterbi
DVB-C measurements (QAM64, QAM128)	MER	up to 32 dB at QAM64
	BER	1 x 10^{-2} to 1 x 10^{-8} (0) at QAM64 (BER better than 1 x 10^{-8} for level >57 dBµV), before Reed-Solomon
DVB-T measurements (2k/8k mode)	MER	up to 32 dB
	BER	5 x 10^{-2} to 1 x 10^{-8} (0), before Viterbi and Reed-Solomon
Display		5.5" TFT screen 320 x 240 pixel pixel error max. ≤6 with a distance of ≥6.5 mm ∅
Remote control interface		RS-232-C (25-pin connector, female)
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

Measuring Amplifier with FM Filter R&S EFL 100-Z3

Specifications of Options EFL100-Z3 and EFL100-Z4

Preamplifier for level increase with weak DVB-T signals. Suppression of FM range when special channels S02 und S03 are measured in broadband communication systems (109 MHz to 125 MHz).

	R&S EFL100-Z3	**R&S EFL100-Z4**
Frequency range	109 MHz to 1 GHz	40 MHz to 1 GHz
Gain	19 dB	
Measurement uncertainty	±1,5 dB	
Noise figure	<3 dB	
Stopband attenuation	at 87 MHz: 35 dB ± 3 dB at 95 MHz: 22 dB ± 3 dB	–
Supply voltage	10 V to 20 V via RF output	
Connectors	BNC male/female	

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	✓	✓	✓

Certified Quality System ISO 9001 DQS REG. NO 1954 QM

Certified Environmental System ISO 14001 DQS REG. NO 1954 UM

Ordering information

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

Options

Measuring Amplifier with FM Filter	R&S EFL100-Z3	2111.2132.02
Measuring Amplifier	R&S EFL100-Z4	2111.2149.22

Recommended extras

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

Printed in Germany (Pe we)

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ROHDE&SCHWARZ

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