

R&S®EFL240/EFL340

Portable TV Test Receiver

Technical Specifications



Product data applies under the following conditions:

Two hours storage at ambient followed by 30 minutes warm-up operation.

Specified environmental conditions met.

Recommended calibration interval adhered to.

Technical Specifications

Spectrum Analyzer Mode

Frequency Range	5 MHz to 2,5 GHz
Resolution	1 KHz
Span	100, 200, 500 KHz, 1, 2, 5, 10, 20, 50, 100, 200, 500 MHz, 1.0 , 1.5, 2.0 and 2,5 GHz.
RBW	300, 600 Hz, 1, 2.4, 4.8, 9, 18, 36, 100, 200, 300, 400, 800 KHz, 1.6, 3,2 and 6.4 MHz. Auto with SPAN. User define
VBW	100 Hz to 1 KHz in multiples of 100 Hz. 1 KHz to 10 KHz in multiples of 2.5 KHz. 10 KHz to 20 KHz in multiples of 5 KHz 20 KHz to 1 MHz in multiples of 25 KHz Auto with SPAN and RBW. User define
Maximum Level Measurement	+22 dBm
Logarithmic level axis	1, 2, 5 and 10 dB.
Setting range of reference level	-105 dBm to +20 dBm
Automatic Reference Level	Yes with saturation automatic detection
Maximum number of traces	2
Trace Functions	Max Hold, Min Hold
Marks	3 with searching peak function.
Trigger Level Function	Enabled
BER in Spectrum	Quality signal measure for DVB in spectrum mode: DVB-T, DVB-C and DVB-T2 (only R&S EFL 340) with span between 5-20 MHz DVB-S and DVB-S2

Frequency working bands

FM	80-110 MHz
DVB-T, DVB-C	20 MHz to 880 MHz
DVB-T2	20 MHz to 880 MHz (only R&S EFL 340)
DVB-S, DVB-S2	950 MHz to 2150 MHz
Extended Range (DVB-T, DVB-C)	20 MHz to 1500 MHz

TV Analyzer Mode (Combo Mode and Measure Mode)

Analog TV Analyzer

Standards	
TV Standards	Pal B/G,D/K, I, Secam B/G, L, D/K
Sound standards	In line with TV standard. User selection Nicam.
Measurements	
Vision Carrier Level	Up to 20 dBm
Carrier Noise Level ratio	< 1.0 to 52 dB.
In line Carrier Noise Level ratio	<1.0 to 52 dB. Default line 6. User define line between 3 and 25.
Vision/sound carrier level ratio	<1.0 to 30 dB.
Graphical Measurements	
Line Representation	line 1 to 625. With offset and zoom function.
Synchronism	Enable.
General Data	
Automatic detection analog and digital channel	
Simultaneous display of measurement, TV image and spectrum (Combo Mode)	

DIGITAL TV Analyzer

DVB-T2 (* only R&S EFL 340)

Standards		
Terrestrial DTV in line with ETSI EN 302755		
Automatic detection DVB-T2 or DVB-T.		
Bandwidth	Automatic in line with channel plan or manual selection 5,6 ,7,8 MHz.	
FFT mode	Automatic or manual selection 1K,2K,4K,8K,16K,32K	
QAM order	Automatic or manual selection 4QAM, 16QAM, 64 QAM and 256 QAM Normal or rotated constellation.	
Guard Interval	Automatic or manual selection 1/32, 1/16, 1/8, ¼. 1/128, 19/128, 19/256	
Code Rate	Automatic	
Spectrum Inversion	Automatic or manual selection ON, OFF.	
Multi PLP	Enable	
Frequency Range		
Working Band	20 MHz – 880 MHz	
Extended Working Band	20 MHz – 1500 MHz	
Measurements		
Power	Range: -90 dBm to 20 dBm.	± 2 dB (20 MHz – 880 MHz) ± 3 dB (880 MHz – 1500 MHz)
C/N	Up to 52 db	
LDPCBER	Bit error rate before LDPC	
BCHBER	Bit error rate before RS	
MER	Range: 16 dB to 35 dB (64 – 256 QAM) 10 dB to 35 dB (16 QAM) 4 dB to 35 dB (QPSK)	± 1,5 dB (up to 28 dB) ± 2,5 dB (28 to 32 dB) ± 3,5 dB (32 to 35 dB) (*1)
PdP	Echoes without demodulation. Zoom 287 µS, 574 µS and 1148 µS.	
Constellation	Selectable carrier number (Normal or rotated constellation)	
Uncorrected Packet Analysis	Enabled	
TV picture on display		
Simultaneous display of measurement, TV image and analog spectrum (Combo Mode)		
Visualization Free to air MPEG2 channels.		
Visualization Free to air MPEG4 channels (up to 1080p) with sound demodulation compatible with Dolby® AC3, DD+ and AAC.		
Common interface for encrypted channel compatible with DVB-CI. (*2)		

*1 AWGN

*2 Due to the high range of CAM manufacturers, operators and smart-card systems, it is not possible to verify the proper functioning of all possible combinations.

DVB-T

Standards		
Terrestrial DTV in line with ETSI EN 30044		
Automatic standard detection DVB-T and DVB-T2		
Bandwidth	Automatic in line with channel plan or manual selection 7,8 MHz.	
FFT mode	Automatic or manual selection 2K,8K	
QAM order	Automatic or manual selection 4QAM, 16QAM and 64 QAM	
Guard Interval	Automatic or manual selection ¼, 1/8, 1/16, 1/32	
Code Rate	Automatic	
Spectrum Inversion	Automatic or manual selection ON, OFF.	
Frequency Range		
Working Band	20 MHz – 880 MHz	
Extended Working Band	20 MHz – 1500 MHz	
Frequency Offset	Auto or manual selection (± 1/6, ± 2/6 , ± 3/6 MHz of central frequency)	
Measurements		
Power	Range: -90 dBm to 20 dBm.	± 2 dB (20 MHz – 880 MHz) ± 3 dB (880 MHz – 1500 MHz)
	Minimum QEF input signal: -71 dBm (preamplifier ON, RF: 626 MHz, 64 QAM, GI=1/8, CR 5/6).	
C/N	Up to 52 db	
CBER	Bit error rate before Viterbi	
VBER	Bit error rate before RS	
MER	Range: 16 dB to 35 dB (64 QAM) 10 dB to 35 dB (16 QAM) 4 dB to 35 dB (QPSK)	± 1,5 dB (up to 28 dB) ± 2,5 dB (28 to 32 dB) ± 3,5 dB (32 to 35 dB) (*1)
MER versus Carrier	Graphical measure with numerical indication (MER RMS, MER maximum, MER minimum)	
PdP	Echoes without demodulation. Zoom 287 µS, 574 µS and 1148 µS.	
Echoes	Pre and Post Echoes Visualization	
Constellation	Selectable carrier number	
Uncorrected Packet Analysis	Enabled	
TV picture on display		
Simultaneous display of measurement, TV image and spectrum (Combo Mode)		
Visualization Free to air MPEG2 channels.		
Visualization Free to air MPEG4 channels (up to 1080p) with sound demodulation compatible with Dolby® AC3, DD+ and AAC.		
Common interface for encrypted channel compatible with DVB-CI. (*2)		

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DVB-C

Standards		
Cable TV J.83/A/C		
Bandwidth	Automatic in line with channel plan or manual selection	
QAM order	Automatic or manual selection 4,16,32,64,128 and 256QAM	
Symbol Rate	Automatic or manual selection (700 - 7200 MSymbs)	
Spectrum Inversion	Automatic or manual selection ON, OFF.	
DFE Filter	ON/OFF manual selection	
Frequency Range		
Working Band	20 MHz – 880 MHz	
Extended Working Band	20 MHz – 1500 MHz	
Measurements		
Power	Range: -90 dBm to 20 dBm.	± 2 dB (20 MHz – 880 MHz) ± 3 dB (880 MHz – 1500 MHz)
	Minimum QEF input signal: -64 dBm (preamplifier ON, RF: 626 MHz, 64 QAM, 6875 Msymb).(*1)	
C/N	Up to 52 db	
CBER	Bit error rate before RS	
MER	Range: 18 dB to 38 dB	± 1,5 dB (up to 30 dB) ± 2, dB (30 to 35 dB) ± 2,5 dB (35 to 38 dB)
Constellation	Enabled	
Uncorrected Packet Analysis	Enabled	
TV picture on display		
Simultaneous display of measurement, TV image and analog spectrum (Combo Mode)		
Visualization Free to air MPEG2 channels.		
Visualization Free to air MPEG4 channels (up to 1080p) with sound demodulation compatible with Dolby® AC3, DD+ and AAC.		
Common interface for encrypted channel compatible with DVB-CI. (*2)		

*1 AWGN.

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DVB-S

Standards		
Satellite Digital TV		
Bandwidth	Automatic in line with channel plan or manual selection	
Code Rate	Automatic or manual selection 1/2, 2/3, 3/4,5/6,7/8	
Symbol Rate	Automatic or manual selection (1 - 45 Mbaud)	
Frequency Range		
Working Band	950 MHz – 2150 MHz	
Measurements		
Power	Range: -90 dBm to 20 dBm.	± 3 dB
C/N	1 dB to 30 dB	
CBER	Bit error rate before Viterbi	
VBER	Bit error rate before RS	
MER	Range: 5 dB to 20 dB	± 2, dB (5 to 15 dB) ± 3, dB (15 to 20 dB)
Uncorrected Packet Analysis		
TV picture on display		
Simultaneous display of measurement, TV image and spectrum (Combo Mode)		
Visualization Free to air MPEG2 channels.		
Visualization Free to air MPEG4 channels (up to 1080p) with sound demodulation compatible with Dolby® AC3, DD+ and AAC.		
Common interface for encrypted channel compatible with DVB-CI. (*1)		

(*1) Due to the high range of CAM manufacturers, operators and smart-card systems, it is not possible to verify the proper functioning of all possible combinations.

DVB-S2

Standards		
2 ^a Generation Satellite Digital TV . QPSK and 8PSK compatible		
Bandwidth	Automatic in line with channel plan or manual selection	
Symbol Rate	Automatic or manual selection : (1 - 36 Mbaud DVB-S2-8PSK) (1 – 30 Mbaud DVB-S2 -8PSK)	
Frequency Range		
Working Band	950 MHz – 2200 MHz	
Measurements		
Power	Range: -90 dBm to 20 dBm.	± 3 dB (880 MHz – 1500 MHz)
C/N	1 dB to 30 dB	
Link Margin	-1 dB to 10 dB	
BER	Bit error rate before LDPC	
BCHBER	Bit error rate before BCH	
MER	Range: 5 dB to 20 dB	± 2, dB (5 to 15 dB) ± 3, dB (15 to 20 dB)
Constellation	Enabled	
Uncorrected Packet Analysis	Enabled	
TV picture on display		
Simultaneous display of measurement, TV image and spectrum (Combo Mode)		
Visualization Free to air MPEG2 channels.		
Visualization Free to air MPEG4 channels (up to 1080p) with sound demodulation compatible with Dolby® AC3, DD+ and AAC.		
Common interface for encrypted channel compatible with DVB-CI. (*1)		

(*1) Due to the high range of CAM manufacturers, operators and smart-card systems, it is not possible to verify the proper functioning of all possible combinations.

General data

Operating Languages	English, Deutsch , Spanish, Portuguese, French, Italian, Russian, Czech and Polish.
Display	TFT 640x480 5.7"
Operating temperature range	0 °C to + 40 °C
Permissible temperature range	0 °C to + 45 °C
Storage temperature range	-20° to 60 °C
MTBF	>25.000 h (Failure rate calculation includes failure events not related to accessories, DVB-CI compatibility issues, misunderstanding of use, misuse or batteries).
Interfaces	
USB	For update firmware and download data with R&S EFL suite PC application
SD	SD interface up to 2 GB to datalogs and graphs storage. (SD card 2 GB included)
Common Interface	Compatible with DVB-CI (*)
HDMI	HDMI 1.2. Digital Video Output
Power supply	
Input Voltage Range	100 V to 240 V
AC supply frequency	50 Hz to 60 Hz
AC input current	1.5 A
Power Consumption	42 W
Battery	
Battery type	Lithium-ion
Nominal battery output voltage	7.2 V 9000 mAh
Mechanical	
Dimensions	302,1 mm x 148.0 mm x 120.0 mm
Weight	2,1 Kg without Battery 2,480 Kg with Lithium Battery
Recommended calibration interval	12 months
EMC	
Radiated Emissions (30 MHz – 1000MHz)	Complies with EN 61326-1:2006 class A
Interference Voltage (150 KHz – 30 MHz)	Complies with EN 61326:2006 - 7.2.B
Voltage Fluctuations (Flicker)	Complies with EN 61326:2006 - 7.2.C
Harmonics	Complies with EN 61326:2006 - 7.2.D
Electrostatic discharge (ESD)	Complies with EN 61326:2006 - 6.2.A
Electromagnetic Fields Immunity	Complies with EN 61326:2006 - 6.2.B

Mechanical Resistance	
Shock	Complies with EN 60068-2-27
Vibration	Sinusoidal complies with EN 60068-2-6
	Random complies with 60068-2-64