R&S®ZN-Z2xx | R&S®ZV-Z2xx
CALIBRATION KITS

Specifications

Data Sheet
Version 06.00

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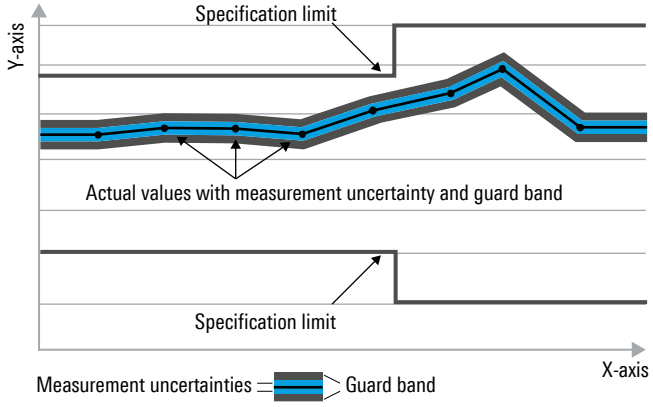
CONTENTS

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.



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/3GPP2 standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bits per second (Gbps), million bits per second (Mbps), thousand bits 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

Measurement range

Impedance		50 Ω
Frequency range	R&S®ZV-Z270	0 Hz to 18 GHz
	R&S®ZN-Z235	0 Hz to 26.5 GHz
	R&S®ZN-Z229	0 Hz to 43.5 GHz
	R&S®ZN-Z224	0 Hz to 50 GHz
	R&S®ZN-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®ZN-Z235	3.5 mm, female and male
	R&S®ZN-Z229	2.92 mm, female and male
	R&S®ZN-Z224	2.4 mm, female and male
	R&S®ZN-Z218	1.85 mm, female and male
	R&S®ZV-Z210	1.0 mm, female and male

Effective system data

The specified effective system data are established after performing a suitable system error calibration, e.g. TOSM, at an R&S®ZNA, R&S®ZVA, R&S®ZNB or R&S®ZVT vector network analyzer, using the characteristic data of the calibration kit, which are stored on a provided USB flash drive. This data is valid between +18 °C and +28 °C, at a measurement bandwidth of 10 Hz and a nominal power of 0 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 the calibration frequencies: DC; from 50 MHz to the highest frequency in the frequency range of the calibration kit in 50 MHz steps.

R&S®ZV-Z270 calibration kit

	0 Hz to 10 GHz		**10 GHz to 18 GHz**	
	spec.	**typ.**	**spec.**	**typ.**
Directivity in dB	≥ 46	48	≥ 44	45
Source match in dB	≥ 43	44	≥ 40	43
Load match in dB	≥ 45	47	≥ 43	44
Reflection tracking in dB	≤ 0.06	0.05	≤ 0.07	0.06
Transmission tracking in dB	≤ 0.02	0.01	≤ 0.03	0.02

R&S®ZN-Z235 calibration kit

	0 Hz to 10 GHz		**10 GHz to 20 GHz**		**20 GHz to 26.5 GHz**	
	spec.	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**
Directivity in dB	≥ 46	49	≥ 44	47	≥ 42	45
Source match in dB	≥ 43	46	≥ 40	43	≥ 40	43
Load match in dB	≥ 45	48	≥ 43	46	≥ 41	44
Reflection tracking in dB	≤ 0.03	0.02	≤ 0.04	0.03	≤ 0.04	0.03
Transmission tracking in dB	≤ 0.02	0.01	≤ 0.03	0.02	≤ 0.03	0.02

R&S®ZN-Z229 calibration kit

	0 Hz to 10 GHz		**10 GHz to 26.5 GHz**		**26.5 GHz to 40 GHz**		**40 GHz to 43.5 GHz**	
	spec.	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**
Directivity in dB	≥ 45	48	≥ 42	45	≥ 38	41	≥ 38	41
Source match in dB	≥ 41	44	≥ 40	43	≥ 36	39	≥ 36	39
Load match in dB	≥ 44	47	≥ 41	44	≥ 37	40	≥ 37	40
Reflection tracking in dB	≤ 0.03	0.02	≤ 0.04	0.03	≤ 0.04	0.03	≤ 0.06	0.05
Transmission tracking in dB	≤ 0.02	0.01	≤ 0.03	0.02	≤ 0.04	0.03	≤ 0.05	0.05

R&S®ZN-Z224 calibration kit

	0 Hz to 10 GHz		10 GHz to 20 GHz		20 GHz to 40 GHz		40 GHz to 50 GHz	
	spec.	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**
Directivity in dB	≥ 46	49	≥ 44	47	≥ 42	45	≥ 40	43
Source match in dB	≥ 43	46	≥ 40	43	≥ 38	41	≥ 36	39
Load match in dB	≥ 45	48	≥ 43	46	≥ 41	44	≥ 39	42
Reflection tracking in dB	≤ 0.03	0.02	≤ 0.04	0.03	≤ 0.04	0.03	≤ 0.06	0.05
Transmission tracking in dB	≤ 0.02	0.01	≤ 0.03	0.02	≤ 0.04	0.03	≤ 0.06	0.05

R&S®ZN-Z218 calibration kit

	0 Hz to 10 GHz		10 GHz to 20 GHz		20 GHz to 40 GHz		40 GHz to 50 GHz		50 GHz to 67 GHz	
	spec.	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**
Directivity in dB	≥ 46	49	≥ 44	47	≥ 42	45	≥ 39	42	≥ 37	40
Source match in dB	≥ 43	46	≥ 40	43	≥ 38	41	≥ 36	39	≥ 34	37
Load match in dB	≥ 45	48	≥ 43	46	≥ 41	44	≥ 39	42	≥ 37	40
Reflection tracking in dB	≤ 0.03	0.02	≤ 0.04	0.03	≤ 0.04	0.03	≤ 0.06	0.05	≤ 0.07	0.06
Transmission tracking in dB	≤ 0.02	0.01	≤ 0.03	0.02	≤ 0.04	0.03	≤ 0.06	0.05	≤ 0.06	0.05

R&S®ZV-Z210 calibration kit

	0 Hz to 0.7 GHz		0.7 GHz to 24 GHz		24 GHz to 65 GHz		65 GHz to 75 GHz		75 GHz to 110 GHz	
	spec.	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**	**spec.**	**typ.**
Directivity in dB	≥ 27	30	≥ 32	35	≥ 30	33	≥ 27	30	≥ 26	29
Source match in dB	≥ 27	30	≥ 32	35	≥ 28	31	≥ 25	28	≥ 24	27
Load match in dB	≥ 27	30	≥ 32	35	≥ 28	31	≥ 25	28	≥ 24	27
Reflection tracking in dB	≤ 0.2	0.1	≤ 0.2	0.1	≤ 0.3	0.2	≤ 0.3	0.2	≤ 0.3	0.2
Transmission tracking in dB	≤ 0.3	0.2	≤ 0.3	0.2	≤ 0.4	0.3	≤ 0.5	0.4	≤ 0.4	0.3

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	1.8 kg (4 lb)
	R&S®ZN-Z235	1.4 kg (3 lb)
	R&S®ZN-Z229	1.4 kg (3 lb)
	R&S®ZN-Z224	1.4 kg (3 lb)
	R&S®ZN-Z218	1.4 kg (3 lb)
	R&S®ZV-Z210	1.4 kg (3 lb)
	shipping weight (all models)	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 26.5 GHz	R&S®ZN-Z235	1336.8500.02
Calibration kit, 2.92 mm, 0 Hz to 43.5 GHz	R&S®ZN-Z229	1336.7004.02
Calibration kit, 2.4 mm, 0 Hz to 50 GHz	R&S®ZN-Z224	1339.5002.02
Calibration kit, 1.85 mm, 0 Hz to 67 GHz	R&S®ZN-Z218	1337.3502.02
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®WE1	Please contact your local Rohde & Schwarz sales office.
Extended warranty, two years	R&S®WE2	
Extended warranty, three years	R&S®WE3	
Extended warranty, four years	R&S®WE4	
Extended warranty with calibration coverage, one year	R&S®CW1	
Extended warranty with calibration coverage, two years	R&S®CW2	
Extended warranty with calibration coverage, three years	R&S®CW3	
Extended warranty with calibration coverage, four years	R&S®CW4	
Extended warranty with accredited calibration coverage, one year	R&S®AW1	
Extended warranty with accredited calibration coverage, two years	R&S®AW2	
Extended warranty with accredited calibration coverage, three years	R&S®AW3	
Extended warranty with accredited calibration coverage, four years	R&S®AW4	

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.

Extended warranty with accredited calibration (AW1 to AW4)
Enhance your extended warranty by adding accredited calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated under accreditation, inspected and maintained during the term of the contract. It includes all repairs [1] and accredited calibration at the recommended intervals as well as any accredited 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 that adds value

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

Rohde&Schwarz

The Rohde&Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test and measurement, technology systems, and networks and cybersecurity. Founded more than 85 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

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Sustainable product design

- ► Environmental compatibility and eco-footprint
- ► Energy efficiency and low emissions
- ► Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

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R&S®ZN-Z2xx | R&S®ZV-Z2xx Calibration Kits
Data without tolerance limits is not binding | Subject to change

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