



Kalibrierschein / Calibration certificate



Deutsche
Akkreditierungsstelle
D-K-15070-01-00

erstellt durch das Kalibrierlaboratorium
issued by the calibration laboratory

Testo Industrial Services GmbH
Gewerbestr. 3
79199 Kirchzarten

Kalibrierzeichen
Calibration mark

MUSTER
D-K- 15070-01-00
2023-05

Gegenstand <i>Object</i>	Network Analyzer
Hersteller <i>Manufacturer</i>	Rohde & Schwarz
Typ <i>Type</i>	ZVL13
Fabrikat/Serien-Nr. <i>Serial no.</i>	12345
Equipment Nr. <i>Equipment no.</i>	12345678
Prüfmittel Nr. <i>Test equipment no.</i>	1234567
Auftraggeber <i>Customer</i>	Mustermann GmbH DE-12345 Musterhausen
Auftragsnummer <i>Order no.</i>	654321
Datum der Kalibrierung <i>Date of calibration</i>	25.05.2023
Datum der Rekalibrierung <i>Date of re-calibration</i>	25.05.2024
Konformitätsaussage <i>Conformity</i>	pass

Dieser Kalibrierschein dokumentiert die metrologische Rückführbarkeit auf das Internationale Einheitensystem (SI). Die DAkkS ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Die Messergebnisse beziehen sich nur auf den kalibrierten Gegenstand. Das Laboratorium gibt keine Empfehlung über das Kalibrierintervall. Für die Festlegung und Einhaltung von Fristen zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the metrological traceability to the International System of Units (SI). The DAkkS is signatory to the multilateral agreements of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates. The measurement results refer only to the calibration object. The laboratory does not make any recommendation about the calibration interval. The user is obliged to have the object recalibrated at appropriate intervals.

Weitere Informationen auf Seite 15
Further information see page 15

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V 7.06 / DE

Datum der Ausstellung
Date of issue

Leiter des Kalibrierlaboratoriums
Head of the calibration laboratory

Freigabe des Kalibrierscheins durch
Approval of the certificate of calibration by

16.06.2023

Max Mustermann

Martina Musterfrau

Kalibrierschein vom Calibration certificate dated 16.06.2023

Kalibriergegenstand (KG) Calibration object

Gegenstand Object Network Analyzer

Inventar Nr. Inventory no. 123456

Standort Location ---

Kalibrierverfahren Calibration procedure

Die Kalibrierung erfolgt nach Herstelleranweisung
 The calibration is performed according to the manufacturer's procedure

Verwendete Kalibrierprozedur Used calibration procedure E:R&S:ZVL:TISSD:NWA:VISA / Rev.: 1.8

Umgebungsbedingungen Ambient conditions

Temperatur Temperature (23 ± 1) °C
 Relative Luftfeuchte Relative humidity (20...70) %

Messeinrichtungen Measuring equipment

Referenz Reference	Rückführung Traceability	Rekal. Next cal.	Zertifikats Nr. Certificate-no.	Eq.-Nr. EQ-no.
Step Attenuator 11 dB HP 8494H	15070-01-01	2023-10	E218054	10956396
Signal Generator E8257D	GPS locked	---	Support device	10971083
Type N Calibration Kit 85032F	15070-01-01	2023-12	E183919	11103245
ATTENUATOR/SWITCH DRIVER 11713A	GPS locked	---	Support device	11105439
Frequenznormal 910R	GPS locked	---	Support device	11846061
Power Meter E4417A	15070-01-01	2023-11	E220883	12433694
Power Sensor E9304A_H18	15070-01-00	2024-03	E233373	12451924
Signal and Spectrum Analyser RSFSV30-M7	15070-01-01	2024-01	E228450	13479490
Step Attenuator 110 dB 8496H	15070-01-01	2023-10	E177668	14133103

Referenzzertifikate sind auf www.primasonline.com abrufbar Reference certificates are available at www.primasonline.com

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Bezugswert Reference value	Messbedingung Measuring condition	Messwert KG Measured value UUT	Abweichung deviation	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
Device Identification						
Manufacturer:----->Rohde&Schwarz						
Model:----->ZVL-13						
Softwarerevision:----->3.32						
Serialnummer----->1303.6509K13/100930						
<hr/>						
Selbsttest Self Test						
--> passed						
<hr/>						
Frequency Accuracy						
Deviation from 13.6 GHz						
-164.90Hz	1GHz	0.0Hz	164.900Hz	±13600Hz	1% pass	136 Hz
<hr/>						
Output Power Accuracy and Flatness (Port 1)						
10 MHz						
-10.597dBm		-10.00dBm	0.60dB	±1.3dB	--- pass	0.40 dB
20 MHz						
-10.029dBm		-10.00dBm	0.03dB	±1.3dB	--- pass	0.40 dB
50 MHz						
-10.034dBm		-10.00dBm	0.03dB	±1.3dB	--- pass	0.40 dB
100 MHz						
-9.969dBm		-10.00dBm	-0.03dB	±1.3dB	--- pass	0.40 dB
200 MHz						
-9.973dBm		-10.00dBm	-0.03dB	±1.3dB	--- pass	0.40 dB
500 MHz						
-10.104dBm		-10.00dBm	0.10dB	±1.3dB	--- pass	0.40 dB
1 GHz						
-10.126dBm		-10.00dBm	0.13dB	±1.3dB	--- pass	0.40 dB

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2 GHz						
-10.238 dBm		-10.00 dBm	0.24 dB	±1.3 dB	--- pass	0.40 dB
3 GHz						
-10.168 dBm		-10.00 dBm	0.17 dB	±1.3 dB	--- pass	0.40 dB
4 GHz						
-10.363 dBm		-10.00 dBm	0.36 dB	±1.3 dB	--- pass	0.40 dB
5 GHz						
-10.297 dBm		-10.00 dBm	0.30 dB	±1.3 dB	--- pass	0.40 dB
6 GHz						
-10.332 dBm		-10.00 dBm	0.33 dB	±1.3 dB	--- pass	0.40 dB
7 GHz						
-10.474 dBm		-10.00 dBm	0.47 dB	±1.3 dB	--- pass	0.40 dB
8 GHz						
-10.188 dBm		-10.00 dBm	0.19 dB	±1.3 dB	--- pass	0.40 dB
9 GHz						
-10.199 dBm		-10.00 dBm	0.20 dB	±1.3 dB	--- pass	0.40 dB
10 GHz						
-10.223 dBm		-10.00 dBm	0.22 dB	±1.3 dB	--- pass	0.40 dB
11 GHz						
-10.048 dBm		-10.00 dBm	0.05 dB	±1.3 dB	--- pass	0.40 dB
12 GHz						
-10.332 dBm		-10.00 dBm	0.33 dB	±1.3 dB	--- pass	0.40 dB
13 GHz						
-9.977 dBm		-10.00 dBm	-0.02 dB	±1.3 dB	--- pass	0.40 dB
13.599 GHz						
-10.111 dBm		-10.00 dBm	0.11 dB	±1.3 dB	--- pass	0.40 dB
<hr/>						
Output Power Accuracy and Flatness (Port 2)						
10 MHz						

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Bezugswert Reference value	Messbedingung Measuring condition	Messwert KG Measured value UUT	Abweichung deviation	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
-10.262dBm		-10.00dBm	0.26dB	±1.3dB	--- pass	0.40 dB
20 MHz						
-9.921dBm		-10.00dBm	-0.08dB	±1.3dB	--- pass	0.40 dB
50 MHz						
-9.912dBm		-10.00dBm	-0.09dB	±1.3dB	--- pass	0.40 dB
100 MHz						
-9.898dBm		-10.00dBm	-0.10dB	±1.3dB	--- pass	0.40 dB
200 MHz						
-9.861dBm		-10.00dBm	-0.14dB	±1.3dB	--- pass	0.40 dB
500 MHz						
-10.036dBm		-10.00dBm	0.04dB	±1.3dB	--- pass	0.40 dB
1 GHz						
-10.093dBm		-10.00dBm	0.09dB	±1.3dB	--- pass	0.40 dB
2 GHz						
-10.212dBm		-10.00dBm	0.21dB	±1.3dB	--- pass	0.40 dB
3 GHz						
-10.132dBm		-10.00dBm	0.13dB	±1.3dB	--- pass	0.40 dB
4 GHz						
-10.312dBm		-10.00dBm	0.31dB	±1.3dB	--- pass	0.40 dB
5 GHz						
-10.247dBm		-10.00dBm	0.25dB	±1.3dB	--- pass	0.40 dB
6 GHz						
-10.156dBm		-10.00dBm	0.16dB	±1.3dB	--- pass	0.40 dB
7 GHz						
-10.461dBm		-10.00dBm	0.46dB	±1.3dB	--- pass	0.40 dB
8 GHz						
-10.156dBm		-10.00dBm	0.16dB	±1.3dB	--- pass	0.40 dB
9 GHz						
-10.200dBm		-10.00dBm	0.20dB	±1.3dB	--- pass	0.40 dB
10 GHz						

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-10.183dBm		-10.00dBm	0.18dB	±1.3dB	--- pass	0.40 dB
11 GHz						
-10.371dBm		-10.00dBm	0.37dB	±1.3dB	--- pass	0.40 dB
12 GHz						
-10.435dBm		-10.00dBm	0.44dB	±1.3dB	--- pass	0.40 dB
13 GHz						
-10.308dBm		-10.00dBm	0.31dB	±1.3dB	--- pass	0.40 dB
13.599 GHz						
-9.829dBm		-10.00dBm	-0.17dB	±1.3dB	--- pass	0.40 dB
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Output Power Linearity (Port 1) referenced to -10 dBm						
50 MHz						
-35 dBm						
-24.828dB	50 MHz	-25.00dB	-0.17dB	±0.8dB	--- pass	0.26 dB
-30 dBm						
-19.952dB	50 MHz	-20.00dB	-0.05dB	±0.8dB	--- pass	0.26 dB
-25 dBm						
-14.992dB	50 MHz	-15.00dB	-0.01dB	±0.8dB	--- pass	0.26 dB
-20 dBm						
-10.020dB	50 MHz	-10.00dB	0.02dB	±0.8dB	--- pass	0.26 dB
-15 dBm						
-5.001dB	50 MHz	-5.00dB	0.00dB	±0.8dB	--- pass	0.26 dB
-9 dBm						
1.045dB	50 MHz	1.00dB	-0.04dB	±0.8dB	--- pass	0.26 dB
-8 dBm						
2.056dB	50 MHz	2.00dB	-0.06dB	±0.8dB	--- pass	0.26 dB
-7 dBm						
3.149dB	50 MHz	3.00dB	-0.15dB	±0.8dB	--- pass	0.26 dB
-6 dBm						
3.992dB	50 MHz	4.00dB	0.008dB	±0.8dB	--- pass	0.044 dB
-5 dBm						
4.924dB	50 MHz	5.00dB	0.076dB	±0.8dB	--- pass	0.044 dB
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Output Power Linearity (Port 1) referenced to -10 dBm						

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300 MHz						
-35 dBm						
-24.904 dB	300 MHz	-25.00 dB	-0.10 dB	±0.8 dB	--- pass	0.26 dB
-30 dBm						
-20.030 dB	300 MHz	-20.00 dB	0.03 dB	±0.8 dB	--- pass	0.26 dB
-25 dBm						
-15.035 dB	300 MHz	-15.00 dB	0.04 dB	±0.8 dB	--- pass	0.26 dB
-20 dBm						
-10.037 dB	300 MHz	-10.00 dB	0.04 dB	±0.8 dB	--- pass	0.26 dB
-15 dBm						
-5.038 dB	300 MHz	-5.00 dB	0.04 dB	±0.8 dB	--- pass	0.26 dB
-9 dBm						
1.030 dB	300 MHz	1.00 dB	-0.03 dB	±0.8 dB	--- pass	0.26 dB
-8 dBm						
2.044 dB	300 MHz	2.00 dB	-0.04 dB	±0.8 dB	--- pass	0.26 dB
-7 dBm						
3.097 dB	300 MHz	3.00 dB	-0.10 dB	±0.8 dB	--- pass	0.26 dB
-6 dBm						
3.955 dB	300 MHz	4.00 dB	0.045 dB	±0.8 dB	--- pass	0.066 dB
-5 dBm						
4.897 dB	300 MHz	5.00 dB	0.103 dB	±0.8 dB	--- pass	0.066 dB
Output Power Linearity (Port 1) referenced to -10 dBm						
1 GHz						
-35 dBm						
-24.950 dB	1000 MHz	-25.00 dB	-0.05 dB	±0.8 dB	--- pass	0.26 dB
-30 dBm						
-20.037 dB	1000 MHz	-20.00 dB	0.04 dB	±0.8 dB	--- pass	0.26 dB
-25 dBm						
-15.080 dB	1000 MHz	-15.00 dB	0.08 dB	±0.8 dB	--- pass	0.26 dB
-20 dBm						
-10.065 dB	1000 MHz	-10.00 dB	0.06 dB	±0.8 dB	--- pass	0.26 dB
-15 dBm						
-5.050 dB	1000 MHz	-5.00 dB	0.05 dB	±0.8 dB	--- pass	0.26 dB
-9 dBm						
0.986 dB	1000 MHz	1.00 dB	0.01 dB	±0.8 dB	--- pass	0.26 dB
-8 dBm						
1.993 dB	1000 MHz	2.00 dB	0.01 dB	±0.8 dB	--- pass	0.26 dB
-7 dBm						
3.039 dB	1000 MHz	3.00 dB	-0.04 dB	±0.8 dB	--- pass	0.26 dB

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-6 dBm						
3.984 dB	1000 MHz	4.00 dB	0.016 dB	±0.8 dB	--- pass	0.066 dB
-5 dBm						
4.875 dB	1000 MHz	5.00 dB	0.125 dB	±0.8 dB	--- pass	0.066 dB
<hr/>						
Output Power Linearity (Port 1) referenced to -10 dBm						
6 GHz						
-35 dBm						
-24.918 dB	6000 MHz	-25.00 dB	-0.08 dB	±0.8 dB	--- pass	0.40 dB
-30 dBm						
-20.006 dB	6000 MHz	-20.00 dB	0.01 dB	±0.8 dB	--- pass	0.40 dB
-25 dBm						
-15.028 dB	6000 MHz	-15.00 dB	0.03 dB	±0.8 dB	--- pass	0.40 dB
-20 dBm						
-10.040 dB	6000 MHz	-10.00 dB	0.04 dB	±0.8 dB	--- pass	0.40 dB
-15 dBm						
-4.980 dB	6000 MHz	-5.00 dB	-0.02 dB	±0.8 dB	--- pass	0.40 dB
-9 dBm						
1.086 dB	6000 MHz	1.00 dB	-0.09 dB	±0.8 dB	--- pass	0.40 dB
-8 dBm						
2.124 dB	6000 MHz	2.00 dB	-0.12 dB	±0.8 dB	--- pass	0.40 dB
-7 dBm						
3.042 dB	6000 MHz	3.00 dB	-0.04 dB	±0.8 dB	--- pass	0.40 dB
-6 dBm						
4.085 dB	6000 MHz	4.00 dB	-0.085 dB	±0.8 dB	--- pass	0.066 dB
-5 dBm						
4.917 dB	6000 MHz	5.00 dB	0.083 dB	±0.8 dB	--- pass	0.066 dB
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Output Power Linearity (Port 1) referenced to -10 dBm						
13.6 GHz						
-35 dBm						
-24.891 dB	13600 MHz	-25.00 dB	-0.11 dB	±0.8 dB	--- pass	0.40 dB
-30 dBm						
-19.925 dB	13600 MHz	-20.00 dB	-0.08 dB	±0.8 dB	--- pass	0.40 dB
-25 dBm						
-14.964 dB	13600 MHz	-15.00 dB	-0.04 dB	±0.8 dB	--- pass	0.40 dB
-20 dBm						

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-10.019dB -15 dBm	13600 MHz	-10.00dB	0.02dB	±0.8dB	--- pass	0.40 dB
-5.089dB -9 dBm	13600 MHz	-5.00dB	0.09dB	±0.8dB	--- pass	0.40 dB
0.988dB -8 dBm	13600 MHz	1.00dB	0.01dB	±0.8dB	--- pass	0.40 dB
2.014dB -7 dBm	13600 MHz	2.00dB	-0.01dB	±0.8dB	--- pass	0.40 dB
2.972dB -6 dBm	13600 MHz	3.00dB	0.03dB	±0.8dB	--- pass	0.40 dB
4.050dB -5 dBm	13600 MHz	4.00dB	-0.050dB	±0.8dB	--- pass	0.088 dB
4.871dB	13600 MHz	5.00dB	0.129dB	±0.8dB	--- pass	0.088 dB
Trace Noise						
Trace Noise S21, 10 MHz TOL = <0.005 dB, U = N/A						
Trace Noise = 0.0048 dB rms						pass
Trace Noise S21, 100 MHz TOL = <0.005 dB, U = N/A						
Trace Noise = 0.0017 dB rms						pass
Trace Noise S21, 1 GHz TOL = <0.005 dB, U = N/A						
Trace Noise = 0.0015 dB rms						pass
Trace Noise S21, 6 GHz TOL = <0.005 dB, U = N/A						
Trace Noise = 0.0021 dB rms						pass
Trace Noise S21, 13.6 GHz TOL = <0.005 dB, U = N/A						
Trace Noise = 0.0032 dB rms						pass
Dynamic Range						
10 Hz IF Bandwidth						
Port 1						
nominal value < -75 dB						
-200.00dB	10kHz	-82.6dB	117.4dB	±125dB	--- pass	1.0 dB
nominal value < -90 dB						
-200.00dB	300kHz	-104.9dB	95.1dB	±110dB	--- pass	1.0 dB
-200.00dB	1MHz	-109.8dB	90.2dB	±110dB	--- pass	1.0 dB
-200.00dB	3MHz	-109.5dB	90.5dB	±110dB	--- pass	1.0 dB
-200.00dB	10MHz	-98.2dB	101.8dB	±110dB	--- pass	1.0 dB
nominal value < -90 dB						
-200.00dB	21MHz	-99.5dB	100.5dB	±110dB	--- pass	1.0 dB
-200.00dB	100MHz	-106.2dB	93.8dB	±110dB	--- pass	1.0 dB
-200.00dB	500MHz	-99.0dB	101.0dB	±110dB	--- pass	1.0 dB
-200.00dB	1GHz	-101.0dB	99.0dB	±110dB	--- pass	1.0 dB
-200.00dB	1.5GHz	-98.0dB	102.0dB	±110dB	--- pass	1.0 dB
-200.00dB	2GHz	-102.7dB	97.3dB	±110dB	--- pass	1.0 dB

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-200.00 dB	3GHz	-99.9 dB	100.1 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	4GHz	-102.6 dB	97.4 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	5GHz	-106.3 dB	93.7 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	6GHz	-107.3 dB	92.7 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	8GHz	-105.6 dB	94.4 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	10GHz	-101.6 dB	98.4 dB	±110 dB	--- pass	1.0 dB
nominal value < -90 dB						
-200.00 dB	12GHz	-97.9 dB	102.1 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	13.6GHz	-93.1 dB	106.9 dB	±110 dB	--- pass	1.0 dB
Port 2						
-200.00 dB	10kHz	-79.4 dB	120.6 dB	±125 dB	--- pass	1.0 dB
nominal value < -90 dB						
-200.00 dB	300kHz	-103.1 dB	96.9 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	1MHz	-109.4 dB	90.6 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	3MHz	-109.0 dB	91.0 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	10MHz	-96.4 dB	103.6 dB	±110 dB	--- pass	1.0 dB
nominal value < -90 dB						
-200.00 dB	21MHz	-98.5 dB	101.5 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	100MHz	-107.5 dB	92.5 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	500MHz	-98.7 dB	101.3 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	1GHz	-99.6 dB	100.4 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	1.5GHz	-97.5 dB	102.5 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	2GHz	-102.0 dB	98.0 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	3GHz	-98.5 dB	101.5 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	4GHz	-100.9 dB	99.1 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	5GHz	-105.5 dB	94.5 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	6GHz	-106.3 dB	93.7 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	8GHz	-104.8 dB	95.2 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	10GHz	-104.4 dB	95.6 dB	±110 dB	--- pass	1.0 dB
nominal value < -90 dB						
-200.00 dB	12GHz	-96.7 dB	103.3 dB	±110 dB	--- pass	1.0 dB
-200.00 dB	13.6GHz	-90.7 dB	109.3 dB	±110 dB	--- pass	1.0 dB
Dynamic Accuracy (S21)						
-10.025 dB	50 MHz	-9.90 dB	0.125 dB	±0.2 dB	--- pass	0.070 dB
-10.023 dB	100 MHz	-9.94 dB	0.083 dB	±0.2 dB	--- pass	0.070 dB
-10.019 dB	500 MHz	-9.95 dB	0.069 dB	±0.2 dB	--- pass	0.070 dB
-10.022 dB	1000 MHz	-9.97 dB	0.052 dB	±0.2 dB	--- pass	0.070 dB
-10.011 dB	2000 MHz	-10.16 dB	-0.149 dB	±0.2 dB	--- pass	0.070 dB
-10.028 dB	3000 MHz	-10.02 dB	0.008 dB	±0.2 dB	--- pass	0.070 dB
-10.035 dB	4000 MHz	-10.15 dB	-0.115 dB	±0.2 dB	--- pass	0.070 dB
-10.041 dB	5000 MHz	-9.98 dB	0.061 dB	±0.2 dB	--- pass	0.070 dB
-10.049 dB	6000 MHz	-9.99 dB	0.059 dB	±0.2 dB	--- pass	0.070 dB
-10.033 dB	7000 MHz	-10.05 dB	-0.017 dB	±0.2 dB	--- pass	0.070 dB
-10.035 dB	8000 MHz	-10.02 dB	0.015 dB	±0.2 dB	--- pass	0.070 dB
-10.077 dB	9000 MHz	-10.05 dB	0.027 dB	±0.2 dB	--- pass	0.070 dB
-10.048 dB	10000 MHz	-10.03 dB	0.018 dB	±0.2 dB	--- pass	0.070 dB
-10.057 dB	11000 MHz	-10.13 dB	-0.073 dB	±0.2 dB	--- pass	0.070 dB

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Bezugswert Reference value	Messbedingung Measuring condition	Messwert KG Measured value UUT	Abweichung deviation	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
-10.082 dB	12000 MHz	-10.05 dB	0.032 dB	±0.2 dB	--- pass	0.070 dB
-10.089 dB	13000 MHz	-10.25 dB	-0.161 dB	±0.2 dB	--- pass	0.070 dB
-20.034 dB	50 MHz	-19.89 dB	0.144 dB	±0.2 dB	--- pass	0.070 dB
-20.023 dB	100 MHz	-19.93 dB	0.093 dB	±0.2 dB	--- pass	0.070 dB
-20.025 dB	500 MHz	-19.95 dB	0.075 dB	±0.2 dB	--- pass	0.070 dB
-20.037 dB	1000 MHz	-19.98 dB	0.057 dB	±0.2 dB	--- pass	0.070 dB
-20.025 dB	2000 MHz	-20.14 dB	-0.115 dB	±0.2 dB	--- pass	0.070 dB
-20.034 dB	3000 MHz	-20.01 dB	0.024 dB	±0.2 dB	--- pass	0.070 dB
-20.053 dB	4000 MHz	-20.09 dB	-0.037 dB	±0.2 dB	--- pass	0.070 dB
-20.059 dB	5000 MHz	-19.96 dB	0.099 dB	±0.2 dB	--- pass	0.070 dB
-20.052 dB	6000 MHz	-19.98 dB	0.072 dB	±0.2 dB	--- pass	0.070 dB
-20.065 dB	7000 MHz	-19.92 dB	0.145 dB	±0.2 dB	--- pass	0.070 dB
-20.046 dB	8000 MHz	-20.00 dB	0.046 dB	±0.2 dB	--- pass	0.070 dB
-20.020 dB	9000 MHz	-20.00 dB	0.020 dB	±0.2 dB	--- pass	0.070 dB
-20.059 dB	10000 MHz	-20.09 dB	-0.031 dB	±0.2 dB	--- pass	0.070 dB
-20.092 dB	11000 MHz	-20.22 dB	-0.128 dB	±0.2 dB	--- pass	0.070 dB
-20.086 dB	12000 MHz	-20.11 dB	-0.024 dB	±0.2 dB	--- pass	0.070 dB
-20.129 dB	13000 MHz	-20.19 dB	-0.061 dB	±0.2 dB	--- pass	0.070 dB
-30.059 dB	50 MHz	-29.91 dB	0.149 dB	±0.2 dB	--- pass	0.070 dB
-30.054 dB	100 MHz	-29.96 dB	0.094 dB	±0.2 dB	--- pass	0.070 dB
-30.040 dB	500 MHz	-29.97 dB	0.070 dB	±0.2 dB	--- pass	0.070 dB
-30.044 dB	1000 MHz	-30.00 dB	0.044 dB	±0.2 dB	--- pass	0.070 dB
-30.036 dB	2000 MHz	-30.16 dB	-0.124 dB	±0.2 dB	--- pass	0.070 dB
-30.055 dB	3000 MHz	-30.05 dB	0.005 dB	±0.2 dB	--- pass	0.070 dB
-30.061 dB	4000 MHz	-30.13 dB	-0.069 dB	±0.2 dB	--- pass	0.070 dB
-30.079 dB	5000 MHz	-30.00 dB	0.079 dB	±0.2 dB	--- pass	0.070 dB
-30.086 dB	6000 MHz	-30.04 dB	0.046 dB	±0.2 dB	--- pass	0.070 dB
-30.083 dB	7000 MHz	-29.96 dB	0.123 dB	±0.2 dB	--- pass	0.070 dB
-30.078 dB	8000 MHz	-30.03 dB	0.048 dB	±0.2 dB	--- pass	0.070 dB
-30.109 dB	9000 MHz	-30.09 dB	0.019 dB	±0.2 dB	--- pass	0.070 dB
-30.111 dB	10000 MHz	-30.16 dB	-0.049 dB	±0.2 dB	--- pass	0.070 dB
-30.146 dB	11000 MHz	-30.30 dB	-0.154 dB	±0.2 dB	--- pass	0.070 dB
-30.170 dB	12000 MHz	-30.20 dB	-0.030 dB	±0.2 dB	--- pass	0.070 dB
-30.168 dB	13000 MHz	-30.24 dB	-0.072 dB	±0.2 dB	--- pass	0.070 dB
-40.145 dB	50 MHz	-40.01 dB	0.135 dB	±0.2 dB	--- pass	0.070 dB
-40.143 dB	100 MHz	-40.06 dB	0.083 dB	±0.2 dB	--- pass	0.070 dB
-40.124 dB	500 MHz	-40.03 dB	0.094 dB	±0.2 dB	--- pass	0.070 dB
-40.124 dB	1000 MHz	-40.06 dB	0.064 dB	±0.2 dB	--- pass	0.070 dB
-40.108 dB	2000 MHz	-40.30 dB	-0.192 dB	±0.2 dB	--- pass	0.070 dB
-40.111 dB	3000 MHz	-40.12 dB	-0.009 dB	±0.2 dB	--- pass	0.070 dB
-40.115 dB	4000 MHz	-40.17 dB	-0.055 dB	±0.2 dB	--- pass	0.070 dB
-40.137 dB	5000 MHz	-40.06 dB	0.077 dB	±0.2 dB	--- pass	0.070 dB
-40.171 dB	6000 MHz	-40.14 dB	0.031 dB	±0.2 dB	--- pass	0.070 dB
-40.203 dB	7000 MHz	-40.26 dB	-0.057 dB	±0.2 dB	--- pass	0.070 dB
-40.273 dB	8000 MHz	-40.22 dB	0.053 dB	±0.2 dB	--- pass	0.070 dB
-40.265 dB	9000 MHz	-40.26 dB	0.005 dB	±0.2 dB	--- pass	0.070 dB
-40.270 dB	10000 MHz	-40.35 dB	-0.080 dB	±0.2 dB	--- pass	0.070 dB
-40.280 dB	11000 MHz	-40.42 dB	-0.140 dB	±0.2 dB	--- pass	0.070 dB
-40.232 dB	12000 MHz	-40.28 dB	-0.048 dB	±0.2 dB	--- pass	0.070 dB
-40.201 dB	13000 MHz	-40.25 dB	-0.049 dB	±0.2 dB	--- pass	0.070 dB

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Bezugswert Reference value	Messbedingung Measuring condition	Messwert KG Measured value UUT	Abweichung deviation	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
-50.174 dB	50 MHz	-50.05 dB	0.124 dB	±0.3 dB	--- pass	0.070 dB
-50.164 dB	100 MHz	-50.10 dB	0.064 dB	±0.3 dB	--- pass	0.070 dB
-50.144 dB	500 MHz	-50.03 dB	0.114 dB	±0.3 dB	--- pass	0.070 dB
-50.143 dB	1000 MHz	-50.05 dB	0.093 dB	±0.3 dB	--- pass	0.070 dB
-50.121 dB	2000 MHz	-50.33 dB	-0.209 dB	±0.3 dB	--- pass	0.070 dB
-50.140 dB	3000 MHz	-50.15 dB	-0.010 dB	±0.3 dB	--- pass	0.070 dB
-50.146 dB	4000 MHz	-50.22 dB	-0.074 dB	±0.3 dB	--- pass	0.070 dB
-50.176 dB	5000 MHz	-50.08 dB	0.096 dB	±0.3 dB	--- pass	0.070 dB
-50.216 dB	6000 MHz	-50.19 dB	0.026 dB	±0.3 dB	--- pass	0.070 dB
-50.229 dB	7000 MHz	-50.30 dB	-0.071 dB	±0.3 dB	--- pass	0.070 dB
-50.297 dB	8000 MHz	-50.24 dB	0.057 dB	±0.3 dB	--- pass	0.070 dB
-50.344 dB	9000 MHz	-50.36 dB	-0.016 dB	±0.3 dB	--- pass	0.070 dB
-50.324 dB	10000 MHz	-50.42 dB	-0.096 dB	±0.3 dB	--- pass	0.070 dB
-50.321 dB	11000 MHz	-50.47 dB	-0.149 dB	±0.3 dB	--- pass	0.070 dB
-50.320 dB	12000 MHz	-50.38 dB	-0.060 dB	±0.3 dB	--- pass	0.070 dB
-50.265 dB	13000 MHz	-50.32 dB	-0.055 dB	±0.3 dB	--- pass	0.070 dB
-60.172 dB	50 MHz	-60.07 dB	0.102 dB	±0.3 dB	--- pass	0.070 dB
-60.170 dB	100 MHz	-60.11 dB	0.060 dB	±0.3 dB	--- pass	0.070 dB
-60.150 dB	500 MHz	-60.04 dB	0.110 dB	±0.3 dB	--- pass	0.070 dB
-60.148 dB	1000 MHz	-60.07 dB	0.078 dB	±0.3 dB	--- pass	0.070 dB
-60.138 dB	2000 MHz	-60.28 dB	-0.142 dB	±0.3 dB	--- pass	0.070 dB
-60.140 dB	3000 MHz	-60.15 dB	-0.010 dB	±0.3 dB	--- pass	0.070 dB
-60.149 dB	4000 MHz	-60.24 dB	-0.091 dB	±0.3 dB	--- pass	0.070 dB
-60.179 dB	5000 MHz	-60.05 dB	0.129 dB	±0.3 dB	--- pass	0.070 dB
-60.207 dB	6000 MHz	-60.18 dB	0.027 dB	±0.3 dB	--- pass	0.070 dB
-60.247 dB	7000 MHz	-60.15 dB	0.097 dB	±0.3 dB	--- pass	0.070 dB
-60.300 dB	8000 MHz	-60.25 dB	0.050 dB	±0.3 dB	--- pass	0.070 dB
-60.316 dB	9000 MHz	-60.32 dB	-0.004 dB	±0.3 dB	--- pass	0.070 dB
-60.343 dB	10000 MHz	-60.39 dB	-0.047 dB	±0.3 dB	--- pass	0.070 dB
-60.356 dB	11000 MHz	-60.54 dB	-0.184 dB	±0.3 dB	--- pass	0.070 dB
-60.320 dB	12000 MHz	-60.41 dB	-0.090 dB	±0.3 dB	--- pass	0.070 dB
-60.299 dB	13000 MHz	-60.38 dB	-0.081 dB	±0.3 dB	--- pass	0.070 dB
Dynamic Accuracy (S12)						
-10.025 dB	50 MHz	-9.90 dB	0.125 dB	±0.2 dB	--- pass	0.070 dB
-10.023 dB	100 MHz	-9.94 dB	0.083 dB	±0.2 dB	--- pass	0.070 dB
-10.019 dB	500 MHz	-9.92 dB	0.099 dB	±0.2 dB	--- pass	0.070 dB
-10.022 dB	1000 MHz	-9.96 dB	0.062 dB	±0.2 dB	--- pass	0.070 dB
-10.011 dB	2000 MHz	-9.99 dB	0.021 dB	±0.2 dB	--- pass	0.070 dB
-10.028 dB	3000 MHz	-10.01 dB	0.018 dB	±0.2 dB	--- pass	0.070 dB
-10.035 dB	4000 MHz	-9.95 dB	0.085 dB	±0.2 dB	--- pass	0.070 dB
-10.041 dB	5000 MHz	-9.94 dB	0.101 dB	±0.2 dB	--- pass	0.070 dB
-10.049 dB	6000 MHz	-9.99 dB	0.059 dB	±0.2 dB	--- pass	0.070 dB
-10.033 dB	7000 MHz	-9.97 dB	0.063 dB	±0.2 dB	--- pass	0.070 dB
-10.035 dB	8000 MHz	-10.01 dB	0.025 dB	±0.2 dB	--- pass	0.070 dB
-10.077 dB	9000 MHz	-10.04 dB	0.037 dB	±0.2 dB	--- pass	0.070 dB
-10.048 dB	10000 MHz	-10.01 dB	0.038 dB	±0.2 dB	--- pass	0.070 dB
-10.057 dB	11000 MHz	-10.10 dB	-0.043 dB	±0.2 dB	--- pass	0.070 dB
-10.082 dB	12000 MHz	-10.08 dB	0.002 dB	±0.2 dB	--- pass	0.070 dB
-10.089 dB	13000 MHz	-10.07 dB	0.019 dB	±0.2 dB	--- pass	0.070 dB
-20.034 dB	50 MHz	-19.88 dB	0.154 dB	±0.2 dB	--- pass	0.070 dB

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Bezugswert Reference value	Messbedingung Measuring condition	Messwert KG Measured value UUT	Abweichung deviation	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
-20.023 dB	100 MHz	-19.93 dB	0.093 dB	±0.2 dB	--- pass	0.070 dB
-20.025 dB	500 MHz	-19.92 dB	0.105 dB	±0.2 dB	--- pass	0.070 dB
-20.037 dB	1000 MHz	-19.92 dB	0.117 dB	±0.2 dB	--- pass	0.070 dB
-20.025 dB	2000 MHz	-19.97 dB	0.055 dB	±0.2 dB	--- pass	0.070 dB
-20.034 dB	3000 MHz	-20.01 dB	0.024 dB	±0.2 dB	--- pass	0.070 dB
-20.053 dB	4000 MHz	-20.06 dB	-0.007 dB	±0.2 dB	--- pass	0.070 dB
-20.059 dB	5000 MHz	-19.92 dB	0.139 dB	±0.2 dB	--- pass	0.070 dB
-20.052 dB	6000 MHz	-19.98 dB	0.072 dB	±0.2 dB	--- pass	0.070 dB
-20.065 dB	7000 MHz	-19.96 dB	0.105 dB	±0.2 dB	--- pass	0.070 dB
-20.046 dB	8000 MHz	-19.98 dB	0.066 dB	±0.2 dB	--- pass	0.070 dB
-20.020 dB	9000 MHz	-19.99 dB	0.030 dB	±0.2 dB	--- pass	0.070 dB
-20.059 dB	10000 MHz	-20.03 dB	0.029 dB	±0.2 dB	--- pass	0.070 dB
-20.092 dB	11000 MHz	-20.09 dB	0.002 dB	±0.2 dB	--- pass	0.070 dB
-20.086 dB	12000 MHz	-20.06 dB	0.026 dB	±0.2 dB	--- pass	0.070 dB
-20.129 dB	13000 MHz	-20.06 dB	0.069 dB	±0.2 dB	--- pass	0.070 dB
-30.059 dB	50 MHz	-29.92 dB	0.139 dB	±0.2 dB	--- pass	0.070 dB
-30.054 dB	100 MHz	-29.96 dB	0.094 dB	±0.2 dB	--- pass	0.070 dB
-30.040 dB	500 MHz	-29.93 dB	0.110 dB	±0.2 dB	--- pass	0.070 dB
-30.044 dB	1000 MHz	-29.97 dB	0.074 dB	±0.2 dB	--- pass	0.070 dB
-30.036 dB	2000 MHz	-30.03 dB	0.006 dB	±0.2 dB	--- pass	0.070 dB
-30.055 dB	3000 MHz	-30.05 dB	0.005 dB	±0.2 dB	--- pass	0.070 dB
-30.061 dB	4000 MHz	-30.00 dB	0.061 dB	±0.2 dB	--- pass	0.070 dB
-30.079 dB	5000 MHz	-29.96 dB	0.119 dB	±0.2 dB	--- pass	0.070 dB
-30.086 dB	6000 MHz	-30.03 dB	0.056 dB	±0.2 dB	--- pass	0.070 dB
-30.083 dB	7000 MHz	-30.00 dB	0.083 dB	±0.2 dB	--- pass	0.070 dB
-30.078 dB	8000 MHz	-30.02 dB	0.058 dB	±0.2 dB	--- pass	0.070 dB
-30.109 dB	9000 MHz	-30.08 dB	0.029 dB	±0.2 dB	--- pass	0.070 dB
-30.111 dB	10000 MHz	-30.07 dB	0.041 dB	±0.2 dB	--- pass	0.070 dB
-30.146 dB	11000 MHz	-30.20 dB	-0.054 dB	±0.2 dB	--- pass	0.070 dB
-30.170 dB	12000 MHz	-30.16 dB	0.010 dB	±0.2 dB	--- pass	0.070 dB
-30.168 dB	13000 MHz	-30.14 dB	0.028 dB	±0.2 dB	--- pass	0.070 dB
-40.145 dB	50 MHz	-40.01 dB	0.135 dB	±0.2 dB	--- pass	0.070 dB
-40.143 dB	100 MHz	-40.06 dB	0.083 dB	±0.2 dB	--- pass	0.070 dB
-40.124 dB	500 MHz	-40.01 dB	0.114 dB	±0.2 dB	--- pass	0.070 dB
-40.124 dB	1000 MHz	-40.01 dB	0.114 dB	±0.2 dB	--- pass	0.070 dB
-40.108 dB	2000 MHz	-40.10 dB	0.008 dB	±0.2 dB	--- pass	0.070 dB
-40.111 dB	3000 MHz	-40.12 dB	-0.009 dB	±0.2 dB	--- pass	0.070 dB
-40.115 dB	4000 MHz	-40.10 dB	0.015 dB	±0.2 dB	--- pass	0.070 dB
-40.137 dB	5000 MHz	-40.02 dB	0.117 dB	±0.2 dB	--- pass	0.070 dB
-40.171 dB	6000 MHz	-40.13 dB	0.041 dB	±0.2 dB	--- pass	0.070 dB
-40.203 dB	7000 MHz	-40.11 dB	0.093 dB	±0.2 dB	--- pass	0.070 dB
-40.273 dB	8000 MHz	-40.20 dB	0.073 dB	±0.2 dB	--- pass	0.070 dB
-40.265 dB	9000 MHz	-40.25 dB	0.015 dB	±0.2 dB	--- pass	0.070 dB
-40.270 dB	10000 MHz	-40.24 dB	0.030 dB	±0.2 dB	--- pass	0.070 dB
-40.280 dB	11000 MHz	-40.27 dB	0.010 dB	±0.2 dB	--- pass	0.070 dB
-40.232 dB	12000 MHz	-40.24 dB	-0.008 dB	±0.2 dB	--- pass	0.070 dB
-40.201 dB	13000 MHz	-40.13 dB	0.071 dB	±0.2 dB	--- pass	0.070 dB
-50.174 dB	50 MHz	-50.05 dB	0.124 dB	±0.3 dB	--- pass	0.070 dB
-50.164 dB	100 MHz	-50.09 dB	0.074 dB	±0.3 dB	--- pass	0.070 dB
-50.144 dB	500 MHz	-50.00 dB	0.144 dB	±0.3 dB	--- pass	0.070 dB
-50.143 dB	1000 MHz	-50.06 dB	0.083 dB	±0.3 dB	--- pass	0.070 dB
-50.121 dB	2000 MHz	-50.13 dB	-0.009 dB	±0.3 dB	--- pass	0.070 dB

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Bezugswert Reference value	Messbedingung Measuring condition	Messwert KG Measured value UUT	Abweichung deviation	Zulässige Abweichung Allowed deviation	Ausnutzung der zul. Abw. in % Utilization of Allowed deviation %	Messunsicher- heit ($k=2$) Measuring uncertainty ($k=2$)
-50.140dB	3000 MHz	-50.17 dB	-0.030dB	±0.3dB	--- pass	0.070 dB
-50.146dB	4000 MHz	-50.09dB	0.056dB	±0.3dB	--- pass	0.070 dB
-50.176dB	5000 MHz	-50.04dB	0.136dB	±0.3dB	--- pass	0.070 dB
-50.216dB	6000 MHz	-50.19dB	0.026dB	±0.3dB	--- pass	0.070 dB
-50.229dB	7000 MHz	-50.19dB	0.039dB	±0.3dB	--- pass	0.070 dB
-50.297dB	8000 MHz	-50.23dB	0.067dB	±0.3dB	--- pass	0.070 dB
-50.344dB	9000 MHz	-50.34dB	0.004dB	±0.3dB	--- pass	0.070 dB
-50.324dB	10000 MHz	-50.30dB	0.024dB	±0.3dB	--- pass	0.070 dB
-50.321dB	11000 MHz	-50.38dB	-0.059dB	±0.3dB	--- pass	0.070 dB
-50.320dB	12000 MHz	-50.35dB	-0.030dB	±0.3dB	--- pass	0.070 dB
-50.265dB	13000 MHz	-50.22dB	0.045dB	±0.3dB	--- pass	0.070 dB
-60.172dB	50 MHz	-60.08dB	0.092dB	±0.3dB	--- pass	0.070 dB
-60.170dB	100 MHz	-60.10dB	0.070dB	±0.3dB	--- pass	0.070 dB
-60.150dB	500 MHz	-60.01dB	0.140dB	±0.3dB	--- pass	0.070 dB
-60.148dB	1000 MHz	-60.02dB	0.128dB	±0.3dB	--- pass	0.070 dB
-60.138dB	2000 MHz	-60.11dB	0.028dB	±0.3dB	--- pass	0.070 dB
-60.140dB	3000 MHz	-60.13dB	0.010dB	±0.3dB	--- pass	0.070 dB
-60.149dB	4000 MHz	-60.12dB	0.029dB	±0.3dB	--- pass	0.070 dB
-60.179dB	5000 MHz	-60.04dB	0.139dB	±0.3dB	--- pass	0.070 dB
-60.207dB	6000 MHz	-60.18dB	0.027dB	±0.3dB	--- pass	0.070 dB
-60.247dB	7000 MHz	-60.16dB	0.087dB	±0.3dB	--- pass	0.070 dB
-60.300dB	8000 MHz	-60.23dB	0.070dB	±0.3dB	--- pass	0.070 dB
-60.316dB	9000 MHz	-60.36dB	-0.044dB	±0.3dB	--- pass	0.070 dB
-60.343dB	10000 MHz	-60.31dB	0.033dB	±0.3dB	--- pass	0.070 dB
-60.356dB	11000 MHz	-60.37dB	-0.014dB	±0.3dB	--- pass	0.070 dB
-60.320dB	12000 MHz	-60.31dB	0.010dB	±0.3dB	--- pass	0.070 dB
-60.299dB	13000 MHz	-60.29dB	0.009dB	±0.3dB	--- pass	0.070 dB

Messunsicherheit Measuring uncertainty

Angegeben ist die erweiterte Messunsicherheit, die sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor $k = 2$ ergibt. Sie wurde gemäß EA-4/02 M: 2022 ermittelt. Der Wert der Messgröße liegt mit einer Wahrscheinlichkeit von etwa 95 % im zugeordneten Werteintervall. Ein Anteil für die Langzeit-Instabilität ist nicht enthalten. Die dimensionslosen Anteile der Messunsicherheit sind als relative Messunsicherheiten bezogen auf den Messwert zu verstehen.

The expanded uncertainty of measurement corresponding to the measurement results is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$. This was determined in accordance with EA-4/02 M: 2022. Usually the true value is located in the corresponding interval with a probability of approximately 95%. The non-dimensional fractions of the measuring uncertainty are relative values in relation to the indicated value.

Bemerkungen Special remarks

Auf Kundenwunsch wurde bei der Dynamic Range nur bis minimal -90dB gemessen.

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Bewertung der Konformität Determination of conformity

Gesamtkonformität: Overall conformity:

Alle Messergebnisse liegen innerhalb der zulässigen Abweichung

All measurement results are within the allowed deviation

1) Die Konformitätsaussage erfolgt gemäß der Entscheidungsregel 'Vertrauensniveau 50' mit einer Konformitätswahrscheinlichkeit größer 50%. Zulässige Abweichung gemäß Herstellerangabe.

1) The statement of conformity is made according to the decision rule 'confidence level 50' with a probability of conformity greater than 50%. Allowed deviation in accordance with manufacturer.

Die Einhaltung der Spezifikation wird im Kalibrierzertifikat wie folgt angezeigt:

The compliance to specification is represented on the calibration certificate as follows:

Zeichenerklärung zum Diagramm:
 ◆ blau = Normal (4Eck; μ N normiert)
 ● grün = Kalibriergegenst. (Kreis; μ (KG) normiert)
 | rot = \pm Zulässige Abweichung (normiert auf $\pm 100\%$)
 H schwarz = erw. Messunsicherheit für $k=2$ (normiert)

Messwert und Messunsicherheit innerhalb der zulässigen Abweichung Measured value and measurement uncertainty within specification	pass	
Messwert innerhalb und Messunsicherheit außerhalb der zulässigen Abweichung. Measured value within and measurement uncertainty outside the specification.	pass	
Messwert außerhalb und Messunsicherheit teilweise innerhalb der zulässigen Abweichung Measured value outside and measurement uncertainty partly within the specification.	fail	
Messwert und Messunsicherheit außerhalb der zulässigen Abweichung Measured value and measurement uncertainty outside specification.	fail	

Ausnutzung der zulässigen Abweichung in % = $|Abweichung| / Zulässige\ Abweichung$

Utilization of allowed deviation % = $|deviation| / allowed\ deviation$

Die Angabe der Toleranzausnutzung in % ist bei logarithmischen Einheiten nicht sinnvoll und wird mit "---" entwertet.

The indication of the tolerance utilization in % is not applicable for logarithmic units and is invalidated with "---".

The German original text is valid in case of doubt.

- Ende des Kalibrierscheins -
 - End of the calibration certificate. -