Spectrum Analyzers FSE

20 Hz to 40 GHz

- Spectrum analysis
  with ultra-wide dynamic range
  Noise figure = 18 dB/T.O.I. = 20 dBm (FSEB)

  and
- Universal analysis of digital and analog modulated signals (option)
  BPSK, QPSK, π/4-DQPSK, 8PSK, QAM MSK, GMSK, 2FSK, AM, FM, PM

- High-speed synthesizer
  5 ms for full span (FSEA, FSEB)
- Refresh rate, quasi-analog
  25 sweeps/s

- Large LC TFT display
  24 cm/9.5", active
- Future-proof modular design
  Customized solutions through wide variety of options

ROHDE&SCHWARZ

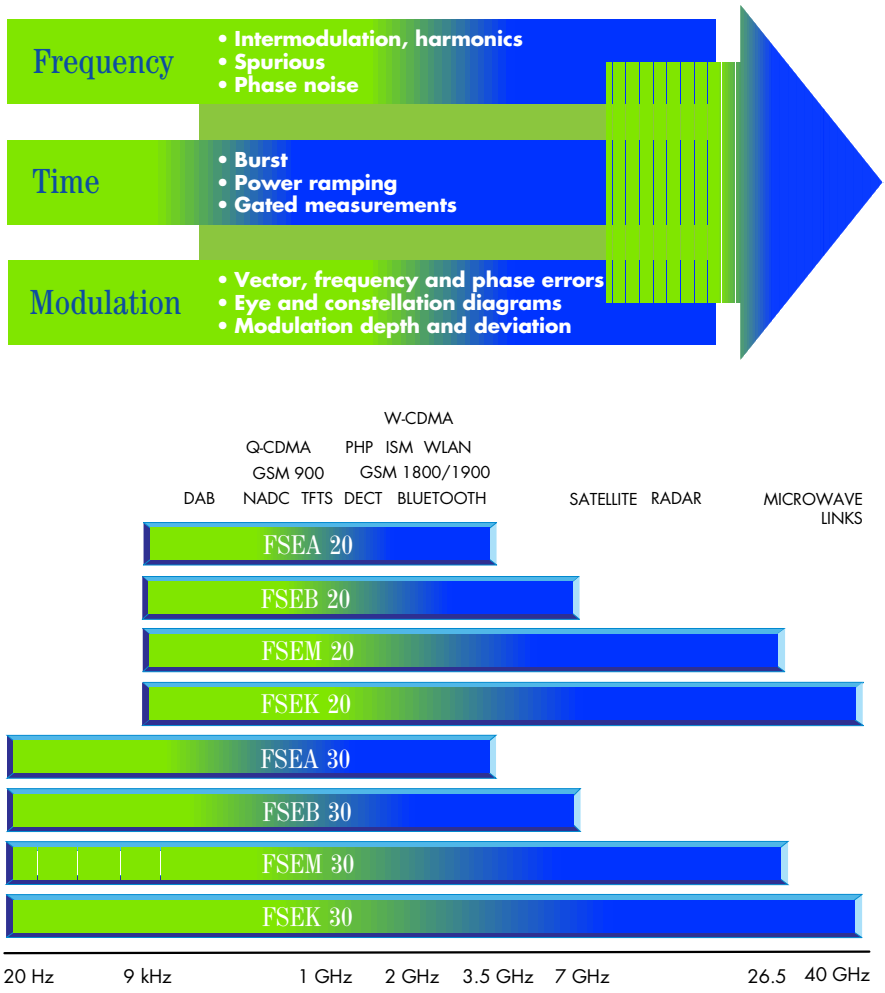
The spectrum analyzers from Rohde&Schwarz

Overview

The FSE spectrum analyzers from Rohde&Schwarz have been optimized both for general-purpose measurements and meeting the stringent requirements of testing advanced digital communication systems. Extremely high measurement speed, future-proof modular design and excellent characteristics put the analyzers right at the top of today's market – at an extremely attractive price.

Characteristics

- Combines the following functions: spectrum analysis *and* analysis of digitally modulated signals (option)
- Spectrum analysis with maximum dynamic range
- Adaptation of all models to your specific requirements by means of a wide range of options.
  Easy upgrading of basic models into top-class models



Modular design for a safe investment

The FSE "option building blocks"

Option/function/software	Designation	FSEA		FSEB		FSEM		FSEK	
		20	30	20	30	20	30	20	30
Frequency from 20 Hz	–	–	●	–	●	–	●	–	●
Frequency to 3.5 GHz	–	●	●	–	–	–	–	–	–
7-GHz Frequency Extension	**FSE-B2**	❍	❍	●	●	–	–	–	–
Low Phase Noise and OCXO	**FSE-B4**	❍	●	❍	●	❍	●	❍	●
FFT Filter	**FSE-B5**	❍	●	❍	●	❍	●	❍	●
Vector Signal Analyzer	**FSE-B7**	❍	❍	❍	❍	❍	❍	❍	❍
Tracking Generator 3.5 GHz	**FSE-B8**	❍	❍	–	–	–	–	–	–
Tracking Generator 3.5 GHz with I/Q Modulator	**FSE-B9**	❍	❍	–	–	–	–	–	–
Tracking Generator 7 GHz	**FSE-B10**	–	–	❍	❍	–	❍	–	❍
Tracking Generator 7 GHz with I/Q Modulator	**FSE-B11**	–	–	❍	❍	–	❍	–	❍
Switchable Attenuator for Tracking Generator	**FSE-B12**	❍	❍	❍	❍	–	❍	–	❍
1-dB Attenuator	**FSE-B13**[1])	❍	❍	❍	❍	–	❍	–	❍
Controller	**FSE-B15**	❍	❍	❍	❍	❍	❍	❍	❍
Ethernet Interface	**FSE-B16**	❍	❍	❍	❍	❍	❍	❍	❍
2nd IEC/IEEE-Bus Interface	**FSE-B17**	❍	❍	❍	❍	❍	❍	❍	❍
Removable Harddisk	**FSE-B18**[2])	❍	❍	❍	❍	❍	❍	❍	❍
Second Harddisk for FSE-B18	**FSE-B19**	❍	❍	❍	❍	❍	❍	❍	❍
External Mixing	**FSE-B21**	–	–	–	–	❍	❍	❍	❍
Increased Level Accuracy up to 2 GHz	**FSE-B22**[2])	❍	❍	❍	❍	❍	❍	❍	❍
Broadband Output 741.4 MHz	**FSE-B23**[2])	❍	❍	❍	❍	❍	❍	❍	❍
Noise Measurement Software	**FS-K3**	❍	❍	❍	❍	❍	❍	❍	❍
Phase Noise Measurement Software	**FSE-K4**	❍	❍	❍	❍	❍	❍	❍	❍
GSM Application Firmware	**FSE-K10/ -K11**	❍	❍	❍	❍	❍	❍	❍	❍

● Incorporated in basic model ❍ Can be retrofitted (option)

[1]) Cannot be retrofitted in combination with FSE-B22.

[2]) Factory-fitted only.

FSE options and their applications

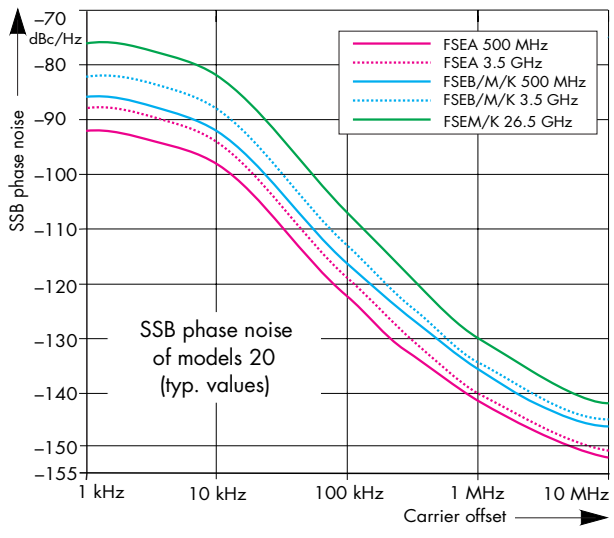
Digital mobile radio systems	Analog mobile radio systems	TV and CATV	AM and FM sound broadcasting	General-purpose RF measurements		
❍				❍	**FSE-B2**	7-GHz Frequency Extension
❍	●			●	**FSE-B4**	Low Phase Noise and OCXO
●	❍		●		**FSE-B7**	Vector Signal Analyzer
		❍		❍	**FSE-B8/-B9/ -B10/-B11**	Tracking Generator
❍					**FSE-B13**	1-dB Attenuator
❍				❍	**FSE-B15**	Controller
				❍	**FSE-B21**	External Mixing
				❍	**FSE-B23**	Broadband Output 741.4 MHz
❍	❍			❍	**FS-K3**	Noise Measurement Software
❍	❍			❍	**FSE-K4**	Phase Noise Measurement Software
❍					**FSE-K10/-K11**	GSM Application Firmware

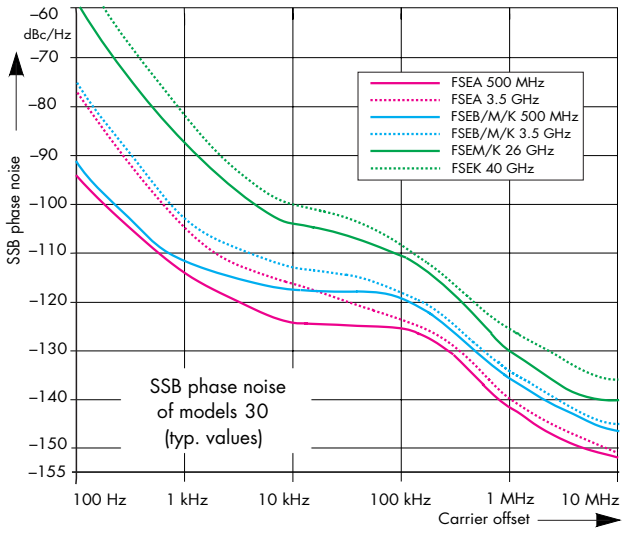
● Required ❍ Recommended

Specifications

	FSEA20	FSEA30	FSEB20	FSEB30	FSEM20	FSEM30	FSEK20	FSEK30
Specifications are guaranteed under the following conditions: 30 minutes warmup time at ambient temperature, specified environmental conditions met, calibration cycle adhered to, and total calibration performed. Data without tolerances: typical values only. Data designated "nominal" apply to design parameters and are not tested.								
Frequency								
Frequency range	9 kHz to 3.5 GHz	20 Hz to 3.5 GHz	9 kHz to 7 GHz	20 Hz to 7 GHz	9 kHz to 26.5 GHz	20 Hz to 26.5 GHz	9 kHz to 40 GHz	20 Hz to 40 GHz
Frequency resolution	0.01 Hz							
Refer. frequency Internal, nominal								
Aging per day [1])	–	1×10^{-9}	–	1×10^{-9}	–	1×10^{-9}	–	1×10^{-9}
Aging per year [1])	1×10^{-6}	2×10^{-7}	1×10^{-6}	2×10^{-7}	1×10^{-6}	2×10^{-7}	1×10^{-6}	2×10^{-7}
Temperature drift (0°C to 50°C)	1×10^{-6}	5×10^{-8}	1×10^{-6}	5×10^{-8}	1×10^{-6}	5×10^{-8}	1×10^{-6}	5×10^{-8}
Total error (per year)	2.5×10^{-6}	2.5×10^{-7}	2.5×10^{-6}	2.5×10^{-7}	2.5×10^{-6}	2.5×10^{-7}	2.5×10^{-6}	2.5×10^{-7}
With option FSE-B4								
Aging per day [1])	1×10^{-9}	–	1×10^{-9}	–	1×10^{-9}	–	1×10^{-9}	–
Aging per year [1])	2×10^{-7}	–	2×10^{-7}	–	2×10^{-7}	–	2×10^{-7}	–
Temperature drift (0°C to 50°C)	5×10^{-8}	–	5×10^{-8}	–	5×10^{-8}	–	5×10^{-8}	–
Total error (per year)	2.5×10^{-7}	–	2.5×10^{-7}	–	2.5×10^{-7}	–	2.5×10^{-7}	–
External	10 MHz or n × 1 MHz, n=1 to 16							
Frequency display	with marker							
Resolution	0.1 Hz to 10 kHz (dependent on span)							
Error (sweep time >3× auto sweep time)	±(marker frequency × reference error + 0.5% × span + 10% × resolution bandwidth + 1/2 (last digit))							
Frequency counter	measures the marker frequency							
Resolution	0.1 Hz to 10 kHz (selectable)							
Count accuracy (S/N >25 dB)	±(frequency × reference error + 10 Hz + 1/2 (last digit))							
Display range for frequency axis	0 Hz, 10 Hz to full span							
Resolution/error of display range	0.1 Hz/1%							
Spectral purity (dBc/Hz) SSB phase noise, f ≤500 MHz,	for f >500 MHz see diagrams below							
carrier offset 100 Hz [2])	–	<–87	–	<–81	–	<–81	–	<–81
1 kHz [2])	<–85	<–107	<–79	<–100	<–79	<–100	<–79	<–100
10 kHz [2])	<–95	<–120	<–90	<–114	<–90	<–114	<–90	<–114
100 kHz [3])	<–119	<–119	<–113	<–113	<–113	<–113	<–113	<–113
1 MHz [3])	<–135	<–138	<–129	<–132	<–129	<–132	<–129	<–132
With option FSE-B4	for models .20 with option FSE-B4 values of models .30 apply							
Sweep time								
Span = 0 Hz	1 µs to 2500 s in 5% steps							
Span ≥10 Hz	5 ms to 16000 s in steps ≤10%							
Error	<1%							
Picture refresh rate (span ≤7 GHz)	>20 updates/s with 1 trace, >15 updates/s with 2 traces							
Sampling rate	50 ns (20-MHz A/D converter)							
Number of pixels	500							
Time measurement	with marker and cursor lines							
Resolution	50 ns							
Sweep trigger	free run, single, line, video, gated, delayed, external							
Zero span	additionally pretrigger, posttrigger, trigger delay							

[1]) After 30 days of operation. [2]) Models 20: valid for span ≤50 kHz, RBW<1 kHz. [3]) Valid for span >100 kHz.





Specifications

	FSEA20	FSEA30	FSEB20	FSEB30	FSEM20	FSEM30	FSEK20	FSEK30
Resolution bandwidths								
3-dB bandwidths (in 1/2/3/5 steps)	10 Hz to 10 MHz	1 Hz to 10 MHz	10 Hz to 10 MHz	1 Hz to 10 MHz	10 Hz to 10 MHz	1 Hz to 10 MHz	10 Hz to 10 MHz	1 Hz to 10 MHz
FFT Filter (in 1/2/3/5 steps) (see also folding page)	–	1 Hz to 1 kHz	–	1 Hz to 1 kHz	–	1 Hz to 1 kHz	–	1 Hz to 1 kHz
Bandwidth error ≤3 MHz	<10%							
5 MHz	<15%							
10 MHz	+25%, –10%							
Shape factor 60:3 dB								
<1 kHz	<6							
1 kHz to 2 MHz	<15	<12	<15	<12	<15	<12	<15	<12
>2 MHz	<7							
Video bandwidths	1 Hz to 10 MHz in 1/2/3/5 steps							
Level								
Display range	noise floor displayed to 30 dBm							
Maximum input level								
RF attenuation 0 dB								
DC voltage	0 V							
CW RF power	20 dBm (=0.1 W)							
Pulse spectral density	97 dBµV/MHz							
RF attenuation ≥10 dB								
DC voltage	0 V							
CW RF power	30 dBm (=1 W)							
Max. pulse voltage	150 V				50 V			
Max. pulse energy (10 µs)	1 mWs				0.5 mWs			
1-dB compression of input mixer	+10 dBm nominal (0-dB RF attenuation)							
Displayed average noise floor (dBm)	(0-dB RF attenuation, RBW 10 Hz, VBW 1 Hz, 20 averages, trace average, span 0 Hz, termination 50 Ω)							
Frequency 20 Hz	–	<–80	–	<–74	–	<–74	–	<–74
1 kHz	–	<–110	–	<–104	–	<–104	–	<–104
10 kHz	<–90	<–125	<–84	<–119	<–84	<–119	<–84	<–119
100 kHz	<–110	<–135	<–104	<–129	<–104	<–129	<–104	<–129
1 MHz	<–130, typ. –135	<–145, typ. –150	<–125, typ. –130	<–142, typ. –145	<–124, typ. –129	<–142, typ. –145	<–124, typ. –129	<–142, typ. –145
10 MHz to 3.5/6 GHz	<–145, typ. –150		<–142, typ. <–147		<–138, typ. –140			
6 GHz to 7 GHz	–	–	<–139	<–139	<–135, typ. –138			
7 GHz to 18 GHz	–	–	–	–	<–138, typ. –140		<–134, typ. –139	
18 GHz to 26.5 GHz	–	–	–	–	<–135, typ. –138		<–131, typ. –136	
26.5 GHz to 30 GHz	–	–	–	–	–	–	<–120, typ. –125	
30 GHz to 40 GHz	–	–	–	–	–	–	<–116, typ. –122	
Max. dynamic range bandwidth:	**10 Hz**	**1 Hz**	**10 Hz**	**1 Hz**	**10 Hz**	**1 Hz**	**10 Hz**	**1 Hz**
Displ. noise floor to 1-dB compression	155 dB	165 dB	152 dB	162 dB	150 dB	160 dB	150 dB	160 dB
Max. harmonics suppres., f >50 MHz	>90 dB							
Max. intermodulation-free range								
50 MHz to 3.5 GHz (nominal)	105 dB	115 dB	–	–	–	–	–	–
150 MHz to 7/26.5 GHz (nominal)	–	–	105 dB	115 dB	103 dB	112 dB	103 dB	112 dB
Intermodulation								
3rd-order intermod., intermodulation-free dynamic range, level 2 × –20 dBm, Δf >5 × RBW or 10 kHz, whichever is the greater value	>64 dBc for f >50 MHz (T.O.I. >12 dBm, typ. 18 dBm)		>70 dBc for f >150 MHz (T.O.I. >15 dBm, typ. 20 dBm)		>74 dBc for f >100 MHz >60 dBc for f >7 GHz (T.O.I. >17 dBm, typ. 22 dBm; >10 dBm for f >7 GHz)			
Intermodulation-free range at –40 dBm mixer level	105 dB							
Intercept point k2 (dBm)	>25, typ. >40 for f <50 MHz, >45, typ. >50 for f >50 MHz		>25 for f <150 MHz, >35 typ. >40 for f >150 MHz, >45 typ.					
Immunity to interference								
Image frequency (dB)	>75	>80, typ.>90	>80, typ. >90					
Intermediate frequency (dB)	>80	>100	>75					
Spurious response	(f >1 MHz, without input signal, 0-dB attenuation)							
Span <30 MHz	<–100 dBm	<–110 dBm	<–100 dBm	<–110 dBm	<–100 dBm	<–110 dBm	<–100 dBm	<–110 dBm
Span ≥30 MHz	<–100 dBm							
f_{in} = 25.06 MHz, 25.175 MHz, 5.7172 GHz	<–100 dBm							
f_{in} = 60 MHz	<–100 dBm	<–110 dBm	<–100 dBm					
f_{in} = 14.1894 GHz, 15.6722 GHz								
Span >10 MHz	–90 dBm							
Span ≤10 MHz	–90 dBm		–90 dBm		–90 dBm		–90 dBm	
Other interfering signals (mixer level <–10 dBm) [1]	<–80 dB [2]		<–75 dB [2]					

[1] For models 20, starting from 100 kHz carrier spacing on.

[2] For models with option FSE-B23: <–50 dBm.

Specifications

	FSEA20	FSEA30	FSEB20	FSEB30	FSEM20	FSEM30	FSEK20	FSEK30
Level display								
Measurement display	500 × 400 pixels (with one diagram displayed); max. 2 diagrams with independent settings							
Log level range	10 dB to 200 dB, in steps of 10 dB							
Lin level range	10% of reference level per division (10 divisions) or logarithmic scaling							
Trace	max. 4 traces with 1 diagram, 2 traces per diagram with 2 diagrams, simultaneous measurement with all traces							
Trace detector	max peak, min peak, auto peak (normal), sample, rms, average							
Trace functions	clear/write, max hold, min hold, average							
Setting range of reference level								
Log level display	–130 dBm to 30 dBm, in steps of 0.1 dB							
Linear level display	7.0 nV to 7.07 V in steps of 1%							
Units of level axis	dBm, dBµV, dBmV, dBµA, dBpW (log and lin level display) mV, µV, mA, µA, pW, nW (linear level display)							
Level measurement error –40 dBm, RF attenuation 20 dB, ref. level –15 dB, RBW 5 kHz	**The values are guaranteed for bandwidths from 10 Hz to 30 kHz and 100 kHz to 10 MHz**							
Absolute error at 120 MHz	<0.3 dB							
Freq. response (10 dB RF atten.)								
<1 GHz	<0.5 dB							
1 GHz to 3.5/7 GHz	<1 dB							
7 GHz to 18 GHz	–	–	–	–	<2 dB[1])			
18 GHz to 26.5 GHz	–	–	–	–	<2.5 dB[1])			
26.5 GHz to 40 GHz	–	–	–	–	–	–	<3 dB[1])	
Attenuator error	<0.3 dB							
IF gain error	<0.2 dB (typ. 0.1 dB)							
Linearity error								
Log level display								
(RBW≥1 kHz, analog)								
0 dB to –50 dB	<0.3 dB							
–50 dB to –70 dB	<0.5 dB							
–70 dB to –80 dB	<1 dB	–	<1 dB	–	<1dB	–	<1dB	–
–70 dB to –95 dB	–	<1 dB	–	<1 dB	–	<1 dB	–	<1 dB
Linear level display	5% of ref. level							
Bandwidth switching error								
1 Hz to 30 kHz/100 to 500 kHz	<0.2 dB/<0.2 dB							
1 MHz to 10 MHz	<0.3 dB							
Total measurement error	(0 to 50 dB below reference level, span/RBW <100, rss 95% reliability)							
<1 GHz	<1 dB							
1 GHz to 3.5/7 GHz	<1.5 dB							
7 GHz to 18 GHz	–	–	–	–	<2.5 dB[1])			
18 GHz to 26.5 GHz	–	–	–	–	<3 dB[1])			
26.5 GHz to 40 GHz	–	–	–	–	–	–	<3.5 dB[1])	
Pulse amplitude error (single pulses)								
Bandwidth <1 MHz/≥1 MHz	<0.5 dB, nominal/<2 dB, nominal							

Trigger functions

Trigger	free run, line, video, RF, external
Delayed sweep	
Trigger source	free run, line, video, RF, external
Delay time	100 ns to 10 s, resolution 1 µs min. (or 1% of delay time)
Error of delay time	±(1 µs + (0.1% × delay time))
Delayed sweep time	2 µs to 1000 s
Gated sweep	
Trigger source	external, RF
Gate delay	1 µs to 100 s
Gate length	1 µs to 100 s, resolution min. 1 µs or 1%
Error of gate length	±(1 µs + (0.05% × gate length))
Gap sweep (span = 0 Hz)	
Trigger source	free run, line, video, RF, external
Pretrigger	1 µs to 100 s, 50 ns resolution, dependent on sweep time
Trigger to gap time	1 µs to 100 s, 50 ns resolution, dependent on sweep time
Gap length	1 µs to 100 s, 50 ns resolution

Audio demodulation

AF demodulation types	AM and FM
Audio output	speaker and phone jack
Marker stop time	100 ms to 60 s

[1]) For RF frequencies >7 GHz: error after calling peaking function. For sweep times <10 ms/GHz: additional error 1.5 dB.

Specifications

	FSEA20	FSEA30	FSEB20	FSEB30	FSEM20	FSEM30	FSEK20	FSEK30
Inputs & outputs (front panel)								
RF input	N female, 50 Ω				adapter system, 50 Ω, N male and female, 3.5 mm male and female		adapter system, 50 Ω, N male and female, K male and female, 2.4 mm female	
VSWR (RF attenuation ≥10 dB)								
f <3.5 GHz	<1.5							
f <7 GHz	–		<2.0					
f <26.5 GHz	–	–	–	–	<3		<2.5	
f <37 GHz	–	–	–	–	–	–	<2.5	
f <40 GHz	–	–	–	–	–	–	typ. 2.5	
Attenuator	0 dB to 70 dB, selectable in 10-dB steps							
Probe power supply	+15 V DC, –12.6 V DC and ground, max. 150 mA							
Power supply and coding connector for antennas etc (antenna code)	12-contact Tuchel							
Supply voltages	±10 V, max. 100 mA, ground							
AF output	Z_{out} = 10 Ω, jack plug							
Open-circuit voltage	adjustable up to 1.5 V							
Inputs & outputs (rear panel)								
IF 21.4 MHz	Z_{out} = 50 Ω, BNC female, bandwidth >1 kHz or resolution bandwidth							
Level	0 dBm at reference level, mixer level >–60 dBm							
Video output	Z_{out} = 50 Ω, BNC female							
Voltage (bandwidth ≥1 kHz)	0 V to 1 V, full scale (open-circuit voltage); log scaling							
Reference frequency								
Output, usable as input	BNC female							
Output frequency	10 MHz							
Level	10 dBm nominal							
Input	1 MHz to 16 MHz, integer MHz							
Required level	>0 dBm from 50 Ω							
Sweep output	BNC female, 0 V to 10 V, proportional to displayed frequency							
Power supply connect. f. noise source	BNC female, 0 V and 28 V, switch-selected							
External trigger/gate input	BNC female, >10 kΩ							
Voltage	–5 V to +5 V, adjustable							
IEC/IEEE-bus control	interface to IEC-625-2 (IEEE 488.2), Instruction set: SCPI 1994.0							
Connector	24-contact Amphenol female							
Interface functions	SH1, AH1, T6, L4, SR1, RL1, PP1, DC1, DT1, C11							
Serial interface	RS-232-C (COM 1 and COM 2), 9-contact female connectors							
Mouse interface	PS/2 compatible							
Plotter[1])	via IEC/IEEE bus or RS-232-C; plotter language: HP-GL							
Printer interface	parallel (Centronics compatible) or serial (RS-232-C)							
Keyboard connector	5-contact DIN female for MF-2 keyboard							
User interface	25-contact Cannon female							
Connector f. external monitor (VGA)	15-contact female							
General data								
Display	24-cm LC TFT color display (9.5")							
Resolution	640 × 480 pixels (VGA resolution)							
Pixel failure rate	$<2 \times 10^{-5}$							
Mass memory	1.44-Mbyte 3 1/2" diskette (built-in disk drive), harddisk							
Operating temperature range								
Nominal temperature range	+5 °C to +40 °C							
Limit temperature range	+0 °C to +50 °C							
Storage temperature range	–40 °C to +70 °C							
Humidity	+40 °C at 95% relative humidity (IEC 68–2–3)							
Mechanical stress								
Sinusoidal vibration	5 to 150 Hz, max. 2 g at 55 Hz; 0.5 g from 55 to 150 Hz; to IEC 68-2-6, IEC 68-2-3, IEC 1010-1, MIL-T-28800D, class 5							
Random vibration	10 to 300 Hz, acceleration 1.2 g_{rms}							
Shock	40 g shock spectrum, to MIL-STD-810D and MIL-T-28800D, classes 3 and 5							
Recommended calibration interval	1 year (2 years for operation with external reference)							
RFI suppression	to EMC directive of EU (89/336/EEC) and German EMC legislation							
Power supply								
AC supply	200 V to 240 V: 50 Hz to 60 Hz, 100 V to 120 V: 50 Hz to 400 Hz, class of protection I to VDE 411							
Power consumption	170 VA	180 VA	185 VA	195 VA	220 VA	230 VA	220 VA	230 VA
Safety	to EN 61010-1, UL 3111-1, CSA C22.2 No. 1010-1, IEC 1010-1							
Test mark	VDE, GS, UL, cUL							
Dimensions in mm (W x H x D)	435 × 236 × 460 (5 units of height)					435 × 236 × 570	435 x 236 x 460	435 x 236 x 570
Weight	21.5 kg	22.7 kg	21.8 kg	23.2 kg	23.8 kg	25.2 kg	24.4 kg	25.8 kg

[1]) The plot function is not available with option FSE-B15 installed.

Specifications

FFT Filter FSE-B5 (standard in models 30)

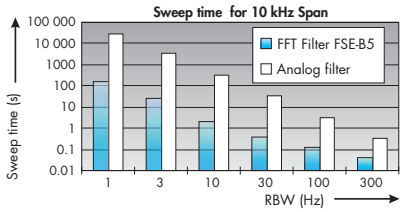
- High frequency resolution due to very small shape factor of 2.5
- Extremely short measurement time, up to 150 times faster than with conventional filters

Resolution bandwidths (RBW)

3 dB bandwidths, in 1/2/3/5 steps	1 Hz to 1 kHz
Bandwidth error	2%, nom.
Shape factor 60:3 dB	2.5, nom.

Display range for frequency axis

Min. span	25 x RBW
Max. span	100 000 x RBW, max. 2 MHz



Level measurement error

Additional total level error, referred to RBW 5 kHz	<1 dB

Max. display range 100 dB

Immunity to interference

Spurious response	≤100 dBm

1 dB Attenuator FSE-B13

Frequency range	max. 7 GHz (stopp frequency ≤7 GHz)
Setting range of RF attenuation	0 dB to 70 dB
Step width	1 dB
Additional attenuator uncertainty	<0.1 dB

External Mixing FSE-B21

LO output/IF input (front panel)	SMA female , 50 Ω
LO signal	7.5 GHz to 15.2 GHz
Amplitude	+15.5 dBm ±3 dB
IF signal	741.4 MHz
Full-scale level	–20 dBm
IF input (front panel)	SMA female , 50 Ω
Frequency	741.4 MHz
Full-scale level	–20 dBm
Level measurement error at IF inputs (IF level –30 dBm, reference level –20 dBm, RBW 30 kHz)	<1 dB

Increased Level Accuracy FSE-B22

Total level error	≤0.5 dB with 10 dB RF attenuation ≤0,6 dB with 20/30/40 dB RF attenuation
Specifications are valid for:	
Temperature range	20 to 30 °C
Frequency range	10 MHz to 2 GHz
Resolution bandwidths	5 to 30 kHz/300 kHz/1 MHz
Signal level	10 dB to 50 dB below reference level
Stop frequency	≤2 GHz
Sweep time	≥3 x auto sweep time

Broadband Output 741.4 MHz FSE-B23

FSE-B23 reduces the suppression of other interference signals to –50 dBm and must not be combined with FSE-K10/-K11.

	FSEA	FSEB	FSEM	FSEK
Gain from RF input to IF output (dB)	6	6	4	4
3 dB BW (MHz)	60	150	150[1]) 40 to 80[2])	150[1]) 40 to 120[3])

[1]) f<7 GHz. [2]) 7 GHz to 26.5 GHz. [3]) 7 GHz to 40 GHz.

Ordering information

Order designation	Type	Order No.
Spectrum Analyzer 9 kHz to 3.5 GHz	FSEA20	1065.6000.25
Spectrum Analyzer 20 Hz to 3.5 GHz	FSEA30	1065.6000.35
Spectrum Analyzer 9 kHz to 7 GHz	FSEB20	1066.3010.25
Spectrum Analyzer 20 Hz to 7 GHz	FSEB30	1066.3010.35
Spectrum Analyzer 9 kHz to 26.5 GHz	FSEM20	1080.1505.25
Spectrum Analyzer 20 Hz to 26.5 GHz	FSEM30	1079.8500.35
Spectrum Analyzer 9 kHz to 40 GHz	FSEK20	1088.1491.25
Spectrum Analyzer 20 Hz to 40 GHz	FSEK30	1088.3494.35

Accessories supplied
Power cable, operating manual, spare fuses;
FSEM: test-port adapter 3.5 mm female (1021.0512.00) and N female (1021.0535.00)
FSEK: test-port adapter K female (1036.4790.00) and N female (1036.4777.00)

Ordering information continued overleaf