

R&S® ZV-Z9x | R&S® ZV-Z19x TEST PORT CABLES

Specifications



Specifications
Version 07.00

ROHDE & SCHWARZ

Make ideas real



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Definitions

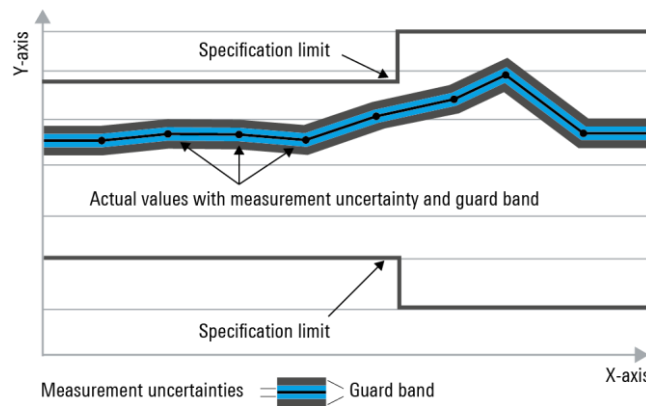
General

Product data applies under the following conditions:

- Three hours of storage at ambient temperature followed by 60 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 $<$, \leq , $>$, \geq , \pm 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.

General information

The R&S®ZV-Z9x test port cables are especially suited for precision measurements where high phase stability and high mechanical flexibility are required. The semi-rigid R&S®ZV-Z19x test port cables are mostly used for general-purpose applications.

The R&S®ZV-Z9x test port cables are ideal for high-precision measurements in labs and production. Their rugged design offers superior magnitude and phase stability, allowing stable and accurate measurements with high repeatability. The R&S®ZV-Z9x test port cables are especially suitable for connecting a device under test (DUT) to a test port of a vector network analyzer (VNA), e.g. the R&S®ZVA8, R&S®ZVA24, R&S®ZVA40, R&S®ZVA50, R&S®ZVA67, R&S®ZVB4, R&S®ZVB8, R&S®ZVB14, R&S®ZVB20, R&S®ZVT8, or R&S®ZVT20.

No test port cables are necessary for measuring a one-port DUT, which can be connected to the analyzer's test port directly or by using a suitable adapter. Use a single test port cable when measuring one-port DUTs or two-port DUTs where one port is connected to the VNA test port directly or via a suitable adapter. Use two or more test port cables if a two-port or multiport DUT is to be connected to the VNA test ports via cables. Depending on the frequency range and the appropriate type of VNA test port connector, different cables are required. The test port cables are flexible. They are available in different lengths.

The R&S®ZV-Z91, R&S®ZV-Z92, R&S®ZV-Z191 and R&S®ZV-Z192 test port cables are designed for use with the R&S®ZVA8, R&S®ZVB4, R&S®ZVB8, and R&S®ZVT8 vector network analyzers. They include a type N male connector for connection to the type N female test ports of the VNA. For connecting the DUT, the R&S®ZV-Z91 and the R&S®ZV-Z191 include a type N male connector, while the R&S®ZV-Z92 and R&S®ZV-Z192 include a 3.5 mm male connector.

The R&S®ZV-Z93 and the R&S®ZV-Z193 test port cables are designed for use with the R&S®ZVA24, R&S®ZVB14, R&S®ZVB20, and R&S®ZVT20 vector network analyzers. They include a 3.5 mm female connector for connection to the 3.5 mm male test ports of the VNA. Alternatively, a cable with a 3.5 mm male connector is also available. The cables include a 3.5 mm male connector for DUT connection.

The R&S®ZV-Z194 test port cable is designed for use with 75 Ω test sets and comes with a 75 Ω type N male connector for connecting the 75 Ω type N female test ports of the VNA. The cable includes a 75 Ω type N male connector for DUT connection.

The R&S®ZV-Z95 and the R&S®ZV-Z195 test port cables are designed for use with the R&S®ZVA40 vector network analyzer and come with a 2.92 mm female connector for connecting the 2.92 mm male test ports of the VNA. The cables include a 2.92 mm male connector for DUT connection.

The R&S®ZV-Z97 and the R&S®ZV-Z197 test port cables are designed for use with the R&S®ZVA50 vector network analyzer and come with a 2.4 mm female connector for connecting the 2.4 mm male test ports of the VNA. The cables include a 2.4 mm male connector for DUT connection.

The R&S®ZV-Z96 and the R&S®ZV-Z196 test port cables are designed for use with the R&S®ZVA67 vector network analyzer and come with a 1.85 mm female connector for connecting the 1.85 mm male test ports of the VNA. Alternatively, a cable with a 1.85 mm male connector is also available. The cable includes a 1.85 mm male connector for DUT connection.

The R&S®ZV-Z198 test port cable is designed for use with the R&S®ZVA110 vector network analyzer and comes with a 1.00 mm female connector for connecting the 1.00 mm male test ports of the VNA. The cable includes a 1.85 mm male connector for DUT connection. This cable is only available in a length of 160 mm (6 in).

Cable handling

Handle cables carefully and inspect all connectors before making a connection. Cables that are not used are to be stored with a view to maximum protection.

Observe the minimum bend radius specified for the cable. Failure to do so may destroy the cable. Cable phase and loss slightly change whenever the cable is bent.

Cables used to perform precise measurements may have to be fit into fixtures to prevent movement after calibration. Otherwise, accurate measurements will not be possible after calibration. If you use a precision calibration kit, make especially sure to move the cable as little as possible.

Mechanical data

Cable connector to VNA	R&S®ZV-Z91	precision type N male
	R&S®ZV-Z92	precision type N male
	R&S®ZV-Z93	ruggedized 3.5 mm female
	R&S®ZV-Z95	ruggedized 2.92 mm female
	R&S®ZV-Z96	ruggedized 1.85 mm female
	R&S®ZV-Z97	ruggedized 2.4 mm female
	R&S®ZV-Z191	precision type N male
	R&S®ZV-Z192	precision type N male
	R&S®ZV-Z193	3.5 mm female or male
	R&S®ZV-Z194	type N (75 Ω) male
	R&S®ZV-Z195	2.92 mm female
	R&S®ZV-Z196	1.85 mm female or male
	R&S®ZV-Z197	2.4 mm female
	R&S®ZV-Z198	1.00 mm female

Cable connector to DUT	R&S®ZV-Z91	precision type N male
	R&S®ZV-Z92	ruggedized 3.5 mm male
	R&S®ZV-Z93	ruggedized 3.5 mm male
	R&S®ZV-Z95	ruggedized 2.92 mm male
	R&S®ZV-Z96	ruggedized 1.85 mm male
	R&S®ZV-Z97	ruggedized 2.4 mm male
	R&S®ZV-Z191	precision type N male
	R&S®ZV-Z192	3.5 mm male
	R&S®ZV-Z193	3.5 mm male
	R&S®ZV-Z194	type N (75 Ω) male
	R&S®ZV-Z195	2.92 mm male
	R&S®ZV-Z196	1.85 mm male
	R&S®ZV-Z197	2.4 mm male
	R&S®ZV-Z198	1.00 mm male

Cable length	R&S®ZV-Z91 model .25	635 mm (25 in)
	R&S®ZV-Z91 model .38	965 mm (38 in)
	R&S®ZV-Z92 model .25	635 mm (25 in)
	R&S®ZV-Z92 model .38	965 mm (38 in)
	R&S®ZV-Z93 model .25	635 mm (25 in)
	R&S®ZV-Z93 model .38	965 mm (38 in)
	R&S®ZV-Z95 model .25	635 mm (25 in)
	R&S®ZV-Z95 model .38	965 mm (38 in)
	R&S®ZV-Z96 model .25	635 mm (25 in)
	R&S®ZV-Z97 model .25	635 mm (25 in)
	R&S®ZV-Z191 model .24	610 mm (24 in)
	R&S®ZV-Z191 model .36	914 mm (36 in)
	R&S®ZV-Z192 model .24	610 mm (24 in)
	R&S®ZV-Z192 model .36	914 mm (36 in)
	R&S®ZV-Z193 model .24	610 mm (24 in)
	R&S®ZV-Z193 model .36	914 mm (36 in)
	R&S®ZV-Z193 model .60	1524 mm (60 in)
	R&S®ZV-Z193 model .61	1524 mm (60 in)
	R&S®ZV-Z194 model .24	610 mm (24 in)
	R&S®ZV-Z194 model .36	914 mm (36 in)
	R&S®ZV-Z195 model .24	610 mm (24 in)
	R&S®ZV-Z195 model .36	914 mm (36 in)
	R&S®ZV-Z196 model .24	610 mm (24 in)
	R&S®ZV-Z196 model .25	610 mm (24 in)
	R&S®ZV-Z196 model .36	914 mm (36 in)
	R&S®ZV-Z196 model .37	914 mm (36 in)
	R&S®ZV-Z196 model .60	1524 mm (60 in)
	R&S®ZV-Z196 model .61	1524 mm (60 in)
	R&S®ZV-Z197 model .24	610 mm (24 in)
	R&S®ZV-Z197 model .36	914 mm (36 in)
	R&S®ZV-Z198 model .06	160 mm (6 in)

Outer diameter of cable	R&S®ZV-Z9x	15.2 mm (0.6 in)
	R&S®ZV-Z191	6.1 mm (0.24 in)
	R&S®ZV-Z192	6.1 mm (0.24 in)
	R&S®ZV-Z193	6.1 mm (0.24 in)
	R&S®ZV-Z194	n.a.
	R&S®ZV-Z195	6.1 mm (0.24 in)
	R&S®ZV-Z196	5.8 mm (0.23 in)
	R&S®ZV-Z197	6.1 mm (0.24 in)
	R&S®ZV-Z198	4.2 mm (0.167 in)

Minimum bend radius	R&S®ZV-Z9x	57 mm (2.25 in)
	R&S®ZV-Z191	26 mm (1 in)
	R&S®ZV-Z192	26 mm (1 in)
	R&S®ZV-Z193	26 mm (1 in)
	R&S®ZV-Z194	n.a.
	R&S®ZV-Z195	26 mm (1 in)
	R&S®ZV-Z196	26 mm (1 in)
	R&S®ZV-Z197	26 mm (1 in)
	R&S®ZV-Z198	n.a.

Crush resistance	R&S®ZV-Z9x	14 kg/mm (800 lb/in)
	R&S®ZV-Z191	4 kg/mm (250 lb/in)
	R&S®ZV-Z192	4 kg/mm (250 lb/in)
	R&S®ZV-Z193	4 kg/mm (250 lb/in)
	R&S®ZV-Z194	n.a.
	R&S®ZV-Z195	4 kg/mm (250 lb/in)
	R&S®ZV-Z196	4 kg/mm (250 lb/in)
	R&S®ZV-Z197	4 kg/mm (250 lb/in)
	R&S®ZV-Z198	n.a.

Coupling torque	R&S®ZV-Z9x	n.a.
	R&S®ZV-Z191	1.5 Nm ± 0.2 Nm
	R&S®ZV-Z192	1.5 Nm ± 0.2 Nm
	R&S®ZV-Z193	0.9 Nm ± 0.1 Nm
	R&S®ZV-Z194	1.5 Nm ± 0.2 Nm
	R&S®ZV-Z195	0.9 Nm ± 0.1 Nm
	R&S®ZV-Z196	0.9 Nm ± 0.1 Nm
	R&S®ZV-Z197	0.9 Nm ± 0.1 Nm
	R&S®ZV-Z198	0.45 Nm ± 0.05 Nm

Electrical data

Impedance	50 Ω
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Frequency range	R&S®ZV-Z91	0 Hz to 18 GHz
	R&S®ZV-Z92	0 Hz to 18 GHz
	R&S®ZV-Z93	0 Hz to 26.5 GHz
	R&S®ZV-Z95	0 Hz to 40 GHz
	R&S®ZV-Z96	0 Hz to 67 GHz
	R&S®ZV-Z97	0 Hz to 50 GHz
	R&S®ZV-Z191	0 Hz to 18 GHz
	R&S®ZV-Z192	0 Hz to 18 GHz
	R&S®ZV-Z193	0 Hz to 26.5 GHz
	R&S®ZV-Z194	0 Hz to 3 GHz
	R&S®ZV-Z195	0 Hz to 40 GHz
	R&S®ZV-Z196	0 Hz to 67 GHz
	R&S®ZV-Z197	0 Hz to 50 GHz
	R&S®ZV-Z198	0 Hz to 110 GHz

Reflection and transmission		
Match (at maximum frequency)	R&S®ZV-Z91 model .25	> 17.94 dB (VSWR < 1.29), typ. 24.94 dB
	R&S®ZV-Z91 model .38	> 17.94 dB (VSWR < 1.29), typ. 24.94 dB
	R&S®ZV-Z92 model .25	> 17.94 dB (VSWR < 1.29), typ. 24.29 dB
	R&S®ZV-Z92 model .38	> 17.94 dB (VSWR < 1.29), typ. 24.29 dB
	R&S®ZV-Z93 model .25	> 17.94 dB (VSWR < 1.29), typ. 27.32 dB
	R&S®ZV-Z93 model .38	> 17.94 dB (VSWR < 1.29), typ. 27.32 dB
	R&S®ZV-Z95 model .25	> 15.93 dB (VSWR < 1.38), typ. 25.96 dB
	R&S®ZV-Z95 model .38	> 15.93 dB (VSWR < 1.38), typ. 25.96 dB
	R&S®ZV-Z96 model .25	> 13.98 dB (VSWR < 1.50), typ. 21.27 dB
	R&S®ZV-Z97 model .25	> 15.04 dB (VSWR < 1.43), typ. 18.30 dB
	R&S®ZV-Z191 model .24	> 16.53 dB (VSWR < 1.35), typ. 21.27 dB
	R&S®ZV-Z191 model .36	> 16.53 dB (VSWR < 1.35), typ. 21.27 dB
	R&S®ZV-Z192 model .24	> 16.53 dB (VSWR < 1.35), typ. 21.27 dB
	R&S®ZV-Z192 model .36	> 16.53 dB (VSWR < 1.35), typ. 21.27 dB
	R&S®ZV-Z193 model .24	> 14.73 dB (VSWR < 1.45), typ. 22.00 dB
	R&S®ZV-Z193 model .36	> 14.73 dB (VSWR < 1.45), typ. 22.00 dB
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	> 26.44 dB (VSWR < 1.1)
	R&S®ZV-Z194 model .36	> 26.44 dB (VSWR < 1.1)
	R&S®ZV-Z195 model .24	> 16.53 dB (VSWR < 1.35), typ. 21.50 dB
	R&S®ZV-Z195 model .36	> 16.53 dB (VSWR < 1.35), typ. 21.50 dB
	R&S®ZV-Z196 model .24	> 13.98 dB (VSWR < 1.50), typ. 21.27 dB
	R&S®ZV-Z196 model .25	> 13.98 dB (VSWR < 1.50), typ. 21.27 dB
	R&S®ZV-Z196 model .36	n.a.
	R&S®ZV-Z196 model .37	n.a.
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
	R&S®ZV-Z197 model .24	> 15.04 dB (VSWR < 1.43)
	R&S®ZV-Z197 model .36	> 15.04 dB (VSWR < 1.43)
	R&S®ZV-Z198 model .06	> 13.97 dB (VSWR < 1.5)

Transmission loss (at maximum frequency)	R&S®ZV-Z91 model .25	< 1.24 dB, typ. 1.00 dB
	R&S®ZV-Z91 model .38	< 1.72 dB, typ. 1.42 dB
	R&S®ZV-Z92 model .25	< 1.24 dB, typ. 1.00 dB
	R&S®ZV-Z92 model .38	< 1.72 dB, typ. 1.42 dB
	R&S®ZV-Z93 model .25	< 1.56 dB
	R&S®ZV-Z93 model .38	< 2.17 dB
	R&S®ZV-Z95 model .25	< 3.46 dB, typ. 2.64 dB
	R&S®ZV-Z95 model .38	< 4.82 dB, typ. 3.85 dB
	R&S®ZV-Z96 model .25	< 5.83 dB, typ. 5.07 dB
	R&S®ZV-Z97 model .25	< 3.61 dB, typ. 2.64 dB
	R&S®ZV-Z191 model .24	< 1.20 dB, typ. 0.96 dB
	R&S®ZV-Z191 model .36	< 1.65 dB, typ. 1.36 dB
	R&S®ZV-Z192 model .24	< 1.20 dB, typ. 0.96 dB
	R&S®ZV-Z192 model .36	< 1.65 dB, typ. 1.36 dB
	R&S®ZV-Z193 model .24	< 1.51 dB, typ. 1.22 dB
	R&S®ZV-Z193 model .36	< 2.08 dB, typ. 1.71 dB
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	< 0.44 dB, typ. 0.36 dB
	R&S®ZV-Z194 model .36	< 0.44 dB, typ. 0.36 dB
	R&S®ZV-Z195 model .24	< 3.06 dB, typ. 2.25 dB
	R&S®ZV-Z195 model .36	< 4.32 dB, typ. 3.37 dB
	R&S®ZV-Z196 model .24	< 4.80 dB, typ. 4.39 dB
	R&S®ZV-Z196 model .25	< 4.80 dB, typ. 4.39 dB
	R&S®ZV-Z196 model .36	n.a.
	R&S®ZV-Z196 model .37	n.a.
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
	R&S®ZV-Z197 model .24	< 3.50 dB, typ. 2.52 dB
	R&S®ZV-Z197 model .36	< 4.92 dB, typ. 3.78 dB
R&S®ZV-Z198 model .06	< 2.74 dB, typ. 2.14 dB	

Transmission loss (versus frequency)	R&S®ZV-Z91 model .25	$< (0.1000 + 0.1915 \cdot \sqrt{f} + 0.0179 \cdot f)$ dB typ. $(0.0255 + 0.1747 \cdot \sqrt{f} + 0.0127 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z91 model .38	$< (0.1000 + 0.2911 \cdot \sqrt{f} + 0.0215 \cdot f)$ dB typ. $(0.0284 + 0.2616 \cdot \sqrt{f} + 0.0159 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z92 model .25	$< (0.1000 + 0.1915 \cdot \sqrt{f} + 0.0179 \cdot f)$ dB typ. $(0.0255 + 0.1747 \cdot \sqrt{f} + 0.0127 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z92 model .38	$< (0.1000 + 0.2911 \cdot \sqrt{f} + 0.0215 \cdot f)$ dB typ. $(0.0284 + 0.2616 \cdot \sqrt{f} + 0.0159 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z93 model .25	$< (0.0800 + 0.3271 \cdot \sqrt{f} - 0.01323 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z93 model .38	$< (0.0800 + 0.4972 \cdot \sqrt{f} - 0.0201 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z95 model .25	$< (0.1109 + 0.4813 \cdot \sqrt{f} + 0.0075 \cdot f)$ dB typ. $(0.0309 + 0.4470 \cdot \sqrt{f} - 0.0055 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z95 model .38	$< (0.1109 + 0.6780 \cdot \sqrt{f} + 0.0105 \cdot f)$ dB typ. $(0.0309 + 0.6257 \cdot \sqrt{f} - 0.0035 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z96 model .25	$< (0.1333 + 0.8230 \cdot \sqrt{f} - 0.01629 \cdot f)$ dB typ. $(0.0548 + 0.8043 \cdot \sqrt{f} - 0.0234 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z97 model .25	$< (0.1 + 0.3781 \cdot \sqrt{f} + 0.0168 \cdot f)$ dB typ. $(0.02 + 0.3438 \cdot \sqrt{f} - 0.0038 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z191 model .24	$< (0.1000 + 0.1838 \cdot \sqrt{f} + 0.0177 \cdot f)$ dB typ. $(0.0253 + 0.1681 \cdot \sqrt{f} + 0.0125 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z191 model .36	$< (0.1000 + 0.2758 \cdot \sqrt{f} + 0.0210 \cdot f)$ dB typ. $(0.0280 + 0.2482 \cdot \sqrt{f} + 0.0154 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z192 model .24	$< (0.1000 + 0.1838 \cdot \sqrt{f} + 0.0177 \cdot f)$ dB typ. $(0.0253 + 0.1681 \cdot \sqrt{f} + 0.0125 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z192 model .36	$< (0.1000 + 0.2758 \cdot \sqrt{f} + 0.0210 \cdot f)$ dB typ. $(0.0280 + 0.2482 \cdot \sqrt{f} + 0.0154 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z193 model .24	$< (0.1000 + 0.1838 \cdot \sqrt{f} + 0.0177 \cdot f)$ dB typ. $(0.0253 + 0.1681 \cdot \sqrt{f} + 0.0125 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z193 model .36	$< (0.1000 + 0.2758 \cdot \sqrt{f} + 0.0210 \cdot f)$ dB typ. $(0.0280 + 0.2482 \cdot \sqrt{f} + 0.0154 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	n.a.
	R&S®ZV-Z194 model .36	n.a.
	R&S®ZV-Z195 model .24	$< (0.1000 + 0.3630 \cdot \sqrt{f} + 0.0166 \cdot f)$ dB typ. $(0.0200 + 0.3300 \cdot \sqrt{f} + 0.0037 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z195 model .36	$< (0.1000 + 0.5445 \cdot \sqrt{f} + 0.0193 \cdot f)$ dB typ. $(0.0200 + 0.4950 \cdot \sqrt{f} + 0.0055 \cdot f)$ dB where f is the frequency in GHz
	R&S®ZV-Z196 model .24	n.a.
	R&S®ZV-Z196 model .25	n.a.
	R&S®ZV-Z196 model .36	n.a.
	R&S®ZV-Z196 model .37	n.a.
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
R&S®ZV-Z197 model .24	n.a.	
R&S®ZV-Z197 model .36	n.a.	
R&S®ZV-Z198 model .06	n.a.	

Delay time	R&S®ZV-Z91 model .25	2.5 ns
	R&S®ZV-Z91 model .38	3.8 ns
	R&S®ZV-Z92 model .25	2.5 ns
	R&S®ZV-Z92 model .38	3.8 ns
	R&S®ZV-Z93 model .25	2.5 ns
	R&S®ZV-Z93 model .38	3.8 ns
	R&S®ZV-Z95 model .25	2.5 ns
	R&S®ZV-Z95 model .38	3.8 ns
	R&S®ZV-Z96 model .25	2.5 ns
	R&S®ZV-Z97 model .25	2.5 ns

Stability ¹		
Magnitude stability	R&S®ZV-Z91 model .25	< 0.08 dB
	R&S®ZV-Z91 model .38	< 0.15 dB
	R&S®ZV-Z92 model .25	< 0.08 dB
	R&S®ZV-Z92 model .38	< 0.15 dB
	R&S®ZV-Z93 model .25	< 0.08 dB
	R&S®ZV-Z93 model .38	< 0.15 dB
	R&S®ZV-Z95 model .25	< 0.08 dB
	R&S®ZV-Z95 model .38	< 0.15 dB
	R&S®ZV-Z96 model .25	< 0.10 dB
	R&S®ZV-Z97 model .25	< 0.08 dB
	R&S®ZV-Z191 model .24	< 0.08 dB
	R&S®ZV-Z191 model .36	< 0.15 dB
	R&S®ZV-Z192 model .24	< 0.08 dB
	R&S®ZV-Z192 model .36	< 0.15 dB
	R&S®ZV-Z193 model .24	< 0.08 dB
	R&S®ZV-Z193 model .36	< 0.15 dB
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	n.a.
	R&S®ZV-Z194 model .36	n.a.
	R&S®ZV-Z195 model .24	< 0.08 dB
	R&S®ZV-Z195 model .36	< 0.15 dB
	R&S®ZV-Z196 model .24	< 0.10 dB, typ. 0.05 dB
	R&S®ZV-Z196 model .25	< 0.10 dB, typ. 0.05 dB
	R&S®ZV-Z196 model .36	n.a.
	R&S®ZV-Z196 model .37	n.a.
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
	R&S®ZV-Z197 model .24	< 0.08 dB, typ. 0.05 dB
	R&S®ZV-Z197 model .36	< 0.15 dB, typ. 0.05 dB
	R&S®ZV-Z198 model .06	n.a.

¹ Stability is measured by means of a standard test procedure using a mandrel with a diameter of 114.3 mm (4.5 in).

Phase stability (at maximum frequency)	R&S®ZV-Z91 model .25	< 2.8°
	R&S®ZV-Z91 model .38	< 5.2°
	R&S®ZV-Z92 model .25	< 2.8°
	R&S®ZV-Z92 model .38	< 5.2°
	R&S®ZV-Z93 model .25	< 3.9°
	R&S®ZV-Z93 model .38	< 7.4°
	R&S®ZV-Z95 model .25	< 3.7°
	R&S®ZV-Z95 model .38	< 7.3°
	R&S®ZV-Z96 model .25	n.a.
	R&S®ZV-Z97 model .25	< 8.0°
	R&S®ZV-Z191 model .24	< 4.7°
	R&S®ZV-Z191 model .36	< 4.7°
	R&S®ZV-Z192 model .24	< 4.7°
	R&S®ZV-Z192 model .36	< 4.7°
	R&S®ZV-Z193 model .24	< 6.6°
	R&S®ZV-Z193 model .36	< 6.6°
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	n.a.
	R&S®ZV-Z194 model .36	n.a.
	R&S®ZV-Z195 model .24	< 9.6°
	R&S®ZV-Z195 model .36	< 9.6°
	R&S®ZV-Z196 model .24	< 14.6°, typ. 8.0°
	R&S®ZV-Z196 model .25	< 14.6°, typ. 8.0°
	R&S®ZV-Z196 model .36	n.a.
	R&S®ZV-Z196 model .37	n.a.
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
	R&S®ZV-Z197 model .24	< 11.8°, typ. 6.0°
	R&S®ZV-Z197 model .36	< 11.8°, typ. 6.0°
R&S®ZV-Z198 model .06	n.a.	

Phase stability (versus frequency)	R&S®ZV-Z91 model .25	$< 0.5^\circ + 0.13^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z91 model .38	$< 0.5^\circ + 0.26^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z92 model .25	$< 0.5^\circ + 0.13^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z92 model .38	$< 0.5^\circ + 0.26^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z93 model .25	$< 0.5^\circ + 0.13^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z93 model .38	$< 0.5^\circ + 0.26^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z95 model .25	$< 0.5^\circ + 0.08^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z95 model .38	$< 0.5^\circ + 0.17^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z96 model .25	$< 0.5^\circ + 0.12^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z97 model .25	$< 0.5^\circ + 0.15^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z191 model .24	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z191 model .36	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z192 model .24	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z192 model .36	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z193 model .24	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z193 model .36	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	n.a.
	R&S®ZV-Z194 model .36	n.a.
	R&S®ZV-Z195 model .24	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z195 model .36	$< 0.64^\circ + 0.2234^\circ \cdot f$ where f is the frequency in GHz
	R&S®ZV-Z196 model .24	n.a.
	R&S®ZV-Z196 model .25	n.a.
	R&S®ZV-Z196 model .36	n.a.
	R&S®ZV-Z196 model .37	n.a.
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
	R&S®ZV-Z197 model .24	n.a.
	R&S®ZV-Z197 model .36	n.a.
R&S®ZV-Z198 model .06	n.a.	

General data

Temperature	operating temperature range	+18 °C to +28 °C
	permissible temperature range	0 °C to +50 °C
	storage temperature range	-40 °C to +70 °C
		in line with IEC 60068-2-1 and IEC 60068-2-2
Damp heat		+40 °C at 95 % rel. humidity, in line with IEC 60068-2-30
Altitude	operating	3000 m, above sea level
	transport	4500 m, above sea level
Mechanical resistance	vibration, sinusoidal	5 Hz to 150 Hz, in line with IEC 60068-2-6
	vibration, random	10 Hz to 300 Hz, in line with IEC 60068-2-64
	shock	40 g shock spectrum, in line with IEC 60068-2-27, MIL-STD-810
Length	R&S®ZV-Z91 model .25	635 mm (25 in)
	R&S®ZV-Z91 model .38	965 mm (38 in)
	R&S®ZV-Z92 model .25	635 mm (25 in)
	R&S®ZV-Z92 model .38	965 mm (38 in)
	R&S®ZV-Z93 model .25	635 mm (25 in)
	R&S®ZV-Z93 model .38	965 mm (38 in)
	R&S®ZV-Z95 model .25	635 mm (25 in)
	R&S®ZV-Z95 model .38	965 mm (38 in)
	R&S®ZV-Z96 model .25	635 mm (25 in)
	R&S®ZV-Z97 model .25	635 mm (25 in)
	R&S®ZV-Z191 model .24	610 mm (24 in)
	R&S®ZV-Z191 model .36	914 mm (36 in)
	R&S®ZV-Z192 model .24	610 mm (24 in)
	R&S®ZV-Z192 model .36	914 mm (36 in)
	R&S®ZV-Z193 model .24	610 mm (24 in)
	R&S®ZV-Z193 model .36	914 mm (36 in)
	R&S®ZV-Z193 model .60	1524 mm (60 in)
	R&S®ZV-Z193 model .61	1524 mm (60 in)
	R&S®ZV-Z194 model .24	610 mm (24 in)
	R&S®ZV-Z194 model .36	914 mm (36 in)
	R&S®ZV-Z195 model .24	610 mm (24 in)
	R&S®ZV-Z195 model .36	914 mm (36 in)
	R&S®ZV-Z196 model .24	610 mm (24 in)
	R&S®ZV-Z196 model .25	610 mm (24 in)
	R&S®ZV-Z196 model .36	914 mm (36 in)
	R&S®ZV-Z196 model .37	914 mm (36 in)
	R&S®ZV-Z196 model .60	1524 mm (60 in)
	R&S®ZV-Z196 model .61	1524 mm (60 in)
	R&S®ZV-Z197 model .24	610 mm (24 in)
	R&S®ZV-Z197 model .36	914 mm (36 in)
	R&S®ZV-Z198 model .06	160 mm (6 in)

Weight	R&S®ZV-Z91 model .25	175 g (6 oz)
	R&S®ZV-Z91 model .38	266 g (9 oz)
	R&S®ZV-Z92 model .25	175 g (6 oz)
	R&S®ZV-Z92 model .38	266 g (9 oz)
	R&S®ZV-Z93 model .25	175 g (6 oz)
	R&S®ZV-Z93 model .38	266 g (9 oz)
	R&S®ZV-Z95 model .25	175 g (6 oz)
	R&S®ZV-Z95 model .38	266 g (9 oz)
	R&S®ZV-Z96 model .25	175 g (6 oz)
	R&S®ZV-Z97 model .25	175 g (6 oz)
	R&S®ZV-Z191 model .24	175 g (6 oz)
	R&S®ZV-Z191 model .36	266 g (9 oz)
	R&S®ZV-Z192 model .24	175 g (6 oz)
	R&S®ZV-Z192 model .36	266 g (9 oz)
	R&S®ZV-Z193 model .24	175 g (6 oz)
	R&S®ZV-Z193 model .36	266 g (9 oz)
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	n.a.
	R&S®ZV-Z194 model .36	n.a.
	R&S®ZV-Z195 model .24	175 g (6 oz)
	R&S®ZV-Z195 model .36	266 g (9 oz)
	R&S®ZV-Z196 model .24	175 g (6 oz)
	R&S®ZV-Z196 model .25	175 g (6 oz)
	R&S®ZV-Z196 model .36	266 g (9 oz)
	R&S®ZV-Z196 model .37	266 g (9 oz)
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
	R&S®ZV-Z197 model .24	n.a.
	R&S®ZV-Z197 model .36	n.a.
	R&S®ZV-Z198 model .06	n.a.

Shipping weight	R&S®ZV-Z91 model .25	0.5 kg (1 lb)
	R&S®ZV-Z91 model .38	0.5 kg (1 lb)
	R&S®ZV-Z92 model .25	0.5 kg (1 lb)
	R&S®ZV-Z92 model .38	0.5 kg (1 lb)
	R&S®ZV-Z93 model .25	0.5 kg (1 lb)
	R&S®ZV-Z93 model .38	0.5 kg (1 lb)
	R&S®ZV-Z95 model .25	0.5 kg (1 lb)
	R&S®ZV-Z95 model .38	0.5 kg (1 lb)
	R&S®ZV-Z96 model .25	0.5 kg (1 lb)
	R&S®ZV-Z97 model .25	0.5 kg (1 lb)
	R&S®ZV-Z191 model .24	0.5 kg (1 lb)
	R&S®ZV-Z191 model .36	0.5 kg (1 lb)
	R&S®ZV-Z192 model .24	0.5 kg (1 lb)
	R&S®ZV-Z192 model .36	0.5 kg (1 lb)
	R&S®ZV-Z193 model .24	0.5 kg (1 lb)
	R&S®ZV-Z193 model .36	0.5 kg (1 lb)
	R&S®ZV-Z193 model .60	n.a.
	R&S®ZV-Z193 model .61	n.a.
	R&S®ZV-Z194 model .24	n.a.
	R&S®ZV-Z194 model .36	n.a.
	R&S®ZV-Z195 model .24	0.5 kg (1 lb)
	R&S®ZV-Z195 model .36	0.5 kg (1 lb)
	R&S®ZV-Z196 model .24	0.5 kg (1 lb)
	R&S®ZV-Z196 model .25	0.5 kg (1 lb)
	R&S®ZV-Z196 model .36	0.5 kg (1 lb)
	R&S®ZV-Z196 model .37	0.5 kg (1 lb)
	R&S®ZV-Z196 model .60	n.a.
	R&S®ZV-Z196 model .61	n.a.
	R&S®ZV-Z197 model .24	n.a.
	R&S®ZV-Z197 model .36	n.a.
	R&S®ZV-Z198 model .06	n.a.

Ordering information

Designation	Type	Order No.
Test port cables for the R&S®ZVA8, R&S®ZVB4, R&S®ZVB8 and R&S®ZVT8 vector network analyzers, frequency range: 0 Hz to 18 GHz		
Test port cable type N male to type N male, length 635 mm (25 in)	R&S®ZV-Z91	1301.7572.25
Test port cable type N male to type N male, length 965 mm (38 in)	R&S®ZV-Z91	1301.7572.38
Test port cable type N male to 3.5 mm male, length 635 mm (25 in)	R&S®ZV-Z92	1301.7589.25
Test port cable type N male to 3.5 mm male, length 965 mm (38 in)	R&S®ZV-Z92	1301.7589.38
Test port cable type N male to type N male, length 610 mm (24 in)	R&S®ZV-Z191	1301.4507.24
Test port cable type N male to type N male, length 914 mm (36 in)	R&S®ZV-Z191	1301.4507.36
Test port cable type N male to 3.5 mm male, length 610 mm (24 in)	R&S®ZV-Z192	1306.4513.24
Test port cable type N male to 3.5 mm male, length 914 mm (36 in)	R&S®ZV-Z192	1306.4513.36
Test port cables for the R&S®ZVA8, R&S®ZVB4, R&S®ZVB8 and R&S®ZVT8 vector network analyzers, frequency range: 0 Hz to 3 GHz		
Test port cable type N 75 Ω male to type N 75 Ω male, length 610 mm (24 in)	R&S®ZV-Z194	1306.4542.24
Test port cable type N 75 Ω male to type N 75 Ω male, length 914 mm (36 in)	R&S®ZV-Z194	1306.4542.36
Test port cables for the R&S®ZVA24, R&S®ZVB20 and R&S®ZVT20 vector network analyzers, frequency range: 0 Hz to 26.5 GHz		
Test port cable 3.5 mm female to 3.5 mm male, length 635 mm (25 in)	R&S®ZV-Z93	1301.7595.25
Test port cable 3.5 mm female to 3.5 mm male, length 965 mm (38 in)	R&S®ZV-Z93	1301.7595.38
Test port cable 3.5 mm female to 3.5 mm male, length 610 mm (24 in)	R&S®ZV-Z193	1306.4520.24
Test port cable 3.5 mm female to 3.5 mm male, length 914 mm (36 in)	R&S®ZV-Z193	1306.4520.36
Test port cable 3.5 mm female to 3.5 mm male, length 1524 mm (60 in)	R&S®ZV-Z193	1306.4520.60
Test port cable 3.5 mm male to 3.5 mm male, length 1524 mm (60 in)	R&S®ZV-Z193	1306.4520.61
Test port cables for the R&S®ZVA40 vector network analyzer, frequency range: 0 Hz to 40 GHz		
Test port cable 2.92 mm female to 2.92 mm male, length 635 mm (25 in)	R&S®ZV-Z95	1301.7608.25
Test port cable 2.92 mm female to 2.92 mm male, length 965 mm (38 in)	R&S®ZV-Z95	1301.7608.38
Test port cable 2.92 mm female to 2.92 mm male, length 610 mm (24 in)	R&S®ZV-Z195	1306.4536.24
Test port cable 2.92 mm female to 2.92 mm male, length 914 mm (36 in)	R&S®ZV-Z195	1306.4536.36
Test port cables for the R&S®ZVA50 vector network analyzer, frequency range: 0 Hz to 50 GHz		
Test port cable 2.4 mm female to 2.4 mm male, length 635 mm (25 in)	R&S®ZV-Z97	1301.7637.25
Test port cable 2.4 mm female to 2.4 mm male, length 610 mm (24 in)	R&S®ZV-Z197	1306.4571.24
Test port cable 2.4 mm female to 2.4 mm male, length 914 mm (36 in)	R&S®ZV-Z197	1306.4571.36

Designation	Type	Order No.
Test port cables for the R&S®ZVA67 vector network analyzer, frequency range: 0 Hz to 67 GHz		
Test port cable 1.85 mm female to 1.85 mm male, length 635 mm (25 in)	R&S®ZV-Z96	1301.7614.25
Test port cable 1.85 mm female to 1.85 mm male, length 610 mm (24 in)	R&S®ZV-Z196	1306.4559.24
Test port cable 1.85 mm male to 1.85 mm male, length 610 mm (24 in)	R&S®ZV-Z196	1306.4559.25
Test port cable 1.85 mm female to 1.85 mm male, length 914 mm (36 in)	R&S®ZV-Z196	1306.4559.36
Test port cable 1.85 mm male to 1.85 mm male, length 914 mm (36 in)	R&S®ZV-Z196	1306.4559.37
Test port cable 1.85 mm female to 1.85 mm male, length 1524 mm (60 in)	R&S®ZV-Z196	1306.4559.60
Test port cable 1.85 mm male to 1.85 mm male, length 1524 mm (60 in)	R&S®ZV-Z196	1306.4559.61
Test port cables for the R&S®ZVA110 vector network analyzer, frequency range: 0 Hz to 110 GHz		
Test port cable 1.00 mm female to 1.00 mm male, length 160 mm (6 in)	R&S®ZV-Z198	1306.4565.06

Warranty and service

Warranty		
Base unit		1 year
All other items		1 year
Service options		
	Service plans	On demand
Calibration	up to five years ²	pay per calibration
Warranty and repair	up to five years ²	standard price repair
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² For extended periods, contact your Rohde & Schwarz sales office.

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