R&S®ZV-Z2xx
Calibration Kits
Specifications

ROHDE&SCHWARZ

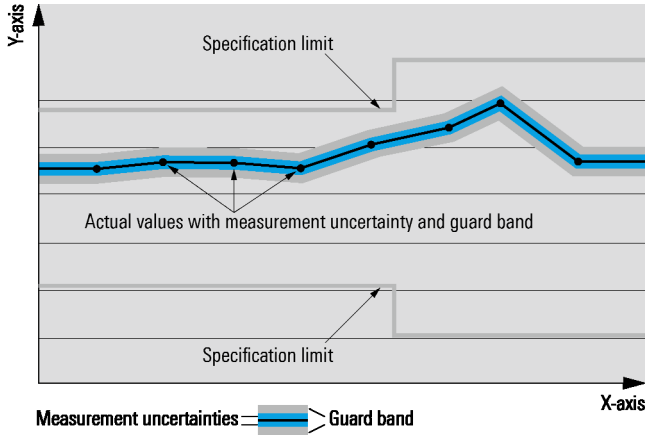
CONTENTS

Definitions

General
Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes 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.



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”.

Typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

Specifications

Measurement range

Impedance		50 Ω
Frequency range	R&S®ZV-Z270	0 Hz to 18 GHz
	R&S®ZV-Z235	0 Hz to 24 GHz
	R&S®ZV-Z235E	0 Hz to 33 GHz
	R&S®ZV-Z229	0 Hz to 40 GHz
	R&S®ZV-Z224	0 Hz to 50 GHz
	R&S®ZV-Z218	0 Hz to 67 GHz
	R&S®ZV-Z210	0 Hz to 110 GHz
Connectors	R&S®ZV-Z270	type N female and male
	R&S®ZV-Z235	3.5 mm female and male
	R&S®ZV-Z235E	3.5 mm female and male
	R&S®ZV-Z229	2.92 mm female and male
	R&S®ZV-Z224	2.4 mm female and male
	R&S®ZV-Z218	1.85 mm female and male
	R&S®ZV-Z210	1.0 mm female and male

Effective system data of R&S®ZV-Z270

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at a R&S®ZVA, R&S®ZVB, or R&S®ZVT vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB stick. This data is valid between +18 °C and +28 °C, at a measurement bandwidth of 10 Hz, and a nominal power of –10 dBm at the calibration ports. The calibration kit is fully functional down to 0 Hz, with effective system data as specified below, although the data is only verified for frequencies as stated.

Directivity	10 MHz to 700 MHz	> 36 dB, typ. 46 dB
	700 MHz to 18 GHz	> 40 dB, typ. 46 dB
Source match	10 MHz to 700 MHz	> 30 dB, typ. 43 dB
	700 MHz to 18 GHz	> 36 dB, typ. 43 dB
Reflection tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.04 dB
	700 MHz to 18 GHz	< 0.1 dB, typ. 0.02 dB
Load match	10 MHz to 700 MHz	> 36 dB, typ. 46 dB
	700 MHz to 18 GHz	> 40 dB, typ. 46 dB
Transmission tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.04 dB
	700 MHz to 18 GHz	< 0.1 dB, typ. 0.02 dB

Effective system data of R&S®ZV-Z235

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at a R&S®ZVA, R&S®ZVB, or R&S®ZVT vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB stick. This data is valid between +18 °C and +28 °C, at a measurement bandwidth of 10 Hz, and a nominal power of –10 dBm at the calibration ports. The calibration kit is fully functional down to 0 Hz, with effective system data as specified below, although the data is only verified for frequencies as stated.

Directivity	10 MHz to 700 MHz	> 36 dB, typ. 46 dB
	700 MHz to 24 GHz	> 40 dB, typ. 46 dB
Source match	10 MHz to 700 MHz	> 30 dB, typ. 43 dB
	700 MHz to 24 GHz	> 36 dB, typ. 43 dB
Reflection tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.04 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.02 dB
Load match	10 MHz to 700 MHz	> 36 dB, typ. 46 dB
	700 MHz to 24 GHz	> 40 dB, typ. 46 dB
Transmission tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.04 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.02 dB

Effective system data of R&S®ZV-Z235E

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at a R&S®ZVA, R&S®ZVB, or R&S®ZVT vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB stick. This data is valid between +18 °C and +28 °C, at a measurement bandwidth of 10 Hz, and a nominal power of –10 dBm at the calibration ports. The calibration kit is fully functional down to 0 Hz, with effective system data as specified below, although the data is only verified for frequencies as stated.

Directivity	10 MHz to 700 MHz	> 36 dB, typ. 46 dB
	700 MHz to 24 GHz	> 40 dB, typ. 46 dB
	24 GHz to 33 GHz	> 36 dB, typ. 40 dB
Source match	10 MHz to 700 MHz	> 30 dB, typ. 43 dB
	700 MHz to 24 GHz	> 36 dB, typ. 43 dB
	24 GHz to 33 GHz	> 30 dB, typ. 36 dB
Reflection tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.04 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.02 dB
	24 GHz to 33 GHz	< 0.2 dB, typ. 0.04 dB
Load match	10 MHz to 700 MHz	> 36 dB, typ. 46 dB
	700 MHz to 24 GHz	> 40 dB, typ. 46 dB
	24 GHz to 33 GHz	> 36 dB, typ. 40 dB
Transmission tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.04 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.02 dB
	24 GHz to 33 GHz	< 0.2 dB, typ. 0.04 dB

Effective system data of R&S®ZV-Z229

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at a R&S®ZVA, R&S®ZVB, or R&S®ZVT vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB stick. This data is valid between +18 °C and +28 °C, at a measurement bandwidth of 10 Hz, and a nominal power of –10 dBm at the calibration ports. The calibration kit is fully functional down to 0 Hz, with effective system data as specified below, although the data is only verified for frequencies as stated.

Directivity	10 MHz to 700 MHz	> 33 dB, typ. 36 dB
	700 MHz to 24 GHz	> 38 dB, typ. 42 dB
	24 GHz to 40 GHz	> 33 dB, typ. 36 dB
Source match	10 MHz to 700 MHz	> 30 dB, typ. 36 dB
	700 MHz to 24 GHz	> 36 dB, typ. 40 dB
	24 GHz to 40 GHz	> 30 dB, typ. 36 dB
Reflection tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.05 dB
	24 GHz to 40 GHz	< 0.2 dB, typ. 0.1 dB
Load match	10 MHz to 700 MHz	> 33 dB, typ. 36 dB
	700 MHz to 24 GHz	> 38 dB, typ. 42 dB
	24 GHz to 40 GHz	> 33 dB, typ. 36 dB
Transmission tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.04 dB
	24 GHz to 40 GHz	< 0.2 dB, typ. 0.08 dB

Effective system data of R&S®ZV-Z224

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at a R&S®ZVA, R&S®ZVB, or R&S®ZVT vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB stick. This data is valid between +18 °C and +28 °C, at a measurement bandwidth of 10 Hz, and a nominal power of –10 dBm at the calibration ports. The calibration kit is fully functional down to 0 Hz, with effective system data as specified below, although the data is only verified for frequencies as stated.

Directivity	10 MHz to 700 MHz	> 33 dB, typ. 40 dB
	700 MHz to 24 GHz	> 40 dB, typ. 46 dB
	24 GHz to 50 GHz	> 33 dB, typ. 36 dB
Source match	10 MHz to 700 MHz	> 30 dB, typ. 40 dB
	700 MHz to 24 GHz	> 36 dB, typ. 40 dB
	24 GHz to 50 GHz	> 30 dB, typ. 36 dB
Reflection tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.05 dB
	24 GHz to 50 GHz	< 0.2 dB, typ. 0.1 dB
Load match	10 MHz to 700 MHz	> 33 dB, typ. 40 dB
	700 MHz to 24 GHz	> 38 dB, typ. 42 dB
	24 GHz to 50 GHz	> 33 dB, typ. 36 dB
Transmission tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.05 dB
	24 GHz to 50 GHz	< 0.2 dB, typ. 0.1 dB

Effective system data of R&S®ZV-Z218

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at a R&S®ZVA, R&S®ZVB, or R&S®ZVT vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB stick. This data is valid between +18 °C and +28 °C, at a measurement bandwidth of 10 Hz, and a nominal power of –10 dBm at the calibration ports. The calibration kit is fully functional down to 0 Hz, with effective system data as specified below, although the data is only verified for frequencies as stated.

Directivity	10 MHz to 700 MHz	> 30 dB, typ. 36 dB
	700 MHz to 24 GHz	> 36 dB, typ. 42 dB
	24 GHz to 67 GHz	> 32 dB, typ. 38 dB
Source match	10 MHz to 700 MHz	> 30 dB, typ. 36 dB
	700 MHz to 24 GHz	> 36 dB, typ. 42 dB
	24 GHz to 67 GHz	> 30 dB, typ. 36 dB
Reflection tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.05 dB
	24 GHz to 67 GHz	< 0.2 dB, typ. 0.1 dB
Load match	10 MHz to 700 MHz	> 30 dB, typ. 36 dB
	700 MHz to 24 GHz	> 36 dB, typ. 42 dB
	24 GHz to 67 GHz	> 30 dB, typ. 36 dB
Transmission tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 24 GHz	< 0.1 dB, typ. 0.05 dB
	24 GHz to 67 GHz	< 0.2 dB, typ. 0.1 dB

Effective system data of R&S®ZV-Z210

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at a R&S®ZVA110 vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB stick. This data is valid between +20 °C and +26 °C, at a measurement bandwidth of 10 Hz, and a nominal power of –15 dBm at the calibration ports. The calibration kit is fully functional down to 0 Hz, with effective system data as specified below, although the data is only verified for frequencies as stated.

Directivity	10 MHz to 50 MHz	typ. 30 dB
	50 MHz to 700 MHz	> 27 dB, typ. 30 dB
	700 MHz to 24 GHz	> 32 dB, typ. 35 dB
	24 GHz to 65 GHz	> 30 dB, typ. 33 dB
	65 GHz to 75 GHz	> 27 dB, typ. 30 dB
	75 GHz to 110 GHz	> 26 dB, typ. 29 dB
Source match	10 MHz to 50 MHz	typ. 30 dB
	50 MHz to 700 MHz	> 27 dB, typ. 30 dB
	700 MHz to 24 GHz	> 32 dB, typ. 35 dB
	24 GHz to 65 GHz	> 28 dB, typ. 31 dB
	65 GHz to 75 GHz	> 25 dB, typ. 28 dB
	75 GHz to 110 GHz	> 24 dB, typ. 27 dB
Reflection tracking	10 MHz to 50 MHz	typ. 0.4 dB
	50 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 24 GHz	< 0.2 dB, typ. 0.1 dB
	24 GHz to 65 GHz	< 0.3 dB, typ. 0.2 dB
	65 GHz to 75 GHz	< 0.3 dB, typ. 0.2 dB
	75 GHz to 110 GHz	< 0.3 dB, typ. 0.2 dB
Load match	10 MHz to 50 MHz	typ. 30 dB
	50 MHz to 700 MHz	> 27 dB, typ. 30 dB
	700 MHz to 24 GHz	> 32 dB, typ. 35 dB
	24 GHz to 65 GHz	> 28 dB, typ. 31 dB
	65 GHz to 75 GHz	> 25 dB, typ. 28 dB
	75 GHz to 110 GHz	> 24 dB, typ. 27 dB
Transmission tracking	10 MHz to 50 MHz	typ. 0.5 dB
	50 MHz to 700 MHz	< 0.3 dB, typ. 0.2 dB
	700 MHz to 24 GHz	< 0.3 dB, typ. 0.2 dB
	24 GHz to 65 GHz	< 0.4 dB, typ. 0.3 dB
	65 GHz to 75 GHz	< 0.5 dB, typ. 0.4 dB
	75 GHz to 110 GHz	< 0.4 dB, typ. 0.3 dB

General data

Temperature loading	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
Calibration interval		1 year
Dimensions (W × H × D)		400 mm × 70 mm × 260 mm (15.8 in × 2.8 in × 10.2 in)
Weight	R&S®ZV-Z270	1800 g (4 lb)
	R&S®ZV-Z235	1400 g (3 lb)
	R&S®ZV-Z235E	1400 g (3 lb)
	R&S®ZV-Z229	1400 g (3 lb)
	R&S®ZV-Z224	1400 g (3 lb)
	R&S®ZV-Z218	1400 g (3 lb)
	R&S®ZV-Z210	1400 g (3 lb)
	shipping weight	4 kg (9 lb)

Ordering information

Designation	Type	Order No.
Calibration Kit, Type N, 0 Hz to 18 GHz	R&S®ZV-Z270	5011.6536.02
Calibration Kit, 3.5 mm, 0 Hz to 24 GHz	R&S®ZV-Z235	5011.6542.02
Calibration Kit, 3.5 mm, 0 Hz to 33 GHz	R&S®ZV-Z235E	5011.6707.02
Calibration Kit, 2.92 mm, 0 Hz to 40 GHz	R&S®ZV-Z229	5011.6559.02
Calibration Kit, 2.4 mm, 0 Hz to 50 GHz	R&S®ZV-Z224	5011.6565.02
Calibration Kit, 1.85 mm, 0 Hz to 67 GHz	R&S®ZV-Z218	5011.6571.02
Calibration Kit, 1.0 mm, 0 Hz to 110 GHz	R&S®ZV-Z210	5011.6588.02

Service options		
Extended Warranty, one year	R&S®WE1ZV-Z2xx	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2ZV-Z2xx	
Extended Warranty, three years	R&S®WE3ZV-Z2xx	
Extended Warranty, four years	R&S®WE4ZV-Z2xx	
Extended Warranty with Calibration Coverage, one year	R&S®CW1ZV-Z2xx	
Extended Warranty with Calibration Coverage, two years	R&S®CW2ZV-Z2xx	
Extended Warranty with Calibration Coverage, three years	R&S®CW3ZV-Z2xx	
Extended Warranty with Calibration Coverage, four years	R&S®CW4ZV-Z2xx	

Extended warranty with a term of one to four years (WE1 to WE4)
Repairs carried out during the contract term are free of charge [1]. Necessary calibration and adjustments carried out during repairs are also covered. Simply contact the forwarding agent we name; your product will be picked up free of charge and returned to you in top condition a couple of days later.

Extended warranty with calibration (CW1 to CW4)
Enhance your extended warranty by adding calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated, inspected and maintained during the term of the contract. It includes all repairs [1] and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

[1] Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.

Service you can rely on

- Worldwide
- Local and personalized
- Customized and flexible
- Uncompromising quality
- Long-term dependability

About Rohde&Schwarz

Rohde&Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde&Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment

- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

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