

ESVD Specifications

Frequency range with option ESVD-B2	20 to 1000 MHz 20 to 2050 MHz
Frequency setting with tuning knob	in 100-Hz, 100-kHz steps or in any selectable step size by keyboard entry of any selectable size for RF analysis
Display	8-digit LCD
Resolution	100 Hz
Setting error (after 30 min. warmup)	$<1 \cdot 10^{-7}$
Temperature effect	$<1 \cdot 10^{-9}/^{\circ}\text{C}$
Aging	$<1 \cdot 10^{-9}/\text{day}$
RF input VSWR	N connector, female, 50 Ω
20 to 1000 MHz	<1.2 with ≥ 10 -dB RF attenuation <2 with 0-dB RF attenuation
1000 to 2000 MHz	<1.35 with ≥ 10 -dB RF attenuation <2 with 0-dB RF attenuation
Preamplifier	switchable between input filter and 1st mixer
Gain	10 dB
Oscillator reradiation at RF input (0-dB RF attenuation)	Off Preamplifier On
20 to 1000 MHz	<20 dB μV <10 dB μV
1000 to 1900 MHz	<50 dB μV <40 dB μV
1900 to 2050 MHz	<60 dB μV <50 dB μV
Interference rejection, nonlinearities	
	20 to 1000 MHz 1000 to 1900 MHz 1900 to 2050 MHz
Image-frequency rejection 1st IF	>90 , typ. 100 dB >80 , typ. 100 dB >70 , typ. 100 dB
2nd IF	>90 , typ. 100 dB >80 , typ. 100 dB >80 , typ. 100 dB
IF rejection	>90 , typ. 100 dB >80 , typ. 100 dB >80 , typ. 100 dB
	Off Preamplifier On
$P_{f1, f2}$ ($ f_1 - f_2 > 5$ MHz)	-10 dBm -20 dBm
Intercept point d3	
20 to 50 MHz	typ. 15 dBm typ. 5 dBm
50 to 1000 MHz	>15 dBm >5 dBm
	typ. 20 dBm typ. 10 dBm
1000 to 2050 MHz	>13 dBm >3 dBm
	typ. 18 dBm typ. 8 dBm
Intercept point k2	
20 to 1000 MHz	>35 dBm >25 dBm
1000 to 2050 MHz	>50 dBm >40 dBm
Preselector	
20 to 1000 MHz: 1 fixed-tuned filter 5 tracking filters	20 to <51.3 MHz 51.3 to <125.3 MHz 125.3 to <273.3 MHz 273.3 to <495.3 MHz 495.3 to <717.3 MHz 717.3 to 1000 MHz
1000 to 2050 MHz: 4 fixed-tuned filters	1000 to <1250 MHz 1250 to <1522 MHz 1522 to <1795 MHz 1795 to 2050 MHz
Maximum input level	
RF attenuation 0 dB	
DC voltage	7 V
Sinewave AC voltage	130 dB μV
Pulse spectral density	97 dB $\mu\text{V}/\text{MHz}$ (100 V·0.5 ns)
RF attenuation ≥ 10 dB	
DC voltage	7 V
Sinewave AC voltage	137 dB μV (= 1 W)
Max. pulse voltage	150 V
Max. pulse energy (10 μs)	1 mWVs

RF shielding

Voltage indication at a field strength of 10 V/m with 0-dB RF attenuation ($f \neq f_0$)	<0 dB μV
Additional error in quasi-peak indication range at 10 V/m	<1 dB

Intermediate frequencies

1st IF 20 to 1000 MHz	1354.7 MHz
1000 to 2050 MHz	394.7 MHz
2nd IF	74.7 MHz
3rd IF	10.7 MHz

IF bandwidths

Nominal bandwidth	-3 dB ($\pm 20\%$)	-6 dB ($\pm 10\%$)	Shape factor ($B_{6\text{dB}}/B_{60\text{dB}}$)
10 kHz	7 kHz	9.5 kHz	typ. 1:4
120 kHz	90 kHz	120 kHz	typ. 1:5
300 kHz	300 kHz	400 kHz	typ. 1:6
1 MHz	800 kHz	1 MHz	typ. 1:4

Noise indication

	Off	Preamplifier	On
20 to 1000 MHz			
Average value, BW = 10 kHz	<-10 dB μV typ. -15 dB μV	<-16 dB μV typ. -20 dB μV	<-16 dB μV typ. -20 dB μV
BW = 120 kHz	typ. -5 dB μV	typ. -9 dB μV	typ. -9 dB μV
BW = 300 kHz	typ. 0 dB μV	typ. -4 dB μV	typ. -4 dB μV
BW = 1 MHz	typ. 4 dB μV	typ. 0 dB μV	typ. 0 dB μV
1000 to 2050 MHz			
Average value, BW = 10 kHz	<-10 dB μV typ. -15 dB μV	<-16 dB μV typ. -20 dB μV	<-16 dB μV typ. -20 dB μV
BW = 120 kHz	typ. -3 dB μV	typ. -9 dB μV	typ. -9 dB μV
BW = 300 kHz	typ. 2 dB μV	typ. -4 dB μV	typ. -4 dB μV
BW = 1 MHz	typ. 6 dB μV	typ. 0 dB μV	typ. 0 dB μV

Voltage measurement range

Lower limit (additional error caused by inherent noise <1 dB)

	Off	Preamplifier	On
20 to 1000 MHz			
Average indication (AV)			
BW _{IF} = 10 kHz	<-6 dB μV typ. -12 dB μV	<-12 dB μV typ. -16 dB μV	<-12 dB μV typ. -16 dB μV
BW _{IF} = 120 kHz	typ. -1 dB μV	typ. -5 dB μV	typ. -5 dB μV
BW _{IF} = 300 kHz	typ. $+4$ dB μV	typ. 0 dB μV	typ. 0 dB μV
BW _{IF} = 1 MHz	typ. $+8$ dB μV	typ. $+4$ dB μV	typ. $+4$ dB μV
Peak indication (PK)			
BW _{IF} = 10 kHz	typ. $+14$ dB μV	typ. $+10$ dB μV	typ. $+10$ dB μV
BW _{IF} = 120 kHz	typ. $+25$ dB μV	typ. $+21$ dB μV	typ. $+21$ dB μV
BW _{IF} = 300 kHz	typ. $+30$ dB μV	typ. $+26$ dB μV	typ. $+26$ dB μV
BW _{IF} = 1 MHz	typ. $+34$ dB μV	typ. $+30$ dB μV	typ. $+30$ dB μV
Quasi-peak indication (QP)			
CISPR band C/D (100-Hz pulse frequency)	$<+8$ dB μV typ. $+4$ dB μV	$<+4$ dB μV typ. 0 dB μV	$<+4$ dB μV typ. 0 dB μV
1000 to 2050 MHz	same values as for 20 to 1000 MHz	same values as for 20 to 1000 MHz	same values as for 20 to 1000 MHz
Upper limit (AV, PK, QP)	137 dB μV (RF attenuation ≥ 10 dB)		
Inherent spurious response	<0 dB μV (equivalent input voltage)		

Level indication

digital	3 digits in dBV, dBA, dBm, dBV/m, dB $\mu\text{V}/\text{m}$, dB μA , dBpV; resolution 0.1 dB on moving-coil meter in operating range of IF detector with digital display of zero scale deflection
analog	30, 60 dB average (AV), peak (PK), spectral density (PK/MHz), quasi-peak (QP)
Operating ranges Detectors	30, 60 dB average (AV), peak (PK), spectral density (PK/MHz), quasi-peak (QP)
Measuring times	1 ms to 100 s (1/2/5 steps)

Measurement error (AV for S/N >16 dB) 20 to 1000 MHz 0 to 55 °C -10 to 0 °C -10 to 55 °C 1000 to 2050 MHz	≤1 dB (digital display) ≤1.5 dB (digital display) typ. <2 dB (analog display) ≤2 dB (digital display) typ. <3 dB (analog display) sinewave and harmonics generator A0 (zero beat) A3 (for A3E emissions) F3 (for F3E emissions) internal clock, permanently operated from internal battery	RFI suppression	complies with VDE 0876, Part 1a, PTT decree 527/1979 and MIL-STD- 461 B1(CE03 and RE02)
Level calibration		Power supply	100/120/240 V ±10%, 230 V +6/-10%, 47 to 420 Hz (70 VA), safety class I to VDE 0411 (IEC 348)
Demodulation modes		AC supply	
Date, time of day		Battery	12 V, 10 Ah approx. 2 h
		Internal	11 to 33 V
		Operating time	435 mm × 236 mm × 460 mm
		External	26 kg with / 23 kg w/o battery
		Dimensions (W × H × D)	
		Weight without options	

Connectors and interfaces

Remote control	interface to IEC 625-2 (IEEE 488), 24-contact Amphenol connector, female via IEC/IEEE-bus interface
Plotter connection	HPGL
Plotter language	parallel interface
Printer connection	(15-contact Cannon connector, female)
Front-panel outputs	
Supply and coding connector for antennas etc	12-contact Tuchel connector, female jack JK34, 10 Ω
AF output	adjustable up to 1.5 V
EMF	
Rear-panel outputs	
IF 74.7 MHz	BNC connector, female, 50 Ω
Gain ref. to RF input (RF attenuation 0 dB)	10 dB without preamplifier 20 dB with preamplifier
Bandwidth (-3 dB)	2 MHz
IF 10.7 MHz	
EMF in range of analog level display for unmodulated sinewave signal, bandwidth = IF bandwidth, operating range 30 dB	1 to 30 mV
60 dB	1 mV to 1 V
Envelope detector output	BNC connector, female
EMF in range of analog level display, operating range 30 dB	4 to 126 mV
60 dB	4 mV to 4 V
Inphase/quadrature demodulator outputs (option ESVD-B1)	BNC connectors, female, 50 Ω, loadable >200 Ω
EMF (peak value, regulated)	3 V
Bandwidth	½ IF bandwidth, max. 200 kHz
Phase error between I and Q for S/N >40dB	
Output frequency	typ. <1°
10 to 100 kHz	typ. <3°
100 to 200 kHz	
for signals to GSM Rec. 5.04, IF bandwidth 300 kHz	3° rms, 7° peak
Reference output	BNC connector, female
Frequency	10 MHz
EMF	>1 V
Frequency error	see setting error
User interface	25-contact Cannon connector includes 6 control lines for an external device, analog display voltage with and with- out simulation of meter response, input for external triggering, RS-232-C interface for firmware update
Keyboard interface	5-contact DIN connector, female
Rear-panel inputs	
External battery	3-contact round connector, female
Required voltage	11 to 33 V

General data

Rated temperature range	-10 to +55 °C (without condensation)
Storage temperature range	-25 to +70 °C
Mechanical resistance	shock-tested to MIL-STD-810 D (40 g), vibration-tested to MIL-T-28800 D, Class 5; IEC Publ. 68-2-6

Ordering information

Order designation	Test Receiver ESVD 1026.5506.10
Accessories supplied	power cable, connector for external battery, operating manual
Options	
I/Q Demodulator	ESVD-B1 1026.9001.02
UHF Frontend 1000 to 2050 MHz (only in conjunction with ESVD-B1)	ESVD-B2 1026.9501.02
Recommended extras	
For interference measurements:	
Current Probe (20 Hz to 100 (200) MHz) for EMS measurements	EZ-17 816.2063.02 EZ-17 816.2063.03
VHF Current Probe (20 to 300 MHz)	ESV-Z1 353.7019.02
Absorbing Clamp (30 to 1000 MHz)	MDS-21 194.0100.50 118.2812.00
Adapter (BNC female to N male)	HUF-Z1 358.0512.52
Broadband Dipole (20 to 80 MHz)	
Log-Periodic Broadband Antenna (80 to 1300 MHz)	HLO23A1 577.8017.02
Tripod	HFU-Z 100.1114.02
Mast (for tripod)	HFU-Z 100.1120.02
Biconical Antenna (20 to 300 MHz)	HK116 4000.7752.02
Log-Periodic Antenna (200 to 1300 MHz)	HL223 4001.5501.02
Conical Log Spiral Antenna (200 to 1000 MHz)	HUF-Z4 837.2210.52
Wooden Tripod	HZ-1 837.2310.02
RF Connecting Cable (7 m)	HFU2-Z5 252.0055.55
RF Probe (BNC connector)	HFV-Z 204.1010.02
Adapter (BNC female to N male)	118.2812.00
V-Network 5 μH 50 Ω	ESH3-Z6 836.5016.52
Preamplifier 10 dB	ESV-Z3 397.7014.52
Other accessories	
6-V lead-acid storage battery 10 Ah (2 required)	338.4012.00
Keyboard (English)	PSA-Z1 1009.5001.32
Headphones	110.2959.00
Service manual	1016.5783.24
Service Kit	EZ-8 816.1067.02
19" Rack Adapter with front handles	ZZA-95 396.4911.00
without front handles	ZZA-951 396.9488.00
Set of Front Handles	ZZG-95 396.5176.00
Transit Case	ZZK-953 1013.9389.00
Trolley	ZZK-0011 1014.0510.00
Printer Cable	EZ-11 816.1767.02
IEC-Bus Connecting Cable, 1 m	PCK 292.2013.10
2 m	PCK 292.2013.20