



Kalibrier-Zertifikat Calibration Certificate

MUSTER

Gegenstand
Object Scopemeter

Hersteller
Manufacturer FLUKE DEUTSCHLAND GmbH

Typ
Type description 190-502

Serien Nr.
Serial no. 12345

Inventar Nr.
Inventory no. ---

Prüfmittel Nr.
Test equipment no. ---

Equipment Nr.
Equipment no. 12345678

Standort
Location ---

Auftraggeber
Customer Mustermann GmbH
DE-12345 Musterhausen

Auftrags Nr.
Order no. 654321

Datum der Kalibrierung
Date of calibration 13.12.2016

Datum der empfohlenen Rekalibrierung
Date of the recommended re-calibration 13.12.2017

Konformitätsaussage Conformity

- Messwert(e) innerhalb der zulässigen Abweichung¹⁾. Measured value(s) within the allowed deviation¹⁾.
- Messwert(e) außerhalb der zulässigen Abweichung¹⁾. Measured value(s) beyond the allowed deviation¹⁾.

¹⁾ Die Messunsicherheit wurde nach GUM mit dem Erweiterungsfaktor $k=2$ berechnet und enthält die Unsicherheit des Verfahrens sowie die Unsicherheit des Prüflings. Die Konformitätsaussage erfolgte nach DIN EN ISO 14253-1 gemäß der Kalibrieranweisung QSA - TIS 7.5-02.

¹⁾ The measurement uncertainty was calculated according to the regulations of GUM with the coverage factor $k=2$ and contains the uncertainty of the measuring procedure and the uncertainty of the measuring system. The statement of conformity was made according to DIN EN ISO 14253-1 according to calibration instruction QSA - TIS 7.5-02.

Dieser Kalibrierschein darf nur vollständig weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine ohne Unterschrift und Stempel haben keine Gültigkeit.

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V 4.52 / DE

Stempel Seal



Fachverantwortlicher Supervisor

Max Mustermann

Max Mustermann

Bearbeiter Technician

Martina Musterfrau

Martina Musterfrau



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Messeinrichtung Measuring equipment

Referenz Reference	Rückführung Traceability	Rekal. Next cal.	Zertifikat-Nr. Certificate-no.	EQ-Nr. EQ-no.
Kalibrator FLUKE DEUTSCHLAND GmbH 5520A-SC600	15070-01-01 2016-07	2017-07	E39440	10322973
Generator Agilent Technologies (M)Sdn Bh 33220A	15070-01-01 2015-12	2016-12	E35038	12469350

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

Umgebungsbedingungen Ambient conditions

Temperatur Temperature (23 ± 3) °C
Relative Luftfeuchte Relative Humidity (40 ± 20) %

Messverfahren Measuring procedure

Die Kalibrierung erfolgt nach Kalibrieranweisung QSA - TIS 7.5-67 - in Abstimmung nach VDI/VDE/DGQ/DKD 2622
The calibration is performed according to the QSA - TIS 7.5-67 procedure- in accordance with VDI/VDE/DGQ/DKD 2622

Prüfprozedur Procedure E:Fluke:190-502:5520,33220 / Rev.:1.2

Messergebnisse Measuring results

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Besondere Bemerkungen Special remarks



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Bereich Range	Referenzwert (Normal) Reference value	Messbedingung Measuring condition	Angezeigter Wert UUT Indicated value UUT	zulässige Abweichung allowed deviation	Ausnutzung der zul. Abw. in % Utilization of allowed dev. in %	Messunsicherheit (k=2) Measuring uncertainty (k=2)
Eingangswiderstand Input resistance						
Input A						
	0.9965 MOhm		1.000 MOhm	±0.01 MOhm	35% pass	967 · 10 ⁻⁶
Input B						
	0.9979 MOhm		1.000 MOhm	±0.01 MOhm	21% pass	967 · 10 ⁻⁶
Vertikalablenkung Vertical deflection						
Input A						
16 mV	12.00 mV	2 mV/Div	12.7 mV	±1.3 mV	54% pass	7.5 · 10 ⁻³
40 mV	30.00 mV	5 mV/Div	30.7 mV	±1.83 mV	38% pass	4.2 · 10 ⁻³
80 mV	60.0 mV	10 mV/Div	61 mV	±3.6 mV	27% pass	10 · 10 ⁻³
160 mV	120.0 mV	20 mV/Div	123 mV	±7.3 mV	41% pass	5.5 · 10 ⁻³
400 mV	300.0 mV	50 mV/Div	308 mV	±18.3 mV	44% pass	3.2 · 10 ⁻³
800 mV	600.0 mV	0.1 V/Div	610 mV	±12.6 mV	79% pass	2.7 · 10 ⁻³
1.6 V	1.20 V	0.2 V/Div	1.2 V	±0.07 V	27% pass	48 · 10 ⁻³
4 V	3.000 V	0.5 V/Div	3.10 V	±0.183 V	55% pass	3.1 · 10 ⁻³
8 V	6.00 V	1 V/Div	6.1 V	±0.36 V	27% pass	10 · 10 ⁻³
16 V	12.00 V	2 V/Div	12.3 V	±0.73 V	41% pass	5.4 · 10 ⁻³
40 V	30.00 V	5 V/Div	30.6 V	±1.83 V	33% pass	3.1 · 10 ⁻³
80 V	60.0 V	10 V/Div	61 V	±3.6 V	27% pass	10 · 10 ⁻³
160 V	120.0 V	20 V/Div	122 V	±7.3 V	27% pass	5.4 · 10 ⁻³
400 V	120.0 V	50 V/Div	125 V	±7.3 V	68% pass	5.4 · 10 ⁻³
800 kV	0.120 kV	100 V/Div	0.13 kV	±0.012 kV	80% pass	48 · 10 ⁻³
Input B						
16 mV	12.00 mV	2 mV/Div	12.7 mV	±1.3 mV	54% pass	7.5 · 10 ⁻³
40 mV	30.00 mV	5 mV/Div	30.8 mV	±1.83 mV	44% pass	4.2 · 10 ⁻³
80 mV	60.0 mV	10 mV/Div	61 mV	±3.6 mV	27% pass	10 · 10 ⁻³
160 mV	120.0 mV	20 mV/Div	121 mV	±7.3 mV	14% pass	5.5 · 10 ⁻³
400 mV	300.0 mV	50 mV/Div	302 mV	±18.3 mV	11% pass	3.2 · 10 ⁻³
800 mV	600.0 mV	0.1 V/Div	605 mV	±12.6 mV	40% pass	2.7 · 10 ⁻³
1.6 V	1.20 V	0.2 V/Div	1.2 V	±0.07 V	14% pass	48 · 10 ⁻³
4 V	3.000 V	0.5 V/Div	3.02 V	±0.183 V	11% pass	3.1 · 10 ⁻³
8 V	6.00 V	1 V/Div	6.1 V	±0.36 V	27% pass	10 · 10 ⁻³
16 V	12.00 V	2 V/Div	12.1 V	±0.73 V	14% pass	5.4 · 10 ⁻³
40 V	30.00 V	5 V/Div	30.1 V	±1.83 V	5% pass	3.1 · 10 ⁻³
80 V	60.0 V	10 V/Div	60 V	±3.6 V	0% pass	10 · 10 ⁻³
160 V	120.0 V	20 V/Div	121 V	±7.3 V	14% pass	5.4 · 10 ⁻³
400 V	120.0 V	50 V/Div	120 V	±7.3 V	0% pass	5.4 · 10 ⁻³



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800 kV	0.120 kV	100 V/Div	0.12 kV	±0.012 kV	0% pass	48 · 10 ⁻³
Messfunktion measurement function Type PK2PK Messbedingung measured condition Coupling DC POS = -3 ; OFFS = 0 ; t = 400µs ; f = 1kHz 2 mV/Div -> 5 mV/Div: (BW Limit f = 20 MHz) 10 mV/Div -> 5 V/Div: (BW Full f = 500 MHz) Averaging = 64 Horizontalablenkung Horizontal deflection Funktionstest Function test Input A						
1 µs	1.000 µs		1.00 µs	±0.02 µs	0% pass	5.9 · 10 ⁻³
Messbedingung measured condition Coupling DC Averaging = 64 Zeitbasis Timebase						
	10.0000000 MHz		10.000000 MHz	±0.001 MHz	0% pass	1.0 · 10 ⁻⁶
Messverfahren measuring procedure Unterabtastung Undersampling Messbedingung measured condition t= 20ms Anstiegszeit Risetime Input A						
0.6ns <= 0.7ns	MU = 30*E-3				pass	
Input B						
0.5ns <= 0.7ns	MU = 30*E-3				pass	



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Funktionstest Function test						
Triggerflanke @ Input A 20 MHz						
	"Signal auf +/- Flanke triggerbar"					pass
	"Probe Calibration"					pass
Meter Funktion						
Gleichspannung DC voltage						
500 mV	0.0 mV		0 mV	±5 mV	0%	pass 577 µV
500 mV	450.0 mV		450 mV	±11.7 mV	3%	pass 1.3 · 10 ⁻³
5 V	0.450 V		0.45 V	±0.056 V	0%	pass 13 · 10 ⁻³
5 V	4.500 V		4.50 V	±0.117 V	1%	pass 1.3 · 10 ⁻³
50 V	-45.00 V		-45.0 V	±1.17 V	1%	pass 1.3 · 10 ⁻³
50 V	-4.50 V		-4.5 V	±0.56 V	0%	pass 13 · 10 ⁻³
50 V	4.50 V		4.5 V	±0.56 V	0%	pass 13 · 10 ⁻³
50 V	25.00 V		25.0 V	±0.87 V	0%	pass 2.3 · 10 ⁻³
50 V	45.00 V		45.0 V	±1.17 V	3%	pass 1.3 · 10 ⁻³
300 V	60.0 V		60 V	±5.9 V	1%	pass 9.6 · 10 ⁻³
300 V	300.0 V		300 V	±9.5 V	1%	pass 1.9 · 10 ⁻³
Wechselspannung AC voltage						
500 mV	50.0 mV	50 Hz	50 mV	±10.7 mV	0%	pass 12 · 10 ⁻³
500 mV	450.0 mV	50 Hz	450 mV	±14.5 mV	0%	pass 1.3 · 10 ⁻³
500 mV	450.0 mV	500 Hz	450 mV	±14.5 mV	0%	pass 1.3 · 10 ⁻³
500 mV	450.0 mV	1 kHz	450 mV	±26.2 mV	1%	pass 1.3 · 10 ⁻³
5 V	4.500 V	50 Hz	4.50 V	±0.167 V	0%	pass 1.3 · 10 ⁻³
5 V	4.500 V	500 Hz	4.50 V	±0.167 V	3%	pass 1.3 · 10 ⁻³
5 V	4.500 V	1 kHz	4.49 V	±0.262 V	4%	pass 1.3 · 10 ⁻³
50 V	5.00 V	50 Hz	5.0 V	±1.07 V	0%	pass 12 · 10 ⁻³
50 V	5.00 V	500 Hz	5.0 V	±1.07 V	1%	pass 12 · 10 ⁻³
50 V	5.00 V	1 kHz	5.0 V	±1.62 V	1%	pass 12 · 10 ⁻³
50 V	25.00 V	50 Hz	25.0 V	±1.37 V	0%	pass 2.3 · 10 ⁻³
50 V	25.00 V	500 Hz	25.0 V	±1.37 V	1%	pass 2.3 · 10 ⁻³
50 V	25.00 V	1 kHz	24.9 V	±2.12 V	3%	pass 2.3 · 10 ⁻³
50 V	45.00 V	50 Hz	45.0 V	±1.67 V	1%	pass 1.3 · 10 ⁻³
50 V	45.00 V	500 Hz	45.0 V	±1.67 V	3%	pass 1.3 · 10 ⁻³
50 V	45.00 V	1 kHz	44.9 V	±2.62 V	3%	pass 1.3 · 10 ⁻³
300 V	250.000 V	50 Hz	250.10 V	±13.75 V	1%	pass 400 · 10 ⁻⁶
300 V	250.000 V	500 Hz	249.80 V	±13.75 V	1%	pass 400 · 10 ⁻⁶
300 V	250.000 V	1 kHz	249.50 V	±21.25 V	2%	pass 400 · 10 ⁻⁶



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zulässige Abweichung gemäß Herstellerangabe
allowed deviation in accordance with manufacturer

Die dimensionslosen Anteile der Messunsicherheit U sind als relative Messunsicherheiten e bezogen auf den Messwert zu verstehen (U = e * MW).

The non-dimensional fractions of the measuring uncertainty U are relative values e in relation to the indicated value (U = e * i.v.).