R&S®EPL
EMI TEST RECEIVER

Specifications

R&S®EPL1000
R&S®EPL1001
R&S®EPL1007

dataTec
Mess- und Prüftechnik. Die Experten.

Ihr Ansprechpartner / Your Partner:

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Specifications
Version 07.00

ROHDE&SCHWARZ
Make ideas real

CONTENTS

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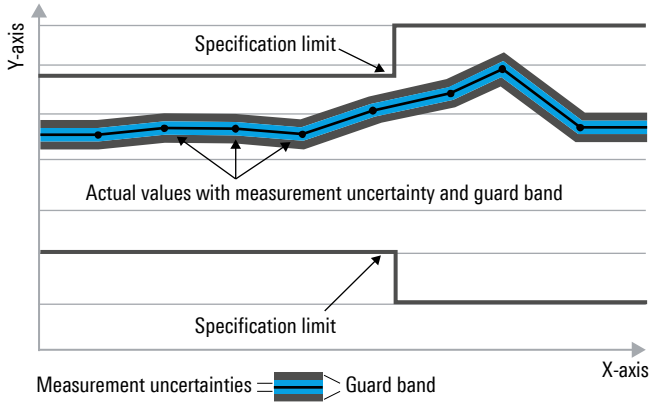
Definitions

General
Product data applies under the following conditions:

- Three hours of storage at ambient temperature followed by 30 minutes of warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits
Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ±, or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)
Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits
Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

Typical data (typ.)
Characterizes product performance by means of representative information for the given parameter. When marked with <, > or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)
Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)
Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties
Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format “parameter: value”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Specifications

Operating modes		• receiver mode • analyzer mode

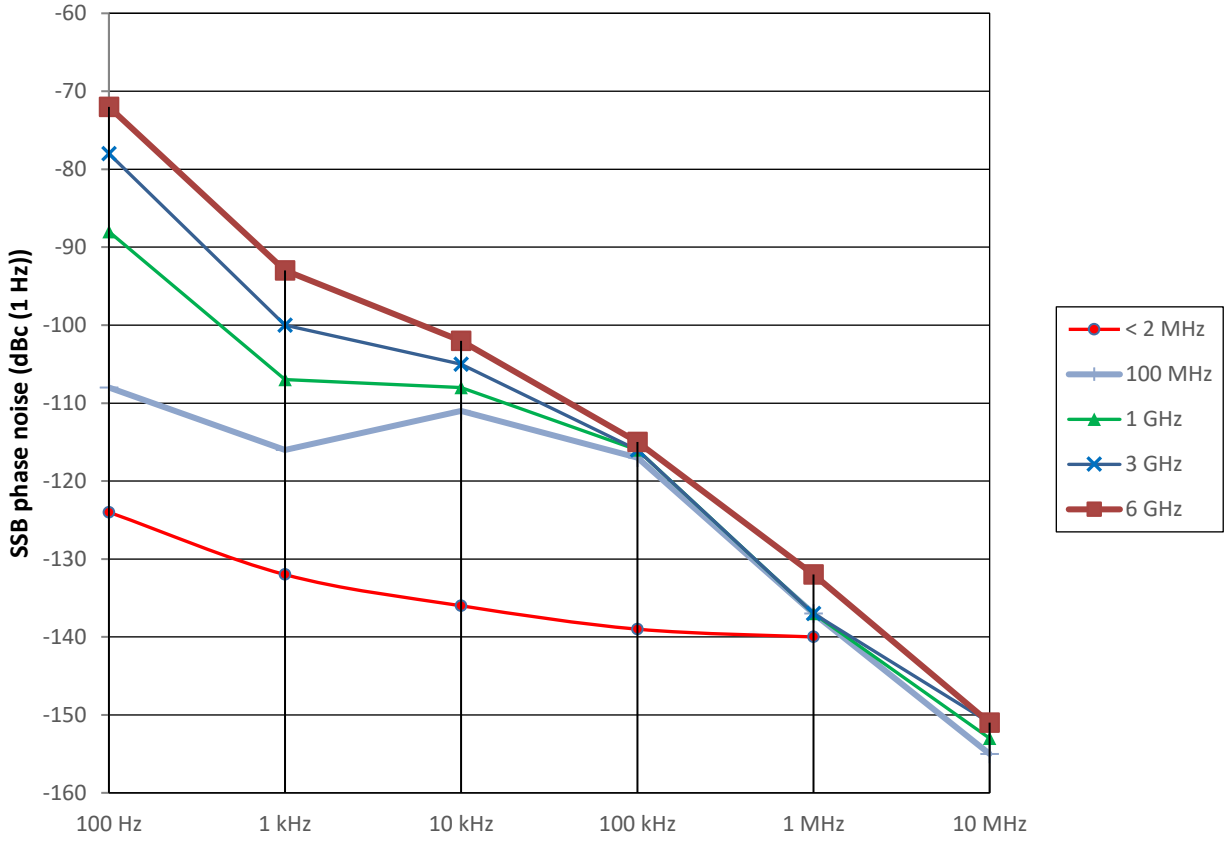
Frequency

Frequency range	R&S®EPL1000	5 kHz to 30 MHz
	R&S®EPL1001	
	inputs 1 and 2	5 kHz to 1 GHz
	R&S®EPL1007	
	input 1	5 kHz to 7.125 GHz
	input 2	5 kHz to 1 GHz
Frequency resolution		0.01 Hz
Scaling		linear, logarithmic [1]
Reference frequency (internal, nominal)		
Accuracy		(time since last adjustment × aging rate) + temperature drift + calibration accuracy
Aging per year	standard	1×10^{-6}
	with R&S®FPL1-B4 OCXO reference frequency option	1×10^{-7}
Temperature drift (0 °C to +50 °C)	standard	1×10^{-6}
	with R&S®FPL1-B4 OCXO reference frequency option	1×10^{-7}
Achievable initial calibration accuracy	standard	5×10^{-7}
	with R&S®FPL1-B4 OCXO reference frequency option	5×10^{-8}
Receiver scan		
Scan		max. 10 subranges with different settings
Scan types		stepped, time domain [2]
Measurement time	stepped scan, per frequency	50 µs to 100 s
	time domain scan, per subrange	50 µs to 100 s
Number of trace points		10 000 000
Frequency step size	stepped scan	min. 1 Hz
	time domain scan	0.25 × resolution bandwidth
Time domain scan		
Frequency segment processed in parallel	R&S®EPL1000	
	f < 30 MHz	
	resolution bandwidth (RBW) = 200 Hz	0.66 MHz
	RBW = 9 kHz	29.85 MHz
	RBW = 120 kHz	24.6 MHz
	RBW = 1 MHz	25.6 MHz
	R&S®EPL1001, R&S®EPL1007 [2]	see R&S®EPL1-K53 option
FFT overlap factor		≥ 93 %
Frequency readout, analyzer mode		
Marker resolution		0.01 Hz
Uncertainty		±(marker frequency × reference uncertainty + 10 % × resolution bandwidth + ½ (span / (sweep points – 1)) + 1 Hz)
Number of sweep (trace) points	default value	1001
	range	101 to 100 001
Marker tuning frequency step size	marker step size = sweep points	span / (sweep points – 1)
	marker step size = standard	span / (default sweep points – 1)
Frequency counter resolution		1 Hz
Count accuracy		±(frequency × reference uncertainty + ½ (last digit))
Display range for frequency axis		0 Hz, 10 Hz to maximum frequency
Resolution		0.1 Hz
Maximum span deviation		0.1 %

[1] Not with internal generator in tracking mode.

[2] Requires R&S®EPL1-K53.

Sweep time range	span = 0 Hz	1 µs to 8000 s
	span ≥ 10 Hz, RBW ≥ 100 kHz	1 ms to 8000 s [3]
	span ≥ 10 Hz, RBW < 100 kHz	75 µs to 8000 s [4]
Sweep time accuracy	span = 0 Hz	0.1 % (nom.)
	span ≥ 10 Hz, RBW ≥ 100 kHz	3 % (nom.)
Spectral purity		
SSB phase noise	frequency = 1000 MHz, carrier offset	
	100 Hz	–88 dBc (1 Hz) (nom.)
	1 kHz	< –99 dBc (1 Hz)
	10 kHz	< –105 dBc (1 Hz), –108 dBc (1 Hz) (typ.)
	100 kHz	< –110 dBc (1 Hz), –115 dBc (1 Hz) (typ.)
	1 MHz	< –130 dBc (1 Hz), –135 dBc (1 Hz) (typ.)
	10 MHz	–152 dBc (1 Hz) (nom.)



Measured SSB phase noise at different center frequencies

[3] Net sweep time without additional hardware settling time.

[4] Time for data acquisition for FFT calculation.

Preselection and preamplifier

Preselection		
State	receiver mode	always on
	analyzer mode	on/off (selectable)
Number of preselection filters	R&S®EPL1000	2
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B2 option	9
Bandwidths (–6 dB), nominal	10 Hz to 150 kHz	fixed lowpass filter
	150 kHz to 30 MHz	38 MHz, fixed bandpass filter
	30 MHz to 130 MHz	146 MHz, fixed bandpass filter
	130 MHz to 195 MHz	155 MHz, fixed bandpass filter
	195 MHz to 300 MHz	160 MHz, fixed bandpass filter
	300 MHz to 525 MHz	370 MHz, fixed bandpass filter
	525 MHz to 755 MHz	378 MHz, fixed bandpass filter
	755 MHz to 1 GHz	421 MHz, fixed bandpass filter
	1 GHz to 7.125 GHz	fixed highpass filter
Preamplifier		switchable
Location		in the signal path between preselection and first mixer
Gain		20 dB (nom.)

IF and resolution bandwidths

EMI filters		
Bandwidths (–6 dB)		10/100/200 Hz, 1/9/10/100/120 kHz, 1 MHz
Bandwidth uncertainty		< 3 %
Shape factor 60 dB:6 dB		< 4
Sweep filters and FFT filters		
Resolution bandwidths (–3 dB)	sweep filters	100 kHz to 10 MHz in 1/2/3/5 sequence
	FFT filters	1 Hz to 50 kHz in 1/2/3/5 sequence
Bandwidth uncertainty		< 3 % (nom.)
Shape factor 60 dB:3 dB		< 5 (nom.)
Channel filters, analyzer mode		
Bandwidths (–3 dB)		100/200/300/500 Hz, 1/1.5/2/2.4/2.7/3/3.4/4/4.5/5/6/7.5/8.5/9/ 10/12.5/14/15/16/20/21/25/30/50/100/ 150/192/200/300/500 kHz, 1/1.228/1.5/2/3/3.75/5/10 MHz
Bandwidth uncertainty		< 2 % (nom.)
Shape factor 60 dB:3 dB		< 2 (nom.)
Video bandwidths, analyzer mode		1 Hz to 10 MHz in 1/2/3/5 sequence
Signal analysis bandwidth (equalized), analyzer mode	standard	10 MHz (nom.)

Level

Display range		displayed noise floor up to +30 dBm
Maximum input level		
DC voltage	R&S®EPL1000	
	input	0 V
	R&S®EPL1001, R&S®EPL1007	
	input 1	50 V
	input 2	0 V
CW RF power	RF attenuation = 0 dB	
	RF preamplifier/low-noise amplifier (LNA) off	20 dBm (= 0.1 W)
	RF preamplifier/LNA on	13 dBm (= 0.02 W)
	RF attenuation ≥ 10 dB	
	RF preamplifier/LNA off	30 dBm (= 1 W)
	RF preamplifier/LNA on	23 dBm (= 0.2 W)
Pulse spectral density	RF attenuation = 0 dB, preselection on [5], RF preamplifier off	97 dB µV/MHz

[5] Default in receiver mode.

Maximum pulse voltage	RF attenuation ≥ 10 dB	
	R&S®EPL1000	
	input	450 V
	R&S®EPL1001, R&S®EPL1007	
	input 1	150 V
	input 2	450 V
Maximum pulse energy	RF attenuation ≥ 10 dB, 10 µs	
	R&S®EPL1000	
	input	20 mWs
	R&S®EPL1001, R&S®EPL1007	
	input 1	1 mWs
	input 2	20 mWs
Intermodulation		
1 dB compression (two-tone)	RF attenuation = 0 dB, preselection off [6], RF preamplifier/LNA off	
	f ≤ 3 GHz	+7 dBm (nom.)
	f > 3 GHz	+10 dBm (nom.)
	RF attenuation = 0 dB, preselection on [5], RF preamplifier off	
	f ≤ 5 GHz	+3 dBm (nom.)
	f > 5 GHz	+7 dBm (nom.)
	RF attenuation = 0 dB, preselection on [5], RF preamplifier on	
	f ≤ 1 GHz	–23 dBm (nom.)
	f > 1 GHz	–20 dBm (nom.)
Third order intercept point (TOI)	RF attenuation = 0 dB, preselection on [5], RF preamplifier off, level = 2 × –20 dBm, Δf > 5 × RBW or 10 kHz, whichever is larger	
	f_{in} < 10 MHz	20 dBm (nom.)
	10 MHz ≤ f_{in} < 30 MHz	> 15 dBm, 20 dBm (typ.)
	30 MHz ≤ f_{in} < 300 MHz	> 8 dBm, 11 dBm (typ.)
	300 MHz ≤ f_{in} < 3 GHz	> 8 dBm, 11 dBm (typ.)
	3 GHz ≤ f_{in} ≤ 7.125 GHz	> 5 dBm, 8 dBm (typ.)
	RF attenuation = 0 dB, preselection off [6], RF preamplifier off, level = 2 × –20 dBm, Δf > 5 × RBW or 10 kHz, whichever is larger	
	f_{in} < 10 MHz	20 dBm (nom.)
	10 MHz ≤ f_{in} < 30 MHz	> 20 dBm, 23 dBm (typ.)
	30 MHz ≤ f_{in} < 300 MHz	> 12 dBm, 15 dBm (typ.)
	300 MHz ≤ f_{in} < 3 GHz	> 13 dBm, 16 dBm (typ.)
	3 GHz ≤ f_{in} ≤ 7.125 GHz	> 15 dBm, 18 dBm (typ.)
	RF attenuation = 0 dB, preselection on [5], RF preamplifier on, level = 2 × –45 dBm, Δf > 5 × RBW or 10 kHz, whichever is larger	
	f_{in} < 10 MHz	–10 dBm (nom.)
	10 MHz ≤ f_{in} < 30 MHz	> –8 dBm
	30 MHz ≤ f_{in} < 300 MHz	> –14 dBm, –11 dBm (typ.)
	300 MHz ≤ f_{in} < 3 GHz	> –14 dBm, 11 dBm (typ.)
	3 GHz ≤ f_{in} ≤ 7.125 GHz	> –10 dBm, –7 dBm (typ.)
Second-harmonic intercept (SHI)	RF attenuation = 0 dB, level = –13 dBm, preselection off [6], RF preamplifier off	
	1 MHz ≤ f_{in} ≤ 30 MHz	45 dBm (nom.)
	30 MHz < f_{in} ≤ 900 MHz	45 dBm (nom.)
	900 MHz < f_{in} ≤ 3 GHz	70 dBm (nom.)

[6] Preselection off is only available in analyzer mode. In receiver mode the preselection is permanently on.

Sensitivity

Noise indication, receiver mode	RF attenuation = 0 dB, RF preamplifier off, termination = 50 Ω, average (AV) detector	
	R&S®EPL1000	
	9 kHz ≤ f < 100 kHz, bandwidth (BW) = 200 Hz	< –15 dBµV
	100 kHz ≤ f < 150 kHz, BW = 200 Hz	< –15 dBµV
	150 kHz ≤ f < 1 MHz, BW = 9 kHz	< +1 dBµV
	1 MHz ≤ f ≤ 30 MHz, BW = 9 kHz	< –4 dBµV
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B2 and R&S®EPL1-B1611 options	
	9 kHz ≤ f < 100 kHz, BW = 200 Hz	< –15 dBµV
	100 kHz ≤ f < 150 kHz, BW = 200 Hz	< –15 dBµV
	150 kHz ≤ f < 1 MHz, BW = 9 kHz	< +2 dBµV
	1 MHz ≤ f < 30 MHz, BW = 9 kHz	< –4 dBµV
	30 MHz ≤ f < 1 GHz, BW = 120 kHz	< +6 dBµV
	1 GHz ≤ f < 3 GHz, BW = 1 MHz	< +17 dBµV
	3 GHz ≤ f < 5 GHz, BW = 1 MHz	< +19 dBµV
	5 GHz ≤ f ≤ 7.125 GHz, BW = 1 MHz	< +21 dBµV
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B2 option, without R&S®EPL1-B1611 option	
	9 kHz ≤ f < 100 kHz, BW = 200 Hz	< –14 dBµV
	100 kHz ≤ f < 150 kHz, BW = 200 Hz	< –14 dBµV
	150 kHz ≤ f < 1 MHz, BW = 9 kHz	< +6 dBµV
	1 MHz ≤ f < 30 MHz, BW = 9 kHz	< +5 dBµV
	30 MHz ≤ f < 1 GHz, BW = 120 kHz	< +11 dBµV
	1 GHz ≤ f < 3 GHz, BW = 1 MHz	< +18 dBµV
	3 GHz ≤ f < 5 GHz, BW = 1 MHz	< +22 dBµV
	5 GHz ≤ f ≤ 7.125 GHz, BW = 1 MHz	< +22 dBµV
	RF attenuation = 0 dB, RF preamplifier on, termination = 50 Ω, average (AV) detector	
	R&S®EPL1000	
	9 kHz ≤ f < 100 kHz, BW = 200 Hz	< –25 dBµV
	100 kHz ≤ f < 150 kHz, BW = 200 Hz	< –25 dBµV
	150 kHz ≤ f < 1 MHz, BW = 9 kHz	< –9 dBµV
	1 MHz ≤ f < 10 MHz, BW = 9 kHz	< –16 dBµV
	10 MHz ≤ f ≤ 30 MHz, BW = 9 kHz	< –12 dBµV
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B2 and R&S®EPL1-B1611 options	
	9 kHz ≤ f < 100 kHz, BW = 200 Hz	< –25 dBµV
	100 kHz ≤ f < 150 kHz, BW = 200 Hz	< –25 dBµV
	150 kHz ≤ f < 1 MHz, BW = 9 kHz	< –8 dBµV
	1 MHz ≤ f < 30 MHz, BW = 9 kHz	< –12 dBµV
	30 MHz ≤ f < 1 GHz, BW = 120 kHz	< –6 dBµV
	1 GHz ≤ f < 3 GHz, BW = 1 MHz	< +6 dBµV
	3 GHz ≤ f < 5 GHz, BW = 1 MHz	< +7 dBµV
	5 GHz ≤ f ≤ 7.125 GHz, BW = 1 MHz	< +10 dBµV
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B2 option, without R&S®EPL1-B1611 option	
	9 kHz ≤ f < 100 kHz, BW = 200 Hz	< –23 dBµV
	100 kHz ≤ f < 150 kHz, BW = 200 Hz	< –25 dBµV
	150 kHz ≤ f < 1 MHz, BW = 9 kHz	< –6 dBµV
	1 MHz ≤ f < 30 MHz, BW = 9 kHz	< –7 dBµV
	30 MHz ≤ f < 300 MHz, BW = 120 kHz	< –4 dBµV
	300 MHz ≤ f < 1 GHz, BW = 120 kHz	< –5 dBµV
	1 GHz ≤ f < 3 GHz, BW = 1 MHz	< +8 dBµV
	3 GHz ≤ f < 5 GHz, BW = 1 MHz	< +10 dBµV
	5 GHz ≤ f ≤ 7.125 GHz, BW = 1 MHz	< +12 dBµV

Displayed average noise level (DANL), analyzer mode	RF attenuation = 0 dB, termination = 50 Ω, logarithmic scaling, normalized to 1 Hz RBW, RBW = 1 kHz, VBW = 1 Hz, sample detector, +20 °C to +30 °C	
	LNA off, preselection off [6] (preselector bypass)	
	R&S®EPL1000	
	5 kHz ≤ f < 1 MHz	< –145 dBm, –152 dBm (typ.)
	1 MHz ≤ f ≤ 30 MHz	< –150 dBm, –155 dBm (typ.)
	R&S®EPL1001, R&S®EPL1007	
	5 kHz ≤ f < 1 MHz	< –145 dBm, –150 dBm (typ.)
	1 MHz ≤ f < 30 MHz	< –147 dBm, –150 dBm (typ.)
	30 MHz ≤ f < 1 GHz	< –148 dBm, –151 dBm (typ.)
	1 GHz ≤ f < 3 GHz	< –144 dBm, –147 dBm (typ.)
	3 GHz ≤ f < 5 GHz	< –140 dBm, –143 dBm (typ.)
	5 GHz ≤ f ≤ 7.125 GHz	< –139 dBm, –142 dBm (typ.)
	LNA on, preselection off [6] (preselector bypass)	
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B22 option	
	5 kHz ≤ f < 1 MHz	< –159 dBm, –164 dBm (typ.)
	1 MHz ≤ f < 30 MHz	< –161 dBm, –165 dBm (typ.)
	30 MHz ≤ f < 1 GHz	< –159 dBm, –163 dBm (typ.)
	1 GHz ≤ f < 3 GHz	< –156 dBm, –159 dBm (typ.)
	3 GHz ≤ f < 5 GHz	< –153 dBm, –156 dBm (typ.)
	5 GHz ≤ f ≤ 7.125 GHz	< –150 dBm, –153 dBm (typ.)
	LNA off, spectrum analyzer path	
	R&S®EPL1001, R&S®EPL1007	
	2 MHz ≤ f < 100 MHz	< –143 dBm, –148 dBm (typ.)
	10 MHz ≤ f < 2 GHz	< –148 dBm, –151 dBm (typ.)
	2 GHz ≤ f < 3 GHz	< –147 dBm, –150 dBm (typ.)
	3 GHz ≤ f < 5 GHz	< –146 dBm, –149 dBm (typ.)
	5 GHz ≤ f ≤ 7.125 GHz	< –144 dBm, –146 dBm (typ.)
	LNA on, spectrum analyzer path	
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B22 option	
	2 MHz ≤ f < 10 MHz	< –160 dBm, –164 dBm (typ.)
	10 MHz ≤ f < 2 GHz	< –162 dBm, –165 dBm (typ.)
	2 GHz ≤ f < 3 GHz	< –160 dBm, –163 dBm (typ.)
	3 GHz ≤ f < 5 GHz	< –158 dBm, –161 dBm (typ.)
	5 GHz ≤ f ≤ 7.125 GHz	< –155 dBm, –158 dBm (typ.)
Spurious responses	input level ≤ –13 dBm, sweep optimization: auto or dynamic, scaling linear	
Image response	10 MHz ≤ f ≤ 3 GHz	
	f_{in} – 2 × 4020.4 MHz (1st IF)	< –90 dBc (typ.)
	f_{in} – 2 × 820.4 MHz (2nd IF)	< –80 dBc
	f_{in} – 2 × 20.4 MHz (3rd IF), RBW ≤ 3 MHz	< –80 dBc
	3 GHz < f ≤ 7.125 GHz, RBW ≤ 3 MHz	< –70 dBc (typ.)
Intermediate frequency response	2 MHz ≤ f ≤ 3 GHz	
	1st IF (4020.4 MHz)	< –80 dBc (typ.)
	2nd IF (820.4 MHz)	< –80 dBc
	3rd IF (20.4 MHz)	< –80 dBc
	3 GHz < f ≤ 7.125 GHz	< –70 dBc
Residual spurious response	RF attenuation = 0 dB	
	f ≤ 2 MHz	< –90 dBm (nom.)
	2 MHz ≤ f < 30 MHz	< –110 dBm
	30 MHz ≤ f ≤ 7.125 GHz	< –103 dBm
Local oscillator related spurious	f < 3 GHz	
	1 kHz ≤ carrier offset ≤ 10 MHz	< –70 dBc
	carrier offset > 10 MHz	< –80 dBc
	3 GHz ≤ f ≤ 7.125 GHz	< –70 dBc (typ.)
Other interfering signals		
Subharmonic of 1st LO	20 MHz ≤ f < 3 GHz, spurious at 4020.4 MHz – 2 × f_{in}	< –80 dBc (nom.)
Harmonic of 1st LO	20 MHz ≤ f < 3 GHz, mixer level < –25 dBm, spurious at f_{in} –2010.2 MHz	< –80 dBc (nom.)

Level display, receiver mode		
Level display	analog	bargraph display, separately for each detector
	digital	numeric, 0.01 dB resolution
Detectors	maximum 4 selectable	maximum peak, minimum peak, RMS, average, quasi-peak, CISPR-average, RMS-average
Units of level axis		dBm, dBµV, dBmV, dBµA, dBpW, dBpT
RF spectrum		
Logarithmic level axis		10 dB to 200 dB, in steps of 10
Frequency axis		linear or logarithmic
Number of traces		6
Detectors		maximum peak, minimum peak, RMS, average, quasi-peak, CISPR-average, RMS-average
Level display, analyzer mode		
Logarithmic level axis		1 dB to 200 dB, in 1 dB steps
Linear level axis		10 % of reference level per level division, 10 divisions or logarithmic scaling
Number of traces		6
Trace detector		maximum peak, minimum peak, auto peak (normal), sample, RMS, average
Trace functions		clear/write, maximum hold, minimum hold, average, view
EMI detectors		quasi-peak, RMS-average, CISPR-average
Measurement marker detector		maximum peak, average, quasi-peak, RMS-average, CISPR-average
Setting range of reference level		–130 dBm to (–13 dBm + RF attenuation – RF preamplifier / LNA gain), in steps of 0.01 dB
Units of level axis		dBm, dBµV, dBmV, dBµA, dBpW, V, A, W
Level measurement uncertainty		
Absolute level uncertainty at 16.667 MHz	RBW = 10 kHz, level = –10 dBm, reference level = –10 dBm, RF attenuation = 10 dB	
	+20 °C to +30 °C	
	preselection off [6]	< 0.3 dB (σ = 0.1 dB)
	preselection on [5]	< 0.4 dB (σ = 0.14 dB)
	0 °C to +50 °C	
	preselection off [6]	< 0.5 dB (σ = 0.17 dB)
	preselection on [5]	< 0.6 dB (σ = 0.2 dB)
Frequency response referenced to 16.667 MHz	RF attenuation = 10/20/30/40 dB, preselection off [6], RF preamplifier off, +20 °C to +30 °C	
	5 kHz ≤ f < 9 kHz	< 1 dB (nom.)
	9 kHz ≤ f < 30 MHz	< 0.3 dB (σ = 0.1 dB)
	30 MHz ≤ f < 3 GHz	< 0.5 dB (σ = 0.1 dB)
	3 GHz ≤ f ≤ 7.125 GHz	< 0.6 dB (σ = 0.2 dB)
	RF attenuation = 10/20/30/40 dB, preselection on [5], RF preamplifier off, +20 °C to +30 °C	
	5 kHz ≤ f < 9 kHz	< 1 dB (nom.)
	9 kHz ≤ f < 30 MHz	< 0.8 dB (σ = 0.27 dB)
	30 MHz ≤ f < 3 GHz	< 0.8 dB (σ = 0.27 dB)
	3 GHz ≤ f ≤ 7.125 GHz	< 1.0 dB (σ = 0.33 dB)
	any setting of RF attenuation and preselection, RF preamplifier off, 0 °C to +50 °C	
	5 kHz ≤ f < 30 MHz	< 1.2 dB (nom.)
	30 MHz ≤ f < 3 GHz	< 1.2 dB (nom.)
	3 GHz ≤ f ≤ 7.125 GHz	< 1.5 dB (nom.)
	RF attenuation ≤ 20 dB, RF preamplifier on, preselection on [5], +20 °C to +30 °C	
	5 kHz ≤ f < 9 kHz	< 1 dB (nom.)
	9 kHz ≤ f < 30 MHz	< 1.2 dB (σ = 0.27 dB)
	30 MHz ≤ f < 3 GHz	< 1.2 dB (σ = 0.27 dB)
	3 GHz ≤ f ≤ 7.125 GHz	< 1.5 dB (σ = 0.33 dB)
	RF attenuation = 10/20/30/40 dB, spectrum analyzer path, LNA off, +20 °C to +30 °C	
	2 MHz ≤ f < 3 GHz	< 0.6 dB (σ = 0.1 dB)
	3 GHz ≤ f ≤ 7.125 GHz	< 0.8 dB (σ = 0.2 dB)

Frequency response referenced to 16.667 MHz (cont.)	RF attenuation ≤ 20 dB, spectrum analyzer path, LNA on, +20 °C to +30 °C, with option R&S®EPL1-B22	
	2 MHz ≤ f < 3 GHz	< 0.6 dB (σ = 0.27 dB)
	3 GHz ≤ f ≤ 7.125 GHz	< 1 dB (σ = 0.33 dB)
	any setting of RF attenuation, spectrum analyzer path, LNA off, 0 °C to +50 °C	
	2 MHz ≤ f < 3 GHz	< 0.8 dB (nom.)
	3 GHz ≤ f ≤ 7.125 GHz	< 1.2 dB (nom.)
Attenuator switching uncertainty	f = 50 MHz, 0 dB to 55 dB, referenced to 10 dB attenuation	< 0.2 dB (σ = 0.07 dB)
Uncertainty of reference level setting		0 dB [7]
Bandwidth switching uncertainty	referenced to RBW = 10 kHz and sweep type FFT	
	sweep type = FFT (RBW < 100 kHz)	< 0.1 dB (nom.)
	sweep type = sweep (RBW ≥ 100 kHz)	< 0.2 dB (nom.)
Nonlinearity of displayed level		
Logarithmic level display	S/N > 16 dB, 0 dB to –50 dB	< 0.1 dB (σ = 0.07 dB)
Linear level display	S/N > 16 dB, 0 dB to –70 dB	5 % of reference level (nom.)
CISPR detectors	R&S®EPL1000	
	CISPR band A/B	in line with CISPR 16-1-1:2019
	R&S®EPL1001, R&S®EPL1007	
	CISPR band A/B/C/D/E	
	with R&S®EPL1-B2 and R&S®EPL1-B1611 options	in line with CISPR 16-1-1:2019
	with R&S®EPL1-B2 option, pulse repetition frequency ≥ 10 Hz	in line with CISPR 16-1-1:2019
	without R&S®EPL1-B2 option, pulse repetition frequency ≥ 20 Hz	in line with CISPR 16-1-1:2019
Total measurement uncertainty	signal level from 0 dB to –50 dB below reference level, S/N > 20 dB, sweep time = auto, sweep type = FFT, RF attenuation = 10/20/30/40 dB, preselection off [6], RF preamplifier/LNA off, span/RBW < 100, confidence level = 95 %, +20 °C to +30 °C	
	1 MHz ≤ f < 30 MHz	0.5 dB
	30 MHz ≤ f < 3 GHz	0.5 dB
	3 GHz ≤ f ≤ 7.125 GHz	0.8 dB
	signal level from 0 dB to –50 dB below reference level, S/N > 20 dB, sweep time = auto, sweep type = FFT, RF attenuation = 10/20/30/40 dB, preselection on [5], RF preamplifier/LNA off/on, span/RBW < 100, confidence level = 95 %, +20 °C to +30 °C	
	1 MHz ≤ f < 30 MHz	0.8 dB
	30 MHz ≤ f < 3 GHz	0.8 dB
	3 GHz ≤ f ≤ 7.125 GHz	1.0 dB

[7] The setting of the reference level affects only the graphical representation of the measurement result on the display, not the measurement itself. Therefore, the reference level setting causes no additional uncertainty in measurement results.

Measurement speed

Receiver mode		
Time domain scan [8]	CISPR band A, 9 kHz to 150 kHz, RBW = 200 Hz or CISPR band B, 150 kHz to 30 MHz, RBW = 9 kHz; measurement time = 100 ms, peak detector	500 ms (meas.)
	CISPR band A, 9 kHz to 150 kHz, RBW = 200 Hz or CISPR band B, 150 kHz to 30 MHz, RBW = 9 kHz; measurement time = 1 s, peak detector	1.4 s (meas.)
	CISPR band A, 9 kHz to 150 kHz, RBW = 200 Hz or CISPR band B, 150 kHz to 30 MHz, RBW = 9 kHz; measurement time = 1 s, quasi-peak and CISPR-average detector	≤ 3 s (meas.)
	CISPR band A, 9 kHz to 150 kHz, RBW = 200 Hz or CISPR band B, 150 kHz to 30 MHz, RBW = 9 kHz; measurement time = 15 s, peak detector	15.4 s (meas.)
	CISPR band A, 9 kHz to 150 kHz, RBW = 200 Hz or CISPR band B, 150 kHz to 30 MHz, RBW = 9 kHz; measurement time = 15 s, quasi-peak and CISPR-average detector	≤ 17 s (meas.)
	CISPR band C, 30 MHz to 300 MHz, RBW = 120 kHz, measurement time = 100 ms, peak detector	1.8 s (meas.)
	CISPR band C, 30 MHz to 300 MHz, RBW = 120 kHz, measurement time = 1 s, peak, quasi-peak and CIPSR-average detector	29 s (meas.)
	CISPR band C/D, 30 MHz to 1000 MHz, RBW = 120 kHz, measurement time = 10 ms, peak detector	1.4 s (meas.)
	CISPR band C/D, 30 MHz to 1000 MHz, RBW = 120 kHz, measurement time = 100 ms, peak detector	5.8 s (meas.)
	CISPR band C/D, 30 MHz to 1000 MHz, RBW = 120 kHz, measurement time = 1 s, peak, quasi-peak and CIPSR-average detector	100 s (meas.)

[8] Requires R&S®EPL1-K53 for R&S®EPL1001 and R&S®EPL1007.

Time domain scan (cont.) [8]	CISPR band E, 1000 MHz to 6000 MHz, RBW = 1 MHz, measurement time = 10 ms, peak detector	4.8 s (meas.)
	CISPR band E, 1000 MHz to 6000 MHz, RBW = 1 MHz, measurement time = 100 ms, peak detector	28.0 s (meas.)
	CISPR band E, 1000 MHz to 6000 MHz, RBW = 1 MHz, measurement time = 1 s, peak and CIPSR-average detector	510 s (meas.)
Local measurement and display update rate	1001 sweep points, sweep optimization set to “speed”	5 ms (200/s) (nom.)
Maximum sweep rate, remote operation [9, 10]	trace average: on	0.9 ms (1100/s) (nom.)
Remote measurement and LAN transfer [9]		3.2 ms (357/s) (nom.)
Marker peak search [9]		1.9 ms (nom.)
Center frequency tune + sweep + sweep data transfer [9]		16 ms (nom.)

Trigger functions

Trigger		
Trigger source		free run, video, external, IF power, I/Q power
Trigger offset	span ≥ 10 Hz	0 s to 20 s
	span = 0 Hz	(–sweep time) to 20 s
Maximum deviation of trigger offset		±10 ns
IF power trigger, analyzer mode		
Sensitivity	minimum signal power	–60 dBm + RF attenuation – RF preamplifier / LNA gain
	maximum signal power	–15 dBm + RF attenuation – RF preamplifier / LNA gain
IF power trigger bandwidth		10 MHz (nom.)
Gated sweep		
Gate source		video, external, IF power
Gate delay		0 s to 20 s, minimum resolution: 10 ns
Gate length		10 ns to 20 s, minimum resolution: 10 ns
Maximum deviation of gate length		±10 ns

I/Q data

Interface		GPIB or LAN interface
Memory length		max. 25 Msample I and Q
Word length of I/Q samples		16 bit
Sampling rate	standard	100 Hz to 16 MHz
Maximum signal analysis bandwidth (equalized)	standard	12.8 MHz
Signal analysis bandwidth	signal analysis bandwidth ≤ 10 MHz	
Amplitude flatness	f_{center} ≥ 12 MHz and (1.25 × signal analysis bandwidth)	±0.3 dB (nom.)
Deviation from linear phase	f_{center} ≥ 12 MHz and (1.25 × signal analysis bandwidth)	±1° (nom.)
Signal analysis bandwidth	10 MHz < signal analysis bandwidth ≤ 12.8 MHz	
Amplitude flatness	f_{center} ≥ 12 MHz and (1.25 × signal analysis bandwidth)	±0.5 dB (nom.)
Deviation from linear phase	f_{center} ≥ 12 MHz and (1.25 × signal analysis bandwidth)	±1.5° (nom.)

[9] Measured with a PC equipped with Intel Core i7, 2.8 GHz, and Gigabit LAN interface.

[10] Measurement is performed with a sweep count of 1000. The indicated speed is the average speed of one sweep.

Audio demodulation

AF demodulation types		AM and FM
Audio output		loudspeaker and phone jack
Marker stop time in analyzer mode		100 ms to 60 s

Inputs and outputs

RF input		
Impedance		50 Ω
Connector		N female
VSWR	RF attenuation ≥ 10 dB, receiver mode or analyzer mode with preselection on [5]	
	9 kHz ≤ f < 30 MHz	< 1.2
	30 MHz ≤ f < 1 GHz	< 1.2
	1 GHz ≤ f < 3 GHz	< 2.0
	3 GHz ≤ f ≤ 7.125 GHz	< 2.0
	RF attenuation ≤ 10 dB, receiver mode or analyzer mode with preselection on [5]	
	9 kHz ≤ f < 30 MHz	< 2.0
	30 MHz ≤ f < 1 GHz	< 2.0
	1 GHz ≤ f < 3 GHz	< 3.0
	3 GHz ≤ f ≤ 7.125 GHz	< 3.0
	RF attenuation ≥ 10 dB, analyzer mode with preselection off [6]	
	9 kHz ≤ f < 30 MHz	< 1.5 (nom.)
	30 MHz ≤ f < 3 GHz	< 1.5 (nom.)
	3 GHz ≤ f ≤ 7.125 GHz	< 2.0 (nom.)
Setting range of attenuator	input	0 dB to 55 dB, in 1 dB steps
USB interfaces	front	2 ports, type A plug, version 2.0
	rear	2 ports, type A plug, version 3.1
Reference output		
Connector		BNC female
Impedance		50 Ω
Output frequency	internal reference	10 MHz
	external reference	same as reference input signal
Level		> 0 dBm (nom.)
Reference input		
Connector		BNC female
Impedance		50 Ω
Input frequency range		10 MHz ± 5 ppm
Required level		> 0 dBm into 50 Ω
External trigger/gate input		
Connector		BNC female
Trigger voltage		0.5 V to 3.5 V
Input impedance		10 kΩ
LAN interface		10/100/1000BASE-T
Connector		RJ-45
External monitor		
Connector		DisplayPort Rev. 1.3
User port		
Connector		25 pin D-Sub female
Output		TTL compatible, 0 V/5 V, max. 15 mA
Input		TTL compatible, max. 5 V
Noise source control and power sensor		
Connectors	for R&S®NRP-Zxx power sensors	7 pin LEMOSA female
	for noise source control	BNC female
Noise source control output voltage		0 V/28 V, switchable, max. 100 mA (nom.)
IF/video/demodulation output, analyzer mode		
Connector		BNC female, 50 Ω
IF output		
Bandwidth		equal to RBW setting
IF frequency		25 MHz
Output level	center frequency > 10 MHz, span = 0 Hz, signal at reference level and center frequency	0 dBm (nom.)

Video output		
Bandwidth		equal to VBW setting
Output scaling	logarithmic display scale	logarithmic
	linear display scale	linear
Output level	center frequency > 10 MHz, span = 0 Hz, signal at reference level and center frequency	1 V (nom.), open circuit
Audio output		
Loudspeaker		built-in, volume adjustable
AF output		
Connector		3.5 mm mini jack
Output impedance		10 Ω
Open-circuit voltage		up to 1.5 V, adjustable

General data

Display		25.7 cm (10.1") LC TFT color display
Resolution		1280 × 800 pixel (WXGA resolution)
Pixel failure rate		$< 1 \times 10^{-5}$
Data storage		
Internal	standard	solid-state drive (SSD) 128 Gbyte
External		supports USB 2.0/3.1 compatible memory devices
Environmental conditions		
Temperature	operating temperature range	+0 °C to +50 °C
	storage temperature range	–20 °C to +70 °C
Climatic loading	without condensation	+40 °C at 85 % relative humidity, in line with EN 60068-2-30,
Mechanical resistance		
Vibration	sinusoidal	5 Hz to 55 Hz, 0.15 mm constant amplitude (1.8 g at 55 Hz); 55 Hz to 150 Hz, acceleration: 0.5 g constant; in line with EN 60068-2-6
	random	8 Hz to 500 Hz, acceleration: 1.2 g (RMS), in line with EN 60068-2-64
Shock		40 g shock spectrum, in line with MIL-STD-810E, method no. 516.4, procedure I, MIL-PRF-28800F
EMC		in line with EMC Directive 2014/30/EU including IEC/EN 61326-1 [11, 12], IEC/EN 61326-2-1, CISPR 11/EN 55011, IEC/EN 61000-3-2, IEC/EN 61000-3-3
Recommended calibration interval		1 year

[11] Emission limits for class B equipment.

[12] Immunity test requirement for industrial environment (EN 61326, table 2).

Power supply		
AC supply	with battery option	100 V to 240 V ± 10 %, 50 Hz to 60 Hz ± 5 %
Current consumption	without options	2.16 A (at 100 V) to 0.95 A (at 240 V) (nom.)
	with internal battery (R&S®FPL1-B31), in charge mode	3 A to 1.5 A (nom.)
Power consumption	without options, device in standby	5 W (nom.)
	with internal battery (R&S®FPL1-B31), in charge mode, device in standby	110 W (nom.)
	R&S®EPL1000, without options, in receiver mode	75 W (nom.) [13]
	R&S®EPL1001, R&S®EPL1007, without options	85 W (nom.) [13]
	R&S®EPL1001, R&S®EPL1007, with R&S®EPL1-B2 option, in receiver mode	120 W (nom.) [13]
Safety		in line with EN 61010-1, IEC 61010-1, UL 61010-1, CAN/CSA-C22.2 No. 61010-1
Test mark[14]		CE, KCC, $_{C}$CSA$_{US}$
Dimensions and weight		
Dimensions (W × H × D)	R&S®EPL1000	408 mm × 189 mm × 235 mm (16.06 in × 7.44 in × 9.25 in)
	R&S®EPL1001, R&S®EPL1007	408 mm × 189 mm × 305 mm (16.06 in × 7.44 in × 12.0 in)
Net weight, nominal	R&S®EPL1000	
	without options	6.9 kg (15.2 lb)
	with internal battery	8.6 kg (18.95 lb)
	R&S®EPL1001, R&S®EPL1007	
	without options	8.4 kg (18.1 lb)
	with internal battery	10.3 kg (22.7 lb)

[13] Power consumption varies depending on mode of operation and options installed. If R&S®FPL1-B31 option is installed, maximum power consumption is only valid if both batteries are fully charged.

[14] KCC and $_{C}$CSA$_{US}$ certification for R&S®EPL1001 as well as R&S®EPL1007 is in preparation and pending.

Options

R&S®EPL1-B9 internal generator

Frequency		
Frequency range	R&S®EPL1001	5 kHz to 1 GHz
	R&S®EPL1007	5 kHz to 7.125 GHz
Setting resolution	independent CW source	0.01 Hz

Frequency offset		
Setting range		0 Hz to f_{max} [15]
Setting resolution		0.01 Hz

Spectral purity		
SSB phase noise	frequency = 1 GHz, output level = 0 dBm	
	carrier offset = 10 kHz	< –102 dBc (1 Hz), –108 dBc (1 Hz) (typ.)
	carrier offset = 100 kHz	< –105 dBc (1 Hz), –111 dBc (1 Hz) (typ.)
	carrier offset = 1 MHz	< –117 dBc (1 Hz), –130 dBc (1 Hz) (typ.)
Harmonics	output level = 0 dBm, +20 °C to +30 °C	
	5 kHz ≤ f < 100 kHz	< –30 dBc (nom.)
	100 kHz ≤ f ≤ 7.125 GHz [16]	< –30 dBc
Non-harmonic spurious	output level = 0 dBm	
	1 kHz < offset from carrier ≤ 4 MHz	–35 dBc (nom.)
	offset from carrier > 4 MHz	< –35 dBc, –45 dBc (typ.)

Level		
Specified level range	f ≤ 1 GHz	–50 dBm to 0 dBm
	1 GHz < f ≤ 7.125 GHz	–30 dBm to 0 dBm
Setting resolution		0.1 dB
Setting range	f ≤ 1 GHz	–60 dBm to +10 dBm
Absolute level uncertainty	frequency = 50 MHz, +20 °C to +30 °C, output level = –10 dBm, frequency offset = 0 Hz	< 0.5 dB
Frequency response	output level = –10 dBm, referenced to level at 50 MHz, +20 °C to +30 °C, frequency offset = 0 Hz	
	100 kHz ≤ f ≤ 3 GHz	< 1 dB
	3 GHz < f ≤ 7.125 GHz	< 1.5 dB, < 1 dB (typ.)
Level nonlinearity	for specified level range, referenced to –10 dBm output level, +20 °C to +30 °C, f ≥ 100 kHz	≤ 2 dB, < 0.5 dB (typ.)

Dynamic range	RBW = 1 kHz, f = 1 GHz	115 dB (nom.)

Power sweep		
Specified level range	f ≤ 1 GHz	–50 dBm to 0 dBm
	1 GHz < f ≤ 7.125 GHz	–30 dBm to 0 dBm
Setting resolution		0.1 dB
Setting range	f ≤ 1 GHz	–60 dBm to +10 dBm

Generator output (GEN Out)		
Connector		N female, 50 Ω
VSWR		1.5 (nom.)

Reverse power		
DC voltage		50 V
CW RF power		30 dBm (= 1 W)
Maximum pulse voltage		150 V
Maximum pulse energy	pulse duration: 10 µs	1 mWs

[15] f_{max} depends on frequency range.

[16] Limit is nominal for harmonics at frequencies > 20 GHz.

R&S®FPL1-B10 GPIB interface

IEC/IEEE bus control		interface in line with IEC 625-2 (IEEE 488.2)
Command set		SCPI 1997.0
Connector		24 pin Amphenol female
Interface functions		SH1, AH1, T6, L4, SR1, RL1, PP1, DC1, DT1, C0

R&S®FPL1-B30 DC power input 12 V/24 V

Input voltage range	DC	12 V to 24 V (nom.), 10.4 V to 28 V, switch-on voltage > 11 V (meas.)
Input current	V_{in} = 12 V/24 V	15 A/7.5 A (nom.)
	V_{in} = 12 V/24 V, operating mode, without internal batteries (R&S®FPL1-B31)	6.8 A/3.2 A (meas.)
	V_{in} = 12 V/24 V, operating mode, internal batteries in charge mode	11 A/5 A (meas.)
	V_{in} = 12 V/24 V, instrument standby mode, internal batteries in charge mode	6.5 A/3.0 A (meas.)
Temperature	operating temperature range	0 °C to +40 °C
	storage temperature range	–20 °C to +70 °C

R&S®FPL1-B31 internal lithium-ion battery

Operating time	R&S®EPL1000	2 h (nom.)
	R&S®EPL1001, R&S®EPL1007	1.25 h (nom.)
Charge time	standby mode, AC supply	
	R&S®EPL1000	< 2 h (nom.)
	R&S®EPL1001, R&S®EPL1007	< 4 h (nom.)
	standby mode, with external DC supply (R&S®FPL1-B30)	
	R&S®EPL1000	< 2 h (nom.)
	R&S®EPL1001, R&S®EPL1007	< 4 h (nom.)
	operating mode	
	R&S®EPL1000	< 4 h (nom.)
	R&S®EPL1001, R&S®EPL1007	< 8 h (nom.)
Temperature	operating temperature range, discharge	0 °C to +50 °C
	operating temperature range, charge	0 °C to +40 °C
	storage temperature range [17]	–20 °C to +60 °C

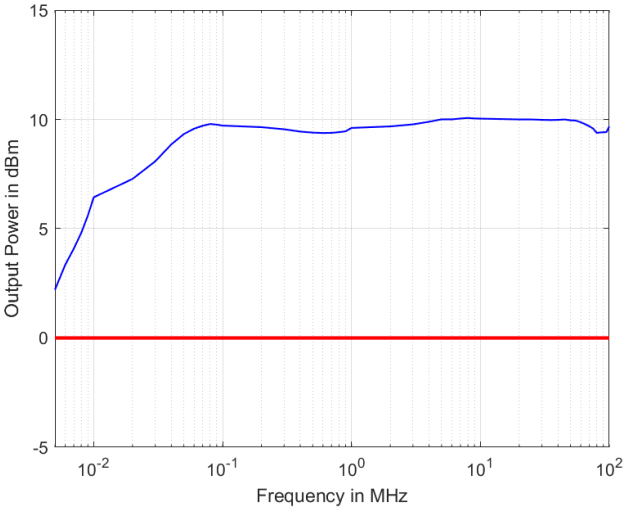
R&S®FSV-B34 charger (only needed for charging spare batteries)

AC input voltage range		100 V to 240 V ± 10 % (nom.)
AC supply frequency		50 Hz to 60 Hz (nom.)
Power consumption		max. 300 W (nom.)
Number of charger bays		4
Dimensions	W × H × D	400 mm × 127 mm × 203 mm (15.75 in × 5 in × 8 in)
Net weight		3.1 kg (6.9 lb)

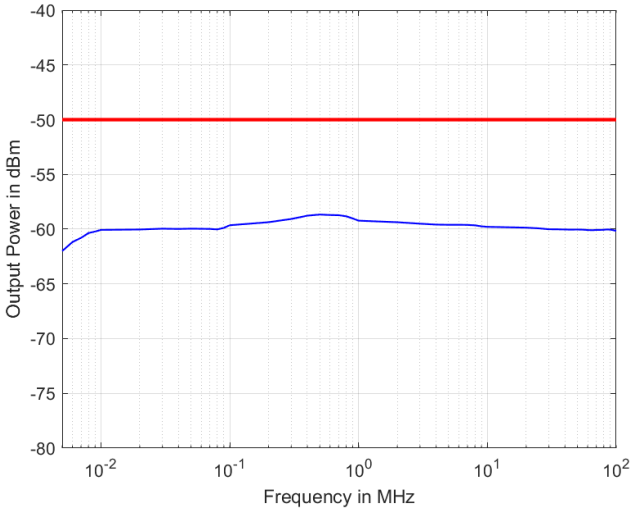
[17] The battery packs should be stored in an environment with low humidity, free from corrosive gas at a recommended temperature range < +21 °C. Extended exposure to temperatures above +45 °C could degrade battery performance and life.

R&S®EPL1-B91 internal generator

Modes		tracking generator
		independent source
		power sweep
Frequency		
Frequency range		5 kHz to 30 MHz
Setting resolution	independent CW source	0.01 Hz
Frequency offset		
Setting range		0 Hz to 30 MHz
Setting resolution		0.01 Hz
Spectral purity		
SSB phase noise	frequency = 15 MHz, output level = 0 dBm	
	carrier offset = 10 kHz	< –102 dBc (1 Hz), –108 dBc (1 Hz) (typ.)
	carrier offset = 100 kHz	< –105 dBc (1 Hz), –111 dBc (1 Hz) (typ.)
	carrier offset = 1 MHz	< –117 dBc (1 Hz), –130 dBc (1 Hz) (typ.)
Harmonics	output level = 0 dBm, +20 °C to +30 °C	
	5 kHz ≤ f < 100 kHz	< –30 dBc (nom.)
	100 kHz ≤ f ≤ 30 MHz	< –30 dBc
Non-harmonic spurious	output level = 0 dBm	
	1 kHz < offset from carrier ≤ 4 MHz	–35 dBc (nom.)
	offset from carrier > 4 MHz	< –35 dBc, –45 dBc (typ.)
Level		
Specified level range		–50 dBm to 0 dBm
Setting resolution		0.1 dB
Setting range		–60 dBm to +10 dBm
Absolute level uncertainty	frequency = 16.667 MHz, +20 °C to +30 °C, output level = –10 dBm, frequency offset = 0 Hz	< 0.5 dB
Frequency response	output level = –10 dBm, referenced to level at 16.667 MHz, +20 °C to +30 °C, frequency offset = 0 Hz, 100 kHz ≤ f ≤ 30 MHz	< 1 dB
Level nonlinearity	for specified level range, referenced to –10 dBm output level, +20 °C to +30 °C, f ≥ 100 kHz	≤ 2 dB, < 0.5 dB (typ.)



Maximum output power level in dBm (meas.) versus frequency



Minimum output power level in dBm (meas.) versus frequency

Dynamic range	RBW = 1 kHz, f = 30 MHz	115 dB (nom.)
Power sweep		
Specified level range		–50 dBm to 0 dBm
Setting resolution		0.1 dB
Setting range		–60 dBm to +10 dBm
Generator output (GEN Out)		
Connector		N female, 50 Ω
VSWR		1.5 (nom.)
Reverse power		
DC voltage		50 V
CW RF power		30 dBm (= 1 W)
Maximum pulse voltage		150 V
Maximum pulse energy	pulse duration: 10 µs	1 mWs

R&S®EPL1-K53 time domain scan (TDS)

Time domain scan		
Frequency segment processed in parallel [18]	f < 30 MHz	
	RBW = 200 Hz	0.66 MHz
	RBW = 9 kHz	29.85 MHz
	RBW = 120 kHz	24.6 MHz
	RBW = 1 MHz	25.6 MHz
	f ≥ 30 MHz	
	RBW = 200 Hz	0.66 MHz
	RBW = 9 kHz	14.92 MHz [19]
	RBW = 120 kHz	20 MHz
	RBW = 1 MHz	20 MHz

[18] Achievable span is determined by frequency settings and preselector limits.

[19] For RF frequencies > 1 GHz the maximum segment size is limited to 3.8 MHz.

R&S®EPL1-K55E real-time spectrogram

Span [18]		
Range	R&S®EPL1-K55E	
	f < 30 MHz	1 kHz to 29.85 MHz
	f ≥ 30 MHz	1 kHz to 20 MHz
Resolution		1 Hz

Measurement time		
Range		33 ms to 100 s [20]

Resolution bandwidths		
Range		10 Hz to 1 MHz
Bandwidth uncertainty		< 3 % (nom.)
Maximum span [18]	RBW = 100 Hz	327.6 kHz
	RBW = 200 Hz	655.3 kHz
	RBW = 300 Hz	983 kHz
	RBW = 500 Hz	1.638 MHz
	RBW = 1 kHz	3.27 MHz
	RBW = 2 kHz	6.553 MHz
	RBW = 3 kHz	9.83 MHz
	RBW = 5 kHz	16.38 MHz
	f < 30 MHz	
	RBW = 9 kHz	29.85 MHz
	RBW = 10 kHz	16.38 MHz
	RBW = 30 kHz	24.57 MHz
	RBW = 50 kHz	20.48 MHz
	RBW = 100 kHz	20.48 MHz
	RBW = 120 kHz	24.57 MHz
	RBW = 200 kHz	20.48 MHz
	RBW = 500 kHz	25.6 MHz
	RBW = 1 MHz	25.6 MHz
	f ≥ 30 MHz	
	RBW = 9 kHz	14.92 MHz
	RBW = 10 kHz	16.38 MHz
	RBW = 30 kHz	20 MHz
	RBW = 50 kHz	20 MHz
	RBW = 100 kHz	20 MHz
	RBW = 120 kHz	20 MHz
	RBW = 200 kHz	20 MHz
	RBW = 500 kHz	12.8 MHz
	RBW = 1 MHz	20 MHz

Level		
Minimum signal duration for 100 % probability of intercept with full amplitude accuracy [21]	trace detector = max. peak	
	RBW = 100 Hz	42.5 ms
	RBW = 200 Hz	21.3 ms
	RBW = 300 Hz	14.2 ms
	RBW = 500 Hz	8.5 ms
	RBW = 1 kHz	4.25 ms
	RBW = 2 kHz	2.13 ms
	RBW = 3 kHz	1.42 µs
	RBW = 5 kHz	850 µs
	RBW = 9 kHz	473 µs
	RBW = 10 kHz	425 µs
	RBW = 30 kHz	142 µs
	RBW = 50 kHz	85 µs
	RBW = 100 kHz	42.5 µs
	RBW = 120 kHz	35.4 µs
	RBW = 200 kHz	21.3 µs
	RBW = 500 kHz	8.47 µs
	RBW = 1 MHz	4.22 µs

[20] Time period during which individual FFTs contribute to the results of the selected trace detector.

[21] Events lasting shorter than the minimum signal duration specification will result in degraded level accuracy.

Result display types		real-time spectrum, real-time spectrogram

Spectrum		
Number of traces		6
Trace detector	maximum 4 selectable	max. peak, min. peak, RMS, average, quasi-peak, CISPR-average, RMS-average
Trace functions		clear/write, max. hold, min. hold, average
Number of markers		16
Marker readout		frequency, level
Spectrogram		
Result display		color-graded bitmap
Spectrogram bitmap color depth		240 colors
Dynamic range covered by bitmap colors		selectable, up to 200 dB (nom.)
History depth		max. 100 000 frames [22]
Trace detector		max. peak, min. peak, RMS, average, quasi-peak, CISPR-average, RMS-average
Number of markers		16
Marker readout		frequency, time/frame number, level

Trigger source		free run, external

R&S®EPL1-K56 IF analysis

Level display, receiver mode		
IF spectrum		
Span		max. 10 MHz
Resolution bandwidths		10 Hz to 100 kHz, in 1/2/3/5 sequence
Detector		sample
Logarithmic level axis		10 dB to 200 dB, in steps of 10 dB
Frequency axis		linear
Number of traces		3

R&S®EPL1-K59 click rate analyzer

Click evaluation		in line with CISPR 14-1:2016 and CISPR 14-1:2020
Maximum test duration		4 h
Resolution bandwidth (RBW)		9 kHz
Measurement time		500 µs
Four frequencies processed in parallel	CISPR 14-1	150 kHz, 500 kHz, 1.4 MHz, 30 MHz
	DENAN-law	150 kHz, 550 kHz, 1.4 MHz, 30 MHz

[22] A frame is the measurement result displayed in one row of the spectrogram. It may consist of one or more traces, depending on the set sweep count. For example, a sweep count of 2 means that two traces will be combined to one row in the spectrogram using the set trace detector.

Ordering information

Base units

Designation	Type	Order No.
EMI test receiver, 5 kHz to 30 MHz	R&S®EPL1000	1350.4444.10
EMI test receiver, 5 kHz to 1 GHz	R&S®EPL1001	1350.4444.11
EMI test receiver, 5 kHz to 7.125 GHz	R&S®EPL1007	1350.4444.17
Accessories supplied: power cable, quick start guide		

Options

Designation	Type	Order No.	Available for R&S®EPL…			Remarks	Retrofit by
			1000	1001	1007		
Hardware options							
Preselection with preamplifier	R&S®EPL1-B2	1350.4015.02	○ [23]	●	●		Rohde & Schwarz service center
OCXO reference frequency	R&S®FPL1-B4	1323.1902.02	●	●	●		Rohde & Schwarz service center
GPIB interface	R&S®FPL1-B10	1323.1890.02	●	●	●		user
DC power supply, 12 V/24 V input	R&S®FPL1-B30	1323.1877.02	●	●	●		user
Internal lithium-ion battery	R&S®FPL1-B31	1323.1725.02	●	–	–	contains 2 battery packs and internal charging unit	Rohde & Schwarz service center
Internal lithium-ion battery	R&S®FPL1-B31	1323.1725.03	–	●	●	contains 2 battery packs and internal charging unit	Rohde & Schwarz service center
Internal generator, 5 kHz to 30 MHz	R&S®EPL1-B91	1350.4073.02	●	–	–		not possible
Keycode options							
Internal generator, 5 kHz to 1 GHz	R&S®EPL1-B9	1350.4467.02	–	●	–	requires R&S®EPL1-B2	user
Internal generator, 5 kHz to 7.125 GHz	R&S®EPL1-B9	1350.4044.02	–	–	●	requires R&S®EPL1-B2	user
Low noise amplifier, 2 MHz to 1/7.125 GHz	R&S®EPL1-B22	1350.4480.02	–	●	●		user
CISPR 16-1-1 compliance	R&S®EPL1-B1611	1350.4515.02	○ [23]	●	●	requires R&S®EPL1-B2	Rohde & Schwarz service center
AM/FM/PM measurement demodulator	R&S®FPL1-K7	1323.1731.02	●	●	●		user
Time domain scan	R&S®EPL1-K53	1350.4050.02	○ [23]	●	●		user
EMI real-time spectrogram	R&S®EPL1-K55E	1350.4473.02	●	●	●	requires R&S®EPL1-K53	user
IF analysis	R&S®EPL1-K56	1350.4067.02	●	●	●		user
Click rate analyzer	R&S®EPL1-K59	1350.4509.02	●	●	●	optional verification of response to pulses by Rohde & Schwarz service center (part of extended instrument calibration)	user
Upgrade							
Frequency upgrade for R&S®EPL1001, 1 GHz to 7.125 GHz	R&S®EPL1-B7125	1350.4021.02	–	●	–	only retrofit; optional calibration by Rohde & Schwarz service center	user

[23] Not necessary, functionality included in base unit.

Designation	Type	Order No.	Available for R&S®EPL…			Remarks	Retrofit by
			1000	1001	1007		
Extras							
Protective hard cover	R&S®EPL1-Z1	1350.4296.02	●	●	●		
Soft carrying bag	R&S®EPL1-Z2	1350.4309.02	●	–	–	for transport and outdoor operation	
Soft carrying bag	R&S®EPL1-Z2	1353.6431.02	–	●	●	for transport and outdoor operation	
H-style shoulder harness	R&S®EPL1-Z3	1350.4315.02	●	●	●	requires R&S®EPL1-Z2	
Spare lithium-ion battery pack	R&S®FPL1-Z4	1323.1677.02	●	●	●	requires R&S®FPL1-B31	
19" rackmount kit	R&S®EPL1-Z6	1350.4321.02	●	–	–		
19" rackmount kit	R&S®EPL1-Z6	1353.6377.02	–	●	●		
Replacement SSD	R&S®EPL1-B19	1350.4450.02	●	●	●	including controller mounted on PC board, including analyzer firmware	installed unit exchangeable by user
Lithium-ion battery charger for charging spare batteries	R&S®FSV-B34	1321.3950.02	●	●	●		
Control cable for R&S®AMN6500/R&S®ENV216/R&S®ENV420/R&S®ENV432							
Length: 3 m	R&S®EZ-21	1107.2087.03	●	●	●		
Length: 10 m	R&S®EZ-21	1107.2087.10	●	●	●		
Calibration							
Accredited calibration	R&S®ACAEPL1000	3599.0699.03	●	–	–		
Accredited calibration with R&S®EPL1-K59 verification	R&S®ACAEPL1000	3599.4771.03	●	–	–	requires R&S®EPL1-K59	
Accredited calibration	R&S®ACAEPL1001	3599.0701.03	–	●	–		
Accredited calibration with R&S®EPL1-K59 verification	R&S®ACAEPL1001	3601.0267.03	–	●	–	requires R&S®EPL1-K59	
Accredited calibration	R&S®ACAEPL1007	3601.0280.03	–	–	●		
Accredited calibration with R&S®EPL1-K59 verification	R&S®ACAEPL1007	3601.0273.03	–	–	●	requires R&S®EPL1-K59	
Documentation of calibration values	R&S®DCV-2	0240.2193.09	●	●	●		
Printout to DCV	R&S®DCV-ZP	1173.6506.02	●	●	●	requires R&S®DCV-2	

Warranty and service

Warranty		
Base unit		1 year
All other items		1 year
Service options		
	Service plans	**On demand**
Calibration	up to five years [24]	pay per calibration
Warranty and repair	up to five years [24]	standard price repair
Contact your Rohde & Schwarz sales office for further details.		

[24] For extended periods, contact your Rohde & Schwarz sales office.

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