

## Agilent Kalibrierung Zertifikat Nr. 1-5520744915-1

**Hersteller:** Agilent Technologies Inc  
**Modell Nr.:** MSO9404A  
**Seriennummer:** MY49150216

**Auftraggeber**

European X-Ray Free-Electron Laser Facility GmbH  
Albert-Einstein-Ring 19  
22761 HAMBURG  
Germany

**Bezeichnung:** Infiniium MSO - 4 GHz, 10/20 GSa/s,  
4+16 Ch

**Installierte Optionen:****Auftraggeber ID-Nr.:****Kalibrierort:**

Agilent Technologies  
Sales & Serv. GmbH & Co. KG  
Herrenberger Strasse 130, Geb 4  
D-71034 Boeblingen  
Germany

**Prozedur Nr.:** STE-50114527-A.04.04  
**Kalibrierdatum:** 9 Nov 2013  
**Temperatur:** (23±5) °C

**Auftragsnummer:**  
**Rel.Luftfeuchte:** (50±30) %RH

Dieses Kalibrierzertifikat dokumentiert die ISO/IEC 17025:2005 konforme Kalibrierung des Kalibriergegenstandes für die Parameter und an den Testpunkten, die in der entsprechenden Agilent Technologies Kalibrierprozedur für diesen Kalibriergegenstand festgelegt sind. Unser Qualitätsmanagementsystem ist nach ISO 9001:2008 zertifiziert.

**Zustand bei Anlieferung:**

Bei der Eingangsprüfung wurden FEHLFUNKTIONEN des Kalibriergegenstandes festgestellt. Ein vollständiger Kalibrierdatensatz konnte nicht erstellt werden.

**Zustand bei Versand:**

Eine Justage und/oder eine Reparatur wurden durchgeführt. Bei Abschluss der Kalibrierung waren die Messpunkte des Kalibriergegenstandes INNERHALB DER SPEZIFIKATION.

**Besondere Bemerkungen:**

Die im Messprotokoll genannten Toleranzgrenzen entsprechen den publizierten Spezifikationen des Kalibriergegenstandes an den jeweiligen Messpunkten.



Edgar Leckel - European Operations Manager

**Agilent Kalibrierung**  
**Zertifikat Nr. 1-5520744915-1**

## Informationen zur Rückführbarkeit

**Techniker ID Nummer:** 00125947

Die Messungen sind durch nationale Metrologieinstitute (z.B. NPL, PTB, NIST, NMIJ, etc.), die Unterzeichner des CIPM-MRAs (Mutual Recognition Arrangement - Gegenseitiges Anerkennungsabkommen) sind, auf SI-Einheiten (Internationales Einheitensystem SI) rückgeführt.

Weitere Dokumente bezüglich Rückführbarkeit der Messeinrichtungen stehen zur Verfügung und können nach vorheriger Absprache eingesehen werden.

Dieses Kalibrierzertifikat darf nur vollständig und unverändert weitergegeben werden.

## Verwendete Messeinrichtungen

Modell Nummer	Modell Bezeichnung	ID Nummer	Fälligkeits Datum	Zertifikat Nummer
11667B	Power splitter, DC to 26.5 GHz, 3.5 mm female connectors	DE2044	21 Sep 2014	1-4654634092-1
3325B	Synthesizer/Function Generator	DE125	17 Jun 2014	1-5169269123-1
3458A	Digital multimeter, 8.5 digit	DE2518	12 Jun 2014	1-5169269654-1
5700A	AC DC Calibrator	DE3090	30 Nov 2013	1-4691371046-1
E4413A	CW Power Sensor, 50 MHz to 26.5 GHz, -70 to +20 dBm	DE3142	11 Aug 2014	1-4993551462-1
E4419B	Power meter - EPM series, dual channel	DE3130	23 Jan 2015	1-4950351426-1
E8257D	PSG Analog Signal Generator	DE3006	29 Dez 2013	1-4004449151-1

## Rückführbarkeitstabelle

	Modell	Modell Bezeichnung	ID Nummer	Zertifikat Nummer	Parameter
W	11667B	Power splitter, DC to 26.5 GHz, 3.5 mm female connectors	DE2044	1-4654634092-1	
R	85052C	Precision mechanical calibration kit, DC to 26.5 GHz, 3.5 mm	DE2434	1-4331659746-1-A2LA:2079.01	Reflection Coefficient Transmission Coefficient
W	3325B	Synthesizer/Function Generator	DE125	1-5169269123-1	
R	3458A	Digital multimeter, 8.5 digit	DE982	1-4820117396-1-UKAS:C 0147	DC Voltage
R	910R	GPS Controlled Frequency STD	UK15765	1-4686537543-1-UKAS:C 0147	Frequency
W	3458A	Digital multimeter, 8.5 digit	DE2518	1-5169269654-1	
R	3458A	Digital multimeter, 8.5 digit	DE1980	1-5125979217-1-UKAS:C 0147	DC Voltage Resistance
W,R	5700A	AC DC CALIBRATOR	DE3090	1-4691371046-1-RVA:K013	DC Voltage Resistance
W	E4413A	CW Power Sensor, 50 MHz to 26.5 GHz, -70 to +20 dBm	DE3142	1-4993551462-1	
R	8485A	Power Sensor, 50 MHz to 26.5 GHz, -30 to +20 dBm	DE2246	1-4817051744-1- ACCLASS:AC-1498	RF Power
W	E4419B	Power meter - EPM series, dual channel	DE3130	1-4950351426-1	
R	478A	Coaxial thermistor mount	DE2420	1-3566121182-1-UKAS:C 0147	RF Power

# Kalibrierzertifikat

## Agilent Kalibrierung Zertifikat Nr. 1-5520744915-1

	Modell	Modell Bezeichnung	ID Nummer	Zertifikat Nummer	Parameter
W	E8257D	PSG Analog Signal Generator	DE3006	1-4004449151-1	
R	5065A	FREQUENCY STANDARD	DE648	1-2552526447-1-UKAS:C 0147	Frequency
R	8902A	8902A MEASUREMENT RECEIVER	DE1733	1-3669885834-1-UKAS:C 0147	RF Power

**Legende:**

**W - Working standard/Arbeitsnormal.** Das Normal, das gewöhnlich zur Kalibrierung oder Überprüfung von Messgeräten oder Messsystemen verwendet wird.

**R - Reference standard/Bezugsnormal.** Das Normal, mit der höchsten an einem betrachteten Ort verfügbaren Genauigkeit, von dem an diesem Ort vorgenommene Messungen abgeleitet werden.

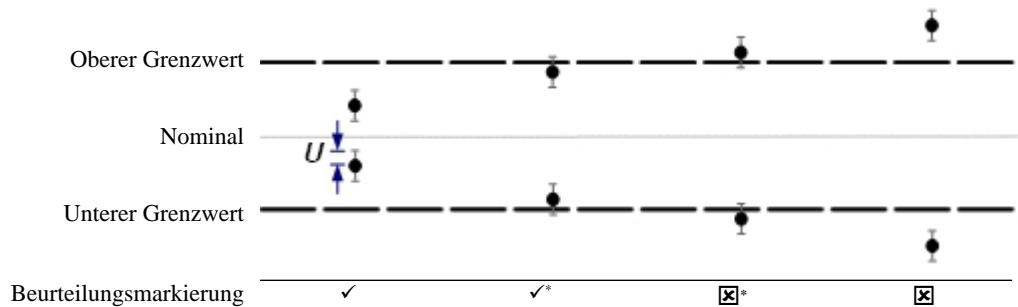
## Agilent Kalibrierung Zertifikat Nr. 1-5520744915-1

### Einhaltung von Spezifikationen

Bei der Beurteilung von Messwerten bezüglich der Einhaltung von Spezifikationen wurde die Messunsicherheit berücksichtigt. Falls die Messunsicherheit der Messwerte die Spezifikationsgrenzen (oberer und unterer Grenzwert) überlappt, ist es nicht möglich eine Aussage über Einhaltung bzw. Nichteinhaltung basierend auf einer Wahrscheinlichkeit von 95% zu treffen. Aussagen über Einhaltung/ Nichteinhaltung sind jedoch möglich, falls eine kleinere Wahrscheinlichkeit als 95% akzeptiert wird.

Die Einhaltung der Spezifikationen und die Abnahmekriterien werden folgendermassen angezeigt:

- ✓ - Einhaltung der Spezifikation.
- ✓\* - Einhaltung der Spezifikation, falls ein geringeres Konfidenzniveau akzeptabel ist.
- ☒\* - Nicht Einhaltung der Spezifikation, falls ein geringeres Konfidenzniveau akzeptabel ist.
- ☒ - Nichteinhaltung der Spezifikation.



Für diese Kalibrierung sind die Fälle zur Beurteilung von Messwerten bezüglich der Einhaltung von Spezifikationen im obigen Schaubild dargestellt. Dabei stellen die Linien (U) des Messwertes die Messunsicherheit unterhalb und oberhalb des jeweiligen Messpunktes dar.

### Zustand bei Anlieferung/Zustand bei Versand

Die folgende Seite enthält eine Zusammenfassung aller durchgeführten Tests bei Anlieferung ("As Received", d.h. vor Justage / Reparatur) und bei Versand ("As Completed", d.h. nach Justage / Reparatur). Die Einhaltung von typischen d.h. nicht garantierten Spezifikationen hat keinen Einfluss auf den Zustand bei Anlieferung und Versand.

Die Beurteilung der Zustände bezieht sich nur auf den Kalibriergegenstand. Eine endgültige Beurteilung, ob die Kalibrierergebnisse die Anforderungen des Benutzers erfüllen, kann nur durch diesen erfolgen.

### Messunsicherheit

Die Messunsicherheitsbewertung wurde in Übereinstimmung mit ISO/IEC Guide 98 ausgeführt. Die im Bericht angegebene erweiterte Messunsicherheit ergibt sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor  $k=2$  (für eine Normalverteilung) oder  $k=1.65$  (für eine Gleichverteilung), korrespondierend mit einer Wahrscheinlichkeit von 95%. Ist dies nicht erfüllt, werden der Erweiterungsfaktor ( $k$ ), der effektive Freiheitsgrad ( $\nu_{\text{eff}}$ ) und die Überdeckungswahrscheinlichkeit ( $p$ ) angegeben.

Angegebene Messunsicherheiten beziehen sich nur auf den gemessenen Wert und lassen keine Schlüsse auf die Langzeitstabilität des Kalibriergegenstandes zu.

Agilent Kalibrierung  
Zertifikat Nr. 1-5520744915-1

## Performance Test Results Summary

<u>Test Name</u>	<u>As Completed Status</u>
IMPEDANCE TEST	PASSED
ZERO ERROR TEST - 50 OHM	PASSED
ZERO ERROR TEST - 1 MOHM	PASSED
OFFSET ACCURACY TEST - 50 OHM	PASSED
OFFSET ACCURACY TEST - 1 MOHM	PASSED
DC GAIN TEST - 50 OHM	PASSED
DC GAIN TEST - 1 MOHM	PASSED
ANALOG BANDWIDTH	PASSED
TIME SCALE ACCURACY	PASSED

## IMPEDANCE TEST

## PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
<b>Channel 1 - 50 OHM</b>					
Range 5 mV/Div	48.75 Ohm	49.74 Ohm	51.25 Ohm	0.44 Ohm	✓
Range 10 mV/Div	48.75 Ohm	49.78 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 20 mV/Div	48.75 Ohm	49.84 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 50 mV/Div	48.75 Ohm	49.68 Ohm	51.25 Ohm	0.26 Ohm	✓
Range 100 mV/Div	48.75 Ohm	49.95 Ohm	51.25 Ohm	0.25 Ohm	✓
Range 200 mV/Div	48.75 Ohm	49.85 Ohm	51.25 Ohm	0.29 Ohm	✓
Range 500 mV/Div	48.75 Ohm	50.17 Ohm	51.25 Ohm	0.25 Ohm	✓
Range 1 V/Div	48.75 Ohm	50.11 Ohm	51.25 Ohm	0.24 Ohm	✓
<b>Channel 1 - 1 MOHM</b>					
Range 5 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0030 MOhm	✓
Range 10 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0012 MOhm	✓
Range 20 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.57 kOhm	✓
Range 50 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 100 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 200 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 500 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0023 MOhm	✓
Range 1 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 2 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 5 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.57 kOhm	✓
<b>Channel 2 - 50 OHM</b>					
Range 5 mV/Div	48.75 Ohm	49.52 Ohm	51.25 Ohm	0.44 Ohm	✓
Range 10 mV/Div	48.75 Ohm	49.58 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 20 mV/Div	48.75 Ohm	49.62 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 50 mV/Div	48.75 Ohm	50.24 Ohm	51.25 Ohm	0.26 Ohm	✓
Range 100 mV/Div	48.75 Ohm	49.69 Ohm	51.25 Ohm	0.25 Ohm	✓
Range 200 mV/Div	48.75 Ohm	49.54 Ohm	51.25 Ohm	0.29 Ohm	✓
Range 500 mV/Div	48.75 Ohm	49.89 Ohm	51.25 Ohm	0.25 Ohm	✓
Range 1 V/Div	48.75 Ohm	49.86 Ohm	51.25 Ohm	0.24 Ohm	✓
<b>Channel 2 - 1 MOHM</b>					
Range 5 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0030 MOhm	✓
Range 10 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0012 MOhm	✓
Range 20 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.57 kOhm	✓
Range 50 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 100 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 200 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 500 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0023 MOhm	✓
Range 1 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 2 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 5 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.57 kOhm	✓
<b>Channel 3 - 50 OHM</b>					
Range 5 mV/Div	48.75 Ohm	49.72 Ohm	51.25 Ohm	0.44 Ohm	✓
Range 10 mV/Div	48.75 Ohm	49.80 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 20 mV/Div	48.75 Ohm	49.81 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 50 mV/Div	48.75 Ohm	50.34 Ohm	51.25 Ohm	0.26 Ohm	✓
Range 100 mV/Div	48.75 Ohm	49.77 Ohm	51.25 Ohm	0.25 Ohm	✓
Range 200 mV/Div	48.75 Ohm	49.64 Ohm	51.25 Ohm	0.29 Ohm	✓
Range 500 mV/Div	48.75 Ohm	49.98 Ohm	51.25 Ohm	0.25 Ohm	✓

## IMPEDANCE TEST (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Range 1 V/Div	48.75 Ohm	49.94 Ohm	51.25 Ohm	0.24 Ohm	✓

### Channel 3 - 1 MOHM

Range 5 mV/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.0030 MOhm	✓
Range 10 mV/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.0012 MOhm	✓
Range 20 mV/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.57 kOhm	✓
Range 50 mV/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 100 mV/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 200 mV/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 500 mV/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.0023 MOhm	✓
Range 1 V/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 2 V/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 5 V/Div	0.990 MOhm	1.001 MOhm	1.010 MOhm	0.57 kOhm	✓

### Channel 4 - 50 OHM

Range 5 mV/Div	48.75 Ohm	49.37 Ohm	51.25 Ohm	0.44 Ohm	✓
Range 10 mV/Div	48.75 Ohm	49.43 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 20 mV/Div	48.75 Ohm	49.47 Ohm	51.25 Ohm	0.43 Ohm	✓
Range 50 mV/Div	48.75 Ohm	50.08 Ohm	51.25 Ohm	0.26 Ohm	✓
Range 100 mV/Div	48.75 Ohm	49.58 Ohm	51.25 Ohm	0.25 Ohm	✓
Range 200 mV/Div	48.75 Ohm	50.12 Ohm	51.25 Ohm	0.29 Ohm	✓
Range 500 mV/Div	48.75 Ohm	49.79 Ohm	51.25 Ohm	0.25 Ohm	✓
Range 1 V/Div	48.75 Ohm	49.74 Ohm	51.25 Ohm	0.24 Ohm	✓

### Channel 4 - 1 MOHM

Range 5 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0030 MOhm	✓
Range 10 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0012 MOhm	✓
Range 20 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.57 kOhm	✓
Range 50 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 100 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 200 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.026 kOhm	✓
Range 500 mV/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.0023 MOhm	✓
Range 1 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 2 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.77 kOhm	✓
Range 5 V/Div	0.990 MOhm	1.000 MOhm	1.010 MOhm	0.57 kOhm	✓

## ZERO ERROR TEST - 50 OHM

## PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
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### Channel 1

Range 5 mV/Div	-1.80 mV	0.43 mV	1.80 mV	0.13 mV	✓
Range 10 mV/Div	-1.80 mV	0.47 mV	1.80 mV	0.16 mV	✓
Range 20 mV/Div	-2.60 mV	0.36 mV	2.60 mV	0.067 mV	✓
Range 50 mV/Div	-5.00 mV	0.22 mV	5.00 mV	0.24 mV	✓
Range 100 mV/Div	-9.00 mV	-0.06 mV	9.00 mV	0.40 mV	✓
Range 200 mV/Div	-17.0 mV	-0.4 mV	17.0 mV	0.72 mV	✓
Range 500 mV/Div	-41.0 mV	-2.7 mV	41.0 mV	2.4 mV	✓
Range 1 V/Div	-81.0 mV	-3.6 mV	81.0 mV	4.0 mV	✓

### Channel 2

Range 5 mV/Div	-1.80 mV	-0.11 mV	1.80 mV	0.13 mV	✓
Range 10 mV/Div	-1.80 mV	-0.08 mV	1.80 mV	0.16 mV	✓

## ZERO ERROR TEST - 50 OHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Range 20 mV/Div	-2.60 mV	-0.23 mV	2.60 mV	0.067 mV	✓
Range 50 mV/Div	-5.00 mV	-0.58 mV	5.00 mV	0.24 mV	✓
Range 100 mV/Div	-9.00 mV	-1.25 mV	9.00 mV	0.40 mV	✓
Range 200 mV/Div	-17.0 mV	-2.4 mV	17.0 mV	0.72 mV	✓
Range 500 mV/Div	-41.0 mV	-5.9 mV	41.0 mV	2.4 mV	✓
Range 1 V/Div	-81.0 mV	-9.5 mV	81.0 mV	4.0 mV	✓
Channel 3					
Range 5 mV/Div	-1.80 mV	0.24 mV	1.80 mV	0.13 mV	✓
Range 10 mV/Div	-1.80 mV	0.23 mV	1.80 mV	0.16 mV	✓
Range 20 mV/Div	-2.60 mV	0.14 mV	2.60 mV	0.067 mV	✓
Range 50 mV/Div	-5.00 mV	-0.05 mV	5.00 mV	0.24 mV	✓
Range 100 mV/Div	-9.00 mV	-0.23 mV	9.00 mV	0.40 mV	✓
Range 200 mV/Div	-17.0 mV	-0.8 mV	17.0 mV	0.72 mV	✓
Range 500 mV/Div	-41.0 mV	-4.1 mV	41.0 mV	2.4 mV	✓
Range 1 V/Div	-81.0 mV	-8.0 mV	81.0 mV	4.0 mV	✓
Channel 4					
Range 5 mV/Div	-1.80 mV	0.15 mV	1.80 mV	0.13 mV	✓
Range 10 mV/Div	-1.80 mV	0.15 mV	1.80 mV	0.16 mV	✓
Range 20 mV/Div	-2.60 mV	0.14 mV	2.60 mV	0.067 mV	✓
Range 50 mV/Div	-5.00 mV	-0.02 mV	5.00 mV	0.24 mV	✓
Range 100 mV/Div	-9.00 mV	-0.30 mV	9.00 mV	0.40 mV	✓
Range 200 mV/Div	-17.0 mV	-0.9 mV	17.0 mV	0.72 mV	✓
Range 500 mV/Div	-41.0 mV	-2.6 mV	41.0 mV	2.4 mV	✓
Range 1 V/Div	-81.0 mV	-4.0 mV	81.0 mV	4.0 mV	✓

## ZERO ERROR TEST - 1 MOHM

# PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 1					
Range 5 mV/Div	-1.40 mV	0.88 mV	1.40 mV	0.23 mV	✓
Range 10 mV/Div	-1.80 mV	0.84 mV	1.80 mV	0.15 mV	✓
Range 20 mV/Div	-2.60 mV	0.64 mV	2.60 mV	0.17 mV	✓
Range 50 mV/Div	-5.00 mV	-0.84 mV	5.00 mV	0.64 mV	✓
Range 100 mV/Div	-9.00 mV	-1.43 mV	9.00 mV	0.82 mV	✓
Range 200 mV/Div	-17.0 mV	-3.9 mV	17.0 mV	1.5 mV	✓
Range 500 mV/Div	-41.0 mV	3.8 mV	41.0 mV	3.6 mV	✓
Range 1 V/Div	-81.0 mV	-10.1 mV	81.0 mV	6.2 mV	✓
Range 2 V/Div	-161.0 mV	-32.2 mV	161.0 mV	13 mV	✓
Range 5 V/Div	-401.0 mV	-101.2 mV	401.0 mV	35 mV	✓
Channel 2					
Range 5 mV/Div	-1.40 mV	0.21 mV	1.40 mV	0.23 mV	✓
Range 10 mV/Div	-1.80 mV	0.18 mV	1.80 mV	0.15 mV	✓
Range 20 mV/Div	-2.60 mV	0.02 mV	2.60 mV	0.17 mV	✓
Range 50 mV/Div	-5.00 mV	-1.19 mV	5.00 mV	0.64 mV	✓
Range 100 mV/Div	-9.00 mV	-2.06 mV	9.00 mV	0.82 mV	✓
Range 200 mV/Div	-17.0 mV	-4.6 mV	17.0 mV	1.5 mV	✓
Range 500 mV/Div	-41.0 mV	-2.7 mV	41.0 mV	3.6 mV	✓
Range 1 V/Div	-81.0 mV	-19.2 mV	81.0 mV	6.2 mV	✓
Range 2 V/Div	-161.0 mV	-45.0 mV	161.0 mV	13 mV	✓



## ZERO ERROR TEST - 1 MOHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Range 5 V/Div	-401.0 mV	-117.7 mV	401.0 mV	35 mV	✓
Channel 3					
Range 5 mV/Div	-1.40 mV	0.10 mV	1.40 mV	0.23 mV	✓
Range 10 mV/Div	-1.80 mV	0.09 mV	1.80 mV	0.15 mV	✓
Range 20 mV/Div	-2.60 mV	0.05 mV	2.60 mV	0.17 mV	✓
Range 50 mV/Div	-5.00 mV	0.11 mV	5.00 mV	0.64 mV	✓
Range 100 mV/Div	-9.00 mV	-0.06 mV	9.00 mV	0.82 mV	✓
Range 200 mV/Div	-17.0 mV	-0.5 mV	17.0 mV	1.5 mV	✓
Range 500 mV/Div	-41.0 mV	3.6 mV	41.0 mV	3.6 mV	✓
Range 1 V/Div	-81.0 mV	0.6 mV	81.0 mV	6.2 mV	✓
Range 2 V/Div	-161.0 mV	-7.4 mV	161.0 mV	13 mV	✓
Range 5 V/Div	-401.0 mV	-25.5 mV	401.0 mV	35 mV	✓
Channel 4					
Range 5 mV/Div	-1.40 mV	0.15 mV	1.40 mV	0.23 mV	✓
Range 10 mV/Div	-1.80 mV	0.29 mV	1.80 mV	0.15 mV	✓
Range 20 mV/Div	-2.60 mV	0.33 mV	2.60 mV	0.17 mV	✓
Range 50 mV/Div	-5.00 mV	2.01 mV	5.00 mV	0.64 mV	✓
Range 100 mV/Div	-9.00 mV	2.16 mV	9.00 mV	0.82 mV	✓
Range 200 mV/Div	-17.0 mV	4.0 mV	17.0 mV	1.5 mV	✓
Range 500 mV/Div	-41.0 mV	6.5 mV	41.0 mV	3.6 mV	✓
Range 1 V/Div	-81.0 mV	17.4 mV	81.0 mV	6.2 mV	✓
Range 2 V/Div	-161.0 mV	31.9 mV	161.0 mV	13 mV	✓
Range 5 V/Div	-401.0 mV	70.4 mV	401.0 mV	35 mV	✓

## OFFSET ACCURACY TEST - 50 OHM

## PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 1 Range 5 mV/Div					
Offset + 60 mV	-2.55 mV	-0.30 mV	2.55 mV	0.68 mV	✓
Offset - 60 mV	-2.55 mV	-0.68 mV	2.55 mV	0.68 mV	✓
Channel 1 Range 10 mV/Div					
Offset + 120 mV	-3.30 mV	-0.02 mV	3.30 mV	0.73 mV	✓
Offset - 120 mV	-3.30 mV	-1.11 mV	3.30 mV	0.73 mV	✓
Channel 1 Range 20 mV/Div					
Offset + 240 mV	-5.60 mV	1.01 mV	5.60 mV	0.95 mV	✓
Offset - 240 mV	-5.60 mV	-1.85 mV	5.60 mV	0.95 mV	✓
Channel 1 Range 50 mV/Div					
Offset + 600 mV	-12.50 mV	-0.84 mV	12.50 mV	2.0 mV	✓
Offset - 600 mV	-12.50 mV	-0.46 mV	12.50 mV	2.0 mV	✓
Channel 1 Range 100 mV/Div					
Offset + 1.2 V	-24.00 mV	-2.30 mV	24.00 mV	5.6 mV	✓
Offset - 1.2 V	-24.00 mV	1.32 mV	24.00 mV	5.6 mV	✓
Channel 1 Range 200 mV/Div					
Offset + 2.4 V	-47.00 mV	-6.81 mV	47.00 mV	7.0 mV	✓
Offset - 2.4 V	-47.00 mV	3.40 mV	47.00 mV	7.0 mV	✓

## OFFSET ACCURACY TEST - 50 OHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 1 Range 500 mV/Div					
Offset + 4.0 V	-91.00 mV	-70.01 mV	91.00 mV	12 mV	✓
Offset - 4.0 V	-91.00 mV	56.96 mV	91.00 mV	12 mV	✓
Channel 1 Range 1 V/Div					
Offset + 4.0 V	-131.00 mV	-88.45 mV	131.00 mV	13 mV	✓
Offset - 4.0 V	-131.00 mV	66.63 mV	131.00 mV	13 mV	✓
Channel 2 Range 5 mV/Div					
Offset + 60 mV	-2.55 mV	0.21 mV	2.55 mV	0.68 mV	✓
Offset - 60 mV	-2.55 mV	0.04 mV	2.55 mV	0.68 mV	✓
Channel 2 Range 10 mV/Div					
Offset + 120 mV	-3.30 mV	0.22 mV	3.30 mV	0.73 mV	✓
Offset - 120 mV	-3.30 mV	-0.10 mV	3.30 mV	0.73 mV	✓
Channel 2 Range 20 mV/Div					
Offset + 240 mV	-5.60 mV	1.01 mV	5.60 mV	0.95 mV	✓
Offset - 240 mV	-5.60 mV	-0.96 mV	5.60 mV	0.95 mV	✓
Channel 2 Range 50 mV/Div					
Offset + 600 mV	-12.50 mV	-1.08 mV	12.50 mV	2.0 mV	✓
Offset - 600 mV	-12.50 mV	-0.27 mV	12.50 mV	2.0 mV	✓
Channel 2 Range 100 mV/Div					
Offset + 1.2 V	-24.00 mV	-2.67 mV	24.00 mV	5.6 mV	✓
Offset - 1.2 V	-24.00 mV	-3.69 mV	24.00 mV	5.6 mV	✓
Channel 2 Range 200 mV/Div					
Offset + 2.4 V	-47.00 mV	-5.94 mV	47.00 mV	7.0 mV	✓
Offset - 2.4 V	-47.00 mV	3.91 mV	47.00 mV	7.0 mV	✓
Channel 2 Range 500 mV/Div					
Offset + 4.0 V	-91.00 mV	-61.44 mV	91.00 mV	12 mV	✓
Offset - 4.0 V	-91.00 mV	66.97 mV	91.00 mV	12 mV	✓
Channel 2 Range 1 V/Div					
Offset + 4.0 V	-131.00 mV	-66.38 mV	131.00 mV	13 mV	✓
Offset - 4.0 V	-131.00 mV	77.53 mV	131.00 mV	13 mV	✓
Channel 3 Range 5 mV/Div					
Offset + 60 mV	-2.55 mV	-0.43 mV	2.55 mV	0.68 mV	✓
Offset - 60 mV	-2.55 mV	0.13 mV	2.55 mV	0.68 mV	✓
Channel 3 Range 10 mV/Div					
Offset + 120 mV	-3.30 mV	-0.32 mV	3.30 mV	0.73 mV	✓
Offset - 120 mV	-3.30 mV	0.32 mV	3.30 mV	0.73 mV	✓
Channel 3 Range 20 mV/Div					
Offset + 240 mV	-5.60 mV	-0.57 mV	5.60 mV	0.95 mV	✓
Offset - 240 mV	-5.60 mV	0.40 mV	5.60 mV	0.95 mV	✓
Channel 3 Range 50 mV/Div					
Offset + 600 mV	-12.50 mV	-1.18 mV	12.50 mV	2.0 mV	✓
Offset - 600 mV	-12.50 mV	2.07 mV	12.50 mV	2.0 mV	✓

**OFFSET ACCURACY TEST - 50 OHM (cont.)**

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 3 Range 100 mV/Div					
Offset + 1.2 V	-24.00 mV	-2.42 mV	24.00 mV	5.6 mV	✓
Offset - 1.2 V	-24.00 mV	3.37 mV	24.00 mV	5.6 mV	✓
Channel 3 Range 200 mV/Div					
Offset + 2.4 V	-47.00 mV	-6.64 mV	47.00 mV	7.0 mV	✓
Offset - 2.4 V	-47.00 mV	7.93 mV	47.00 mV	7.0 mV	✓
Channel 3 Range 500 mV/Div					
Offset + 4.0 V	-91.00 mV	-35.63 mV	91.00 mV	12 mV	✓
Offset - 4.0 V	-91.00 mV	53.07 mV	91.00 mV	12 mV	✓
Channel 3 Range 1 V/Div					
Offset + 4.0 V	-131.00 mV	-47.55 mV	131.00 mV	13 mV	✓
Offset - 4.0 V	-131.00 mV	61.00 mV	131.00 mV	13 mV	✓
Channel 4 Range 5 mV/Div					
Offset + 60 mV	-2.55 mV	-0.67 mV	2.55 mV	0.68 mV	✓
Offset - 60 mV	-2.55 mV	0.45 mV	2.55 mV	0.68 mV	✓
Channel 4 Range 10 mV/Div					
Offset + 120 mV	-3.30 mV	-0.92 mV	3.30 mV	0.73 mV	✓
Offset - 120 mV	-3.30 mV	0.67 mV	3.30 mV	0.73 mV	✓
Channel 4 Range 20 mV/Div					
Offset + 240 mV	-5.60 mV	-1.83 mV	5.60 mV	0.95 mV	✓
Offset - 240 mV	-5.60 mV	1.33 mV	5.60 mV	0.95 mV	✓
Channel 4 Range 50 mV/Div					
Offset + 600 mV	-12.50 mV	-3.64 mV	12.50 mV	2.0 mV	✓
Offset - 600 mV	-12.50 mV	2.80 mV	12.50 mV	2.0 mV	✓
Channel 4 Range 100 mV/Div					
Offset + 1.2 V	-24.00 mV	-6.13 mV	24.00 mV	5.6 mV	✓
Offset - 1.2 V	-24.00 mV	3.28 mV	24.00 mV	5.6 mV	✓
Channel 4 Range 200 mV/Div					
Offset + 2.4 V	-47.00 mV	-11.14 mV	47.00 mV	7.0 mV	✓
Offset - 2.4 V	-47.00 mV	6.18 mV	47.00 mV	7.0 mV	✓
Channel 4 Range 500 mV/Div					
Offset + 4.0 V	-91.00 mV	-41.22 mV	91.00 mV	12 mV	✓
Offset - 4.0 V	-91.00 mV	35.60 mV	91.00 mV	12 mV	✓
Channel 4 Range 1 V/Div					
Offset + 4.0 V	-131.00 mV	-50.32 mV	131.00 mV	13 mV	✓
Offset - 4.0 V	-131.00 mV	44.26 mV	131.00 mV	13 mV	✓

## OFFSET ACCURACY TEST - 1 MOHM

## PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 1 Range 5 mV/Div					
Offset + 2 V	-26.40 mV	-0.82 mV	26.40 mV	0.60 mV	✓
Offset - 2 V	-26.40 mV	-1.09 mV	26.40 mV	0.60 mV	✓
Channel 1 Range 10 mV/Div					
Offset + 5 V	-64.30 mV	-1.12 mV	64.30 mV	2.5 mV	✓
Offset - 5 V	-64.30 mV	-1.12 mV	64.30 mV	2.5 mV	✓
Channel 1 Range 20 mV/Div					
Offset + 10 V	-127.60 mV	-1.60 mV	127.60 mV	2.6 mV	✓
Offset - 10 V	-127.60 mV	-2.31 mV	127.60 mV	2.6 mV	✓
Channel 1 Range 50 mV/Div					
Offset + 10 V	-130.00 mV	0.15 mV	130.00 mV	2.7 mV	✓
Offset - 10 V	-130.00 mV	-0.69 mV	130.00 mV	2.7 mV	✓
Channel 1 Range 100 mV/Div					
Offset + 20 V	-259.00 mV	-0.90 mV	259.00 mV	11 mV	✓
Offset - 20 V	-259.00 mV	-1.40 mV	259.00 mV	11 mV	✓
Channel 1 Range 200 mV/Div					
Offset + 20 V	-267.00 mV	1.60 mV	267.00 mV	7.3 mV	✓
Offset - 20 V	-267.00 mV	1.10 mV	267.00 mV	7.3 mV	✓
Channel 1 Range 500 mV/Div					
Offset + 20 V	-291.00 mV	-8.50 mV	291.00 mV	7.7 mV	✓
Offset - 20 V	-291.00 mV	-9.10 mV	291.00 mV	7.7 mV	✓
Channel 1 Range 1 V/Div					
Offset + 100 V	-1.33 V	-0.07 V	1.33 V	0.031 V	✓
Offset - 100 V	-1.33 V	0.06 V	1.33 V	0.031 V	✓
Channel 1 Range 2 V/Div					
Offset + 100 V	-1.41 V	-0.04 V	1.41 V	0.030 V	✓
Offset - 100 V	-1.41 V	0.08 V	1.41 V	0.030 V	✓
Channel 1 Range 5 V/Div					
Offset + 100 V	-1.65 V	0.03 V	1.65 V	0.044 V	✓
Offset - 100 V	-1.65 V	0.16 V	1.65 V	0.044 V	✓
Channel 2 Range 5 mV/Div					
Offset + 2 V	-26.40 mV	0.05 mV	26.40 mV	0.60 mV	✓
Offset - 2 V	-26.40 mV	-0.41 mV	26.40 mV	0.60 mV	✓
Channel 2 Range 10 mV/Div					
Offset + 5 V	-64.30 mV	0.27 mV	64.30 mV	2.5 mV	✓
Offset - 5 V	-64.30 mV	-1.23 mV	64.30 mV	2.5 mV	✓
Channel 2 Range 20 mV/Div					
Offset + 10 V	-127.60 mV	0.20 mV	127.60 mV	2.6 mV	✓
Offset - 10 V	-127.60 mV	-1.57 mV	127.60 mV	2.6 mV	✓

## OFFSET ACCURACY TEST - 1 MOHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 2 Range 50 mV/Div					
Offset + 10 V	-130.00 mV	1.94 mV	130.00 mV	2.7 mV	✓
Offset - 10 V	-130.00 mV	0.20 mV	130.00 mV	2.7 mV	✓
Channel 2 Range 100 mV/Div					
Offset + 20 V	-259.00 mV	3.30 mV	259.00 mV	11 mV	✓
Offset - 20 V	-259.00 mV	-1.70 mV	259.00 mV	11 mV	✓
Channel 2 Range 200 mV/Div					
Offset + 20 V	-267.00 mV	7.00 mV	267.00 mV	7.3 mV	✓
Offset - 20 V	-267.00 mV	1.90 mV	267.00 mV	7.3 mV	✓
Channel 2 Range 500 mV/Div					
Offset + 20 V	-291.00 mV	3.70 mV	291.00 mV	7.7 mV	✓
Offset - 20 V	-291.00 mV	-1.10 mV	291.00 mV	7.7 mV	✓
Channel 2 Range 1 V/Div					
Offset + 100 V	-1.33 V	-0.04 V	1.33 V	0.031 V	✓
Offset - 100 V	-1.33 V	0.07 V	1.33 V	0.031 V	✓
Channel 2 Range 2 V/Div					
Offset + 100 V	-1.41 V	0.00 V	1.41 V	0.030 V	✓
Offset - 100 V	-1.41 V	0.10 V	1.41 V	0.030 V	✓
Channel 2 Range 5 V/Div					
Offset + 100 V	-1.65 V	0.08 V	1.65 V	0.044 V	✓
Offset - 100 V	-1.65 V	0.19 V	1.65 V	0.044 V	✓
Channel 3 Range 5 mV/Div					
Offset + 2 V	-26.40 mV	-0.34 mV	26.40 mV	0.60 mV	✓
Offset - 2 V	-26.40 mV	0.05 mV	26.40 mV	0.60 mV	✓
Channel 3 Range 10 mV/Div					
Offset + 5 V	-64.30 mV	-0.55 mV	64.30 mV	2.5 mV	✓
Offset - 5 V	-64.30 mV	0.14 mV	64.30 mV	2.5 mV	✓
Channel 3 Range 20 mV/Div					
Offset + 10 V	-127.60 mV	-1.70 mV	127.60 mV	2.6 mV	✓
Offset - 10 V	-127.60 mV	1.50 mV	127.60 mV	2.6 mV	✓
Channel 3 Range 50 mV/Div					
Offset + 10 V	-130.00 mV	-1.60 mV	130.00 mV	2.7 mV	✓
Offset - 10 V	-130.00 mV	1.60 mV	130.00 mV	2.7 mV	✓
Channel 3 Range 100 mV/Div					
Offset + 20 V	-259.00 mV	-3.70 mV	259.00 mV	11 mV	✓
Offset - 20 V	-259.00 mV	3.80 mV	259.00 mV	11 mV	✓
Channel 3 Range 200 mV/Div					
Offset + 20 V	-267.00 mV	-3.30 mV	267.00 mV	7.3 mV	✓
Offset - 20 V	-267.00 mV	4.50 mV	267.00 mV	7.3 mV	✓
Channel 3 Range 500 mV/Div					
Offset + 20 V	-291.00 mV	-6.30 mV	291.00 mV	7.7 mV	✓
Offset - 20 V	-291.00 mV	1.00 mV	291.00 mV	7.7 mV	✓

## OFFSET ACCURACY TEST - 1 MOHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 3 Range 1 V/Div					
Offset + 100 V	-1.33 V	-0.09 V	1.33 V	0.031 V	✓
Offset - 100 V	-1.33 V	0.10 V	1.33 V	0.031 V	✓
Channel 3 Range 2 V/Div					
Offset + 100 V	-1.41 V	-0.08 V	1.41 V	0.030 V	✓
Offset - 100 V	-1.41 V	0.11 V	1.41 V	0.030 V	✓
Channel 3 Range 5 V/Div					
Offset + 100 V	-1.65 V	-0.06 V	1.65 V	0.044 V	✓
Offset - 100 V	-1.65 V	0.13 V	1.65 V	0.044 V	✓
Channel 4 Range 5 mV/Div					
Offset + 2 V	-26.40 mV	-0.24 mV	26.40 mV	0.60 mV	✓
Offset - 2 V	-26.40 mV	0.29 mV	26.40 mV	0.60 mV	✓
Channel 4 Range 10 mV/Div					
Offset + 5 V	-64.30 mV	-0.46 mV	64.30 mV	2.5 mV	✓
Offset - 5 V	-64.30 mV	0.38 mV	64.30 mV	2.5 mV	✓
Channel 4 Range 20 mV/Div					
Offset + 10 V	-127.60 mV	-2.00 mV	127.60 mV	2.6 mV	✓
Offset - 10 V	-127.60 mV	1.80 mV	127.60 mV	2.6 mV	✓
Channel 4 Range 50 mV/Div					
Offset + 10 V	-130.00 mV	-3.30 mV	130.00 mV	2.7 mV	✓
Offset - 10 V	-130.00 mV	0.60 mV	130.00 mV	2.7 mV	✓
Channel 4 Range 100 mV/Div					
Offset + 20 V	-259.00 mV	-5.50 mV	259.00 mV	11 mV	✓
Offset - 20 V	-259.00 mV	2.90 mV	259.00 mV	11 mV	✓
Channel 4 Range 200 mV/Div					
Offset + 20 V	-267.00 mV	-7.10 mV	267.00 mV	7.3 mV	✓
Offset - 20 V	-267.00 mV	2.20 mV	267.00 mV	7.3 mV	✓
Channel 4 Range 500 mV/Div					
Offset + 20 V	-291.00 mV	-7.50 mV	291.00 mV	7.7 mV	✓
Offset - 20 V	-291.00 mV	1.10 mV	291.00 mV	7.7 mV	✓
Channel 4 Range 1 V/Div					
Offset + 100 V	-1.33 V	-0.08 V	1.33 V	0.031 V	✓
Offset - 100 V	-1.33 V	0.08 V	1.33 V	0.031 V	✓
Channel 4 Range 2 V/Div					
Offset + 100 V	-1.41 V	-0.09 V	1.41 V	0.030 V	✓
Offset - 100 V	-1.41 V	0.07 V	1.41 V	0.030 V	✓
Channel 4 Range 5 V/Div					
Offset + 100 V	-1.65 V	-0.11 V	1.65 V	0.044 V	✓
Offset - 100 V	-1.65 V	0.05 V	1.65 V	0.044 V	✓

## DC GAIN TEST - 50 OHM

## PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 1 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-0.46 %	2.00 %	0.21 %	✓
Channel 1 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-1.34 %	2.00 %	0.46 %	✓
Channel 1 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.87 %	2.00 %	0.57 %	✓
Channel 1 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.63 %	2.00 %	0.34 %	✓
Channel 1 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.40 %	2.00 %	0.51 %	✓
Channel 1 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.32 %	2.00 %	0.61 %	✓
Channel 1 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.14 %	2.00 %	0.33 %	✓
Channel 1 Range 1 V/Div Input +/- 3.0 V	-2.00 %	0.26 %	2.00 %	0.54 %	✓
Channel 2 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-1.21 %	2.00 %	0.21 %	✓
Channel 2 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-1.22 %	2.00 %	0.46 %	✓
Channel 2 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.94 %	2.00 %	0.57 %	✓
Channel 2 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.76 %	2.00 %	0.34 %	✓
Channel 2 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.58 %	2.00 %	0.51 %	✓
Channel 2 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.47 %	2.00 %	0.61 %	✓
Channel 2 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.27 %	2.00 %	0.33 %	✓
Channel 2 Range 1 V/Div Input +/- 3.0 V	-2.00 %	0.07 %	2.00 %	0.54 %	✓
Channel 3 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-0.64 %	2.00 %	0.21 %	✓

## DC GAIN TEST - 50 OHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 3 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-0.43 %	2.00 %	0.46 %	✓
Channel 3 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.40 %	2.00 %	0.57 %	✓
Channel 3 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.41 %	2.00 %	0.34 %	✓
Channel 3 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.39 %	2.00 %	0.51 %	✓
Channel 3 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.38 %	2.00 %	0.61 %	✓
Channel 3 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.34 %	2.00 %	0.33 %	✓
Channel 3 Range 1 V/Div Input +/- 3.0 V	-2.00 %	-0.14 %	2.00 %	0.54 %	✓
Channel 4 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-0.29 %	2.00 %	0.21 %	✓
Channel 4 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-0.17 %	2.00 %	0.46 %	✓
Channel 4 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.27 %	2.00 %	0.57 %	✓
Channel 4 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.33 %	2.00 %	0.34 %	✓
Channel 4 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.46 %	2.00 %	0.51 %	✓
Channel 4 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.48 %	2.00 %	0.61 %	✓
Channel 4 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.53 %	2.00 %	0.33 %	✓
Channel 4 Range 1 V/Div Input +/- 3.0 V	-2.00 %	-0.47 %	2.00 %	0.54 %	✓

## DC GAIN TEST - 1 MOHM

# PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 1 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-0.74 %	2.00 %	0.28 %	✓



## DC GAIN TEST - 1 MOHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 1 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-0.66 %	2.00 %	0.39 %	✓
Channel 1 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.67 %	2.00 %	0.24 %	✓
Channel 1 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.65 %	2.00 %	0.18 %	✓
Channel 1 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.63 %	2.00 %	0.16 %	✓
Channel 1 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.57 %	2.00 %	0.16 %	✓
Channel 1 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.69 %	2.00 %	0.15 %	✓
Channel 1 Range 1 V/Div Input +/- 3.0 V	-2.00 %	-0.64 %	2.00 %	0.15 %	✓
Channel 1 Range 2 V/Div Input +/- 6.0 V	-2.00 %	-0.67 %	2.00 %	0.15 %	✓
Channel 1 Range 5 V/Div Input +/- 15 V	-2.00 %	-0.45 %	2.00 %	0.15 %	✓
Channel 2 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-0.71 %	2.00 %	0.28 %	✓
Channel 2 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-0.67 %	2.00 %	0.39 %	✓
Channel 2 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.74 %	2.00 %	0.24 %	✓
Channel 2 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.61 %	2.00 %	0.18 %	✓
Channel 2 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.67 %	2.00 %	0.16 %	✓
Channel 2 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.62 %	2.00 %	0.16 %	✓
Channel 2 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.73 %	2.00 %	0.15 %	✓
Channel 2 Range 1 V/Div Input +/- 3.0 V	-2.00 %	-0.69 %	2.00 %	0.15 %	✓
Channel 2 Range 2 V/Div Input +/- 6.0 V	-2.00 %	-0.73 %	2.00 %	0.15 %	✓
Channel 2 Range 5 V/Div Input +/- 15 V	-2.00 %	-0.52 %	2.00 %	0.15 %	✓

## DC GAIN TEST - 1 MOHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 3 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-0.56 %	2.00 %	0.28 %	✓
Channel 3 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-0.59 %	2.00 %	0.39 %	✓
Channel 3 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.69 %	2.00 %	0.24 %	✓
Channel 3 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.51 %	2.00 %	0.18 %	✓
Channel 3 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.58 %	2.00 %	0.16 %	✓
Channel 3 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.57 %	2.00 %	0.16 %	✓
Channel 3 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.67 %	2.00 %	0.15 %	✓
Channel 3 Range 1 V/Div Input +/- 3.0 V	-2.00 %	-0.67 %	2.00 %	0.15 %	✓
Channel 3 Range 2 V/Div Input +/- 6.0 V	-2.00 %	-0.65 %	2.00 %	0.15 %	✓
Channel 3 Range 5 V/Div Input +/- 15 V	-2.00 %	-0.47 %	2.00 %	0.15 %	✓
Channel 4 Range 5 mV/Div Input +/- 15 mV	-2.00 %	-0.54 %	2.00 %	0.28 %	✓
Channel 4 Range 10 mV/Div Input +/- 30 mV	-2.00 %	-0.51 %	2.00 %	0.39 %	✓
Channel 4 Range 20 mV/Div Input +/- 60 mV	-2.00 %	-0.63 %	2.00 %	0.24 %	✓
Channel 4 Range 50 mV/Div Input +/- 150 mV	-2.00 %	-0.47 %	2.00 %	0.18 %	✓
Channel 4 Range 100 mV/Div Input +/- 300 mV	-2.00 %	-0.62 %	2.00 %	0.16 %	✓
Channel 4 Range 200 mV/Div Input +/- 600 mV	-2.00 %	-0.54 %	2.00 %	0.16 %	✓
Channel 4 Range 500 mV/Div Input +/- 1.5 V	-2.00 %	-0.66 %	2.00 %	0.15 %	✓
Channel 4 Range 1 V/Div Input +/- 3.0 V	-2.00 %	-0.65 %	2.00 %	0.15 %	✓

## DC GAIN TEST - 1 MOHM (cont.)

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
Channel 4 Range 2 V/Div Input +/- 6.0 V	-2.00 %	-0.77 %	2.00 %	0.15 %	✓
Channel 4 Range 5 V/Div Input +/- 15 V	-2.00 %	-0.63 %	2.00 %	0.15 %	✓

## ANALOG BANDWIDTH

## PASSED

<u>TEST CONDITIONS</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>UNCERT.</u>	
<b>4.0 GHz Bandwidth</b>				
<b>Channel 1</b>				
Range 5 mV/div	-3.00 dB	2.16 dB	0.71 dB	✓
Range 10 mV/div	-3.00 dB	2.26 dB	0.65 dB	✓
Range 20 mV/div	-3.00 dB	2.47 dB	0.57 dB	✓
Range 50 mV/div	-3.00 dB	1.97 dB	0.53 dB	✓
Range 100 mV/div	-3.00 dB	1.96 dB	0.56 dB	✓
Range 200 mV/div	-3.00 dB	1.96 dB	0.56 dB	✓
Range 500 mV/div	-3.00 dB	1.56 dB	0.73 dB	✓
Range 1 V/div	-3.00 dB	0.81 dB	0.68 dB	✓
<b>Channel 2</b>				
Range 5 mV/div	-3.00 dB	0.26 dB	0.71 dB	✓
Range 10 mV/div	-3.00 dB	0.43 dB	0.65 dB	✓
Range 20 mV/div	-3.00 dB	0.89 dB	0.57 dB	✓
Range 50 mV/div	-3.00 dB	0.39 dB	0.53 dB	✓
Range 100 mV/div	-3.00 dB	0.37 dB	0.56 dB	✓
Range 200 mV/div	-3.00 dB	0.33 dB	0.56 dB	✓
Range 500 mV/div	-3.00 dB	-0.36 dB	0.73 dB	✓
Range 1 V/div	-3.00 dB	-1.10 dB	0.68 dB	✓
<b>Channel 3</b>				
Range 5 mV/div	-3.00 dB	2.13 dB	0.71 dB	✓
Range 10 mV/div	-3.00 dB	2.36 dB	0.65 dB	✓
Range 20 mV/div	-3.00 dB	2.71 dB	0.57 dB	✓
Range 50 mV/div	-3.00 dB	2.20 dB	0.53 dB	✓
Range 100 mV/div	-3.00 dB	2.17 dB	0.56 dB	✓
Range 200 mV/div	-3.00 dB	2.16 dB	0.56 dB	✓
Range 500 mV/div	-3.00 dB	1.95 dB	0.73 dB	✓
Range 1 V/div	-3.00 dB	1.37 dB	0.68 dB	✓
<b>Channel 4</b>				
Range 5 mV/div	-3.00 dB	0.43 dB	0.71 dB	✓
Range 10 mV/div	-3.00 dB	0.56 dB	0.65 dB	✓
Range 20 mV/div	-3.00 dB	0.82 dB	0.57 dB	✓
Range 50 mV/div	-3.00 dB	0.38 dB	0.53 dB	✓
Range 100 mV/div	-3.00 dB	0.31 dB	0.56 dB	✓
Range 200 mV/div	-3.00 dB	0.46 dB	0.56 dB	✓
Range 500 mV/div	-3.00 dB	0.30 dB	0.73 dB	✓
Range 1 V/div	-3.00 dB	-0.15 dB	0.68 dB	✓



# Measurement Report

Zertifikat Nr. 1-5520744915-1

Modell Nr: MSO9404A    Serial: MY49150216    Firmware Rev:  
Options Tested:

Test Date: 9 Nov 2013  
Condition: As Completed

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## TIME SCALE ACCURACY

## PASSED

<u>TEST COND.</u>	<u>MINIMUM</u>	<u>MEASURED</u>	<u>MAXIMUM</u>	<u>UNCERT.</u>	
10.00002 MHz	-0.90 ppm	-0.13 ppm	0.90 ppm	0.14 ppm	✓