



## **6 Series B Mixed Signal Oscilloscopes Specifications and Performance Verification (MSO64B, MSO66B, MSO68B)**

**Warning:** The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

Supports Product Firmware V1.28 and above

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Tektronix, Inc.

14150 SW Karl Braun Drive

P.O. Box 500

Beaverton, OR 97077

USA

For product information, sales, service, and technical support:

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# Important safety information

This manual contains information and warnings that must be followed by the user for safe operation and to keep the product in a safe condition.

To safely perform service on this product, see the *Service safety summary* that follows the *General safety summary*.

## General safety summary

Use the product only as specified. Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. Carefully read all instructions. Retain these instructions for future reference.

This product shall be used in accordance with local and national codes.

For correct and safe operation of the product, it is essential that you follow generally accepted safety procedures in addition to the safety precautions specified in this manual.

The product is designed to be used by trained personnel only.

Only qualified personnel who are aware of the hazards involved should remove the cover for repair, maintenance, or adjustment.

Before use, always check the product with a known source to be sure it is operating correctly.

This product is not intended for detection of hazardous voltages.

Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

## To avoid fire or personal injury

<b>Use proper power cord</b>	Use only the power cord specified for this product and certified for the country of use.
<b>Ground the product</b>	This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded. Do not disable the power cord grounding connection.
<b>Power disconnect</b>	The power cord disconnects the product from the power source. See instructions for the location. Do not position the equipment so that it is difficult to operate the power cord; it must remain accessible to the user at all times to allow for quick disconnection if needed.
<b>Connect and disconnect properly</b>	Do not connect or disconnect probes or test leads while they are connected to a voltage source. Use only insulated voltage probes, test leads, and adapters supplied with the product, or indicated by Tektronix to be suitable for the product.
<b>Observe all terminal ratings</b>	To avoid fire or shock hazard, observe all rating and markings on the product. Consult the product manual for further ratings information before making connections to the product. Do not exceed the Measurement Category (CAT) rating and voltage or current rating of the lowest rated individual component of a product, probe, or accessory. Use caution when using 1:1 test leads because the probe tip voltage is directly transmitted to the product. Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.
<b>Do not operate without covers</b>	Do not operate this product with covers or panels removed, or with the case open. Hazardous voltage exposure is possible.
<b>Avoid exposed circuitry</b>	Do not touch exposed connections and components when power is present.
<b>Do not operate with suspected failures</b>	If you suspect that there is damage to this product, have it inspected by qualified service personnel.

	<p>Disable the product if it is damaged. Do not use the product if it is damaged or operates incorrectly. If in doubt about safety of the product, turn it off and disconnect the power cord. Clearly mark the product to prevent its further operation.</p> <p>Before use, inspect voltage probes, test leads, and accessories for mechanical damage and replace when damaged. Do not use probes or test leads if they are damaged, if there is exposed metal, or if a wear indicator shows.</p> <p>Examine the exterior of the product before you use it. Look for cracks or missing pieces.</p> <p>Use only specified replacement parts.</p>
<b>Do not operate in wet/damp conditions</b>	Be aware that condensation may occur if a unit is moved from a cold to a warm environment.
<b>Do not operate in an explosive atmosphere</b>	
<b>Keep product surfaces clean and dry</b>	Remove the input signals before you clean the product.
<b>Provide proper ventilation</b>	<p>Refer to the installation instructions in the manual for details on installing the product so it has proper ventilation.</p> <p>Slots and openings are provided for ventilation and should never be covered or otherwise obstructed. Do not push objects into any of the openings.</p>
<b>Provide a safe working environment</b>	<p>Always place the product in a location convenient for viewing the display and indicators.</p> <p>Avoid improper or prolonged use of keyboards, pointers, and button pads. Improper or prolonged keyboard or pointer use may result in serious injury.</p> <p>Be sure your work area meets applicable ergonomic standards. Consult with an ergonomics professional to avoid stress injuries.</p> <p>Use care when lifting and carrying the product. This product is provided with a handle or handles for lifting and carrying.</p> <p>Use only the Tektronix rackmount hardware specified for this product.</p>

## Probes and test leads

Before connecting probes or test leads, connect the power cord from the power connector to a properly grounded power outlet.

Keep fingers behind the protective barrier, protective finger guard, or tactile indicator on the probes. Remove all probes, test leads and accessories that are not in use.

Use only correct Measurement Category (CAT), voltage, temperature, altitude, and amperage rated probes, test leads, and adapters for any measurement.

## Service safety summary

The *Service safety summary* section contains additional information required to safely perform service on the product. Only qualified personnel should perform service procedures. Read this *Service safety summary* and the *General safety summary* before performing any service procedures.

<b>To avoid electric shock</b>	Do not touch exposed connections.
<b>Do not service alone</b>	Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.
<b>Disconnect power</b>	To avoid electric shock, switch off the product power and disconnect the power cord from the mains power before removing any covers or panels, or opening the case for servicing.



- Use care when servicing with power on** Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.
- Verify safety after repair** Always recheck ground continuity and mains dielectric strength after performing a repair.

## Terms in the manual

These terms may appear in this manual:



**Warning:** Warning statements identify conditions or practices that could result in injury or loss of life.



**CAUTION:** Caution statements identify conditions or practices that could result in damage to this product or other property.

## Terms on the product

These terms may appear on the product:

- DANGER indicates an injury hazard immediately accessible as you read the marking.
- WARNING indicates an injury hazard not immediately accessible as you read the marking.
- CAUTION indicates a hazard to property including the product.

## Symbols on the product



When this symbol is marked on the product, be sure to consult the manual to find out the nature of the potential hazards and any actions which have to be taken to avoid them. (This symbol may also be used to refer the user to ratings in the manual.)

The following symbol(s) may appear on the product.



CAUTION  
Refer to Manual



Protective Ground  
(Earth) Terminal



Functional  
Earth Terminal



Chassis Ground



Standby

## Specifications

This chapter contains specifications for the instrument. All specifications are guaranteed unless noted as "typical." Typical specifications are provided for your convenience but are not guaranteed. Specifications that are marked with the ✓ symbol are checked in this manual. All specifications apply to all models unless noted otherwise.

To meet specifications, these conditions must first be met:

- The instrument must have been calibrated in an ambient temperature between 18 °C and 28 °C (64 °F and 82 °F).
- The instrument must be operating within the environmental limits. (See [Environmental specifications](#) on page 43)
- The instrument must be powered from a source that meets the specifications. (See [Power supply system](#) on page 43)
- The instrument must have been operating continuously for at least 20 minutes within the specified operating temperature range.
- You must perform the Signal Path Compensation procedure after the warmup period. See the online help for instructions on how to perform signal path compensation. If the ambient temperature changes more than 5 °C (9 °F), repeat the procedure.

### Analog inputs

**Number of analog input channels**

MSO64B: 4  
MSO66B: 6  
MSO68B: 8

**Input coupling** DC, AC

**Input resistance selection** 1 M $\Omega$  or 50  $\Omega$   
250 K $\Omega$  selectable for Performance Verification

✓ **DC Input Resistance, 50  $\Omega$ , DC coupled** 50  $\Omega$   $\pm$ 3%

✓ **DC Input Resistance, 1M $\Omega$  DC-Coupled** 1 M $\Omega$   $\pm$ 1%

**Input VSWR, 50  $\Omega$  DC-coupled, typical**

Input Frequency	VSWR <100 mV/div	VSWR $\geq$ 100 mV/div
$\leq$ 2.5 GHz	1.4	1.2
>2.5 GHz and $\leq$ 6 GHz	1.5	1.3
>6 GHz and $\leq$ 9.5 GHz	1.9	1.8
>9.5 GHz and $\leq$ 10 GHz	2.1	1.9

**Maximum input voltage, 50  $\Omega$**  2.3 V<sub>RMS</sub>, at <100 mV/div, with peaks  $\leq$  $\pm$ 20 V (Pulse Width  $\leq$  1  $\mu$ s)  
5.5 V<sub>RMS</sub>, at  $\geq$  100 mV/div, with peaks  $\leq$  $\pm$ 20 V (Pulse Width  $\leq$  200  $\mu$ s)

**Maximum input voltage 1 M $\Omega$  DC-coupled** 300 V<sub>RMS</sub>, DC to 10 kHz  
Maximum peak input voltage at the BNC,  $\pm$ 425 V

**Sensitivity range, coarse**

**1 M $\Omega$**  500  $\mu$ V/div to 10 V/div in a 1-2-5 sequence

**50  $\Omega$**  1 mV/div to 1 V/div in a 1-2-5 sequence

**Sensitivity range (Fine)**

<b>1 M<math>\Omega</math></b>	Allows continuous adjustment from 500 $\mu$ V/div to 10V/div
<b>50 <math>\Omega</math></b>	Allows continuous adjustment from 1mV/div to 1V/div

**Sensitivity Resolution (Fine)**  $\leq$ 1% of coarse sensitivity range setting

**Input capacitance 1 M $\Omega$  DC coupled, typical** 14.5 pF  $\pm$ 1.5 pF

**Analog DC**

**Maximum offset ranges,** Input signal cannot exceed maximum input voltage for the 50  $\Omega$  input path.

Volts/div Setting	Maximum offset range, 50 $\Omega$ Input
1 mV/div - 99 mV/div	$\pm$ 1 V
100 mV/div - 1 V/div	$\pm$ 10 V

Volts/div Setting	Maximum offset range, 1 M $\Omega$ Input
500 $\mu$ V/div - 63 mV/div	$\pm$ 1 V
64 mV/div - 999 mV/div	$\pm$ 10 V
1 V/div - 10 V/div	$\pm$ 100 V

Input Signal cannot exceed max input voltage for the 50  $\Omega$  input path.

**DC voltage measurement accuracy, Average acquisition mode**

Measurement Type	DC Accuracy (In Volts)
Average of $\geq$ 16 waveforms	$\pm$ ((DC Gain Accuracy) *  reading - (offset - position)  + Offset Accuracy + 0.05 * V/div setting)
Delta volts between any two averages of $\geq$ 16 waveforms acquired with the same oscilloscope setup and ambient conditions	$\pm$ (DC Gain Accuracy *  reading  + 0.1 div)

**DC voltage measurement accuracy, Sample acquisition mode, typical**

Measurement Type	DC Accuracy (In Volts)
Any Sample	$\pm$ (DC Gain Accuracy *  reading - (offset - position)  + Offset Accuracy + 0.15 div + 0.6 mV)
Delta volts between any two samples acquired with the same scope setup and ambient conditions	$\pm$ (DC Gain Accuracy *  reading  + 0.15 div + 1.2 mV)

**✓ Offset accuracy**

<b>50 <math>\Omega</math> DC-coupled</b>	$\geq$ 5 mV/div: $\pm$ (0.005 X  offset - position  + 0.087 div)
	2 mV/div: $\pm$ (0.005 X  offset - position  + 0.13 div)
	1 mV/div: $\pm$ (0.005 X  offset - position  + 0.224 div)

<b>1 M<math>\Omega</math> DC-coupled</b>	$\geq 5$ mV/div: $\pm (0.005 \times  \text{offset} - \text{position}  + 0.2 \text{ div})$ 2 mV/div: $\pm (0.005 \times  \text{offset} - \text{position}  + 0.237 \text{ div})$ 1 mV/div: $\pm (0.005 \times  \text{offset} - \text{position}  + 0.384 \text{ div})$ Offset and position in units of Volts
<b>Position range</b>	$\pm 5$ divisions
<b>✓ DC gain accuracy</b>	
<b>50 <math>\Omega</math></b>	$\pm 2.0\%^1$ at $> 2$ mV/div ( $\pm 2.0\%$ at 2 mV/div, $\pm 4.0\%$ at 1 mV/div, typical) $\pm 1.0\%^2$ of full scale at $> 2$ mV/div, ( $\pm 1.0\%$ of full scale at 2 mV/div, $\pm 2.0\%$ at 1 mV/div, typical)
<b>1 M<math>\Omega</math></b>	$\pm 2.0\%^1$ at $> 2$ mV/div ( $\pm 2.0\%$ at 2 mV/div, $\pm 2.5\%$ at 1 mV/div and 500 $\mu$ V/div, typical) $\pm 1.0\%^2$ of full scale at $> 2$ mV/div, ( $\pm 1.0\%$ of full scale at 2 mV/div, $\pm 1.25\%$ at 1 mV/div and 500 $\mu$ V/div, typical)
<b>✓ Digital nonlinearity, typical</b>	INL @ $> 2$ mV/div: $\pm 16$ DL's (12-bit reference) INL @ $\leq 2$ mV/div: $\pm 20$ DL's (12-bit reference) DNL: $\pm 1.0$ DL's (12-bit digitizing scale) when oscilloscope is in Hi-Res mode.

## Analog AC

### ✓ Analog bandwidth 50 $\Omega$ DC coupled

Model	Volts/div Setting	Bandwidth
MSO6XB BW-10000	1 mV/div – 1V/div	DC - 10GHz
MSO6XB BW-8000	1 mV/div – 1V/div	DC – 8 GHz
MSO6XB BW-6000	1 mV/div – 1V/div	DC – 6 GHz
MSO6XB BW-4000	1 mV/div – 1V/div	DC – 4 GHz
MSO6XB BW-2500	1 mV/div – 1V/div	DC – 2.5 GHz
MSO6XB BW-1000	1 mV/div – 1V/div	DC – 1 GHz

### ✓ Analog Bandwidth, 1 M $\Omega$

The limits are for ambient temperature of  $\leq 30$  °C and the bandwidth selection set to FULL. Reduce the upper bandwidth frequency by 1% for each °C above 30 °C.

MSO6XB, all models:

Volts/Div Setting	Bandwidth
1 mV/div – 10 V/div	DC – 500 MHz
500 $\mu$ V/div – 995 $\mu$ V/div	DC – 250 MHz

### Analog bandwidth TPP1000 10X probe

The limits are for ambient temperature of  $\leq 30$  °C and the bandwidth selection set to FULL. Reduce the upper bandwidth frequency by 1% for each °C above 30 °C.

<sup>1</sup> Immediately following SPC, add 2% for every 5 °C change in ambient.

<sup>2</sup> Immediately following SPC, add 1% for every 5 °C change in ambient.

Model	Volts/Div Setting	Bandwidth
MDO6X, all models	5 mV/div - 100 V/div	DC - 1 GHz

**Bandwidth selections**

<b>10 GHz model, 50 Ohm:</b>	20 MHz, 200 MHz, 250 MHz, 350 MHz, 500 MHz, 1 GHz, 2 GHz, 2.5 GHz, 3 GHz, 4 GHz, 5 GHz, 6 GHz, 7 GHz, 8GHz, 9GHz, and 10 GHz.
<b>8 GHz model, 50 Ohm</b>	20 MHz, 200 MHz, 250 MHz, 350 MHz, 500 MHz, 1 GHz, 2 GHz, 2.5 GHz, 3 GHz, 4 GHz, 5 GHz, 6 GHz, 7 GHz, and 8 GHz.
<b>6 GHz model, 50 Ohm</b>	20 MHz, 200 MHz, 250 MHz, 350 MHz, 500 MHz, 1 GHz, 2 GHz, 2.5 GHz, 3 GHz, 4 GHz, 5 GHz, and 6 GHz
<b>4 GHz model, 50 Ohm</b>	20 MHz, 200 MHz, 250 MHz, 350 MHz, 500 MHz, 1 GHz, 2 GHz, 2.5 GHz, 3 GHz, and 4 GHz
<b>2.5 GHz model, 50 Ohm</b>	20 MHz, 200 MHz, 250 MHz, 350 MHz, 500 MHz, 1 GHz, 2 GHz, and 2.5 GHz
<b>1 GHz model, 50 Ohm</b>	20 MHz, 200 MHz, 250 MHz, 350 MHz, 500 MHz, and 1 GHz
<b>1M Ohm</b>	20 MHz (HW), 200 MHz, 250 MHz (HW), 350 MHz, and Full (500 MHz)

**Frequency response tolerance/flatness, 50 Ω** ± 0.5 dB from DC to 80% of rated bandwidth up to 8 GHz instruments  
± 0.5 dB from DC To 65% of rated bandwidth for 10 GHz instruments

**Combined TDP7700 and 6 Series B MSO flatness, typical** ±0.6 dB from DC to 80% of nominal BW when used with P77C292MM (SMA Probe Tip)  
Not valid while using peak detect or envelope mode. Valid for probe modes A, B, and D

**Phase accuracy** ±2.5 degrees, typical out to 9 GHz

**Lower frequency limit, AC coupled, typical** <10 Hz when AC 1 MΩ coupled. The AC coupled lower frequency limits are reduced by a factor of 10 (<1 Hz) when 10X passive probes are used.

**Upper frequency limit, 250 MHz bandwidth limited, typical**

<b>50 Ω, DC-coupled</b>	250 MHz, ± 5%
<b>1 MΩ, DC-coupled</b>	250 MHz, ± 25%

**Upper frequency limit, 20 MHz bandwidth limited, typical**

<b>50 Ω, DC-coupled</b>	20 MHz, ± 5%
<b>1 MΩ, DC-coupled</b>	20 MHz, ± 25%

**Calculated rise time**

The formula used is 0.4/BW where BW is the measured –3 dB bandwidth of the oscilloscope. The formula accounts for the rise time contribution of the oscilloscope independent of the rise time of the signal source.

Calculated Rise Time (10% to 90%)<sup>3</sup>

Model	50 Ω	TPP1000 Probe
	1 mV-1 V	5 mV-10 V
MDO6X BW-10000	40 ps	400 ps
MDO6X BW-8000	50 ps	400 ps
MDO6X BW-6000	66.67 ps	400 ps

Table continued...

Model	50 $\Omega$	TPP1000 Probe
	1 mV-1 V	5 mV-10 V
MSO6X BW-4000	100 ps	400 ps
MSO6X BW-2500	160 ps	400 ps
MSO6X BW-1000	400 ps	400 ps

## Effective bits (ENOB), typical

These limits apply to:

- Fastacq turned OFF
- 8 channel box: ch1, ch5
- 6 channel box: ch1, ch4
- 4 channel box: ch1, ch3

50 mV/div, 50 GS, Sample mode, 50 ohm, TYP								50 mV/div, 25 GS, HiRes mode, 50 ohm, TYP								
	Channel bandwidth															
Frequency	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
10 MHz	6.6	6.75	6.85	7	7.15	7.4	7.6	7.85	7.95	8.05	8.45	8.65	8.8	8.85	8.9	9.85
250 MHz	6.6	6.75	6.85	7	7.15	7.35	7.5	7.75	7.85	7.95	8.3	8.65	8.8	8.85		
1 GHz	6.6	6.75	6.85	7	7.1	7.3	7.45	7.7	7.8	7.95	8.3					
2 GHz	6.55	6.65	6.75	6.85	7	7.2	7.35	7.55	7.65	7.75						
4 GHz	6.45	6.65	6.75	6.95	7.05	7.2	7.35									
7 GHz	6.55	6.65	6.75	6.9												

2 mV/div, 50 GS, Sample mode, 50 ohm, TYP								2 mV/div, 25 GS, HiRes mode, 50 ohm, TYP								
	Channel bandwidth															
Frequency	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
10 MHz	4.95	5.1	5.2	5.35	5.55	5.7	5.9	6.1	6.2	6.35	6.8	7.25	7.5	7.65	7.85	9.25
250 MHz	4.95	5.1	5.2	5.35	5.55	5.7	5.85	6.1	6.2	6.35	6.8	7.25	7.5	7.65		
1 GHz	4.95	5.1	5.2	5.35	5.55	5.7	5.85	6.1	6.2	6.35	6.8					
2 GHz	4.95	5.1	5.2	5.35	5.55	5.65	5.85	6.05	6.2	6.35						
4 GHz	4.9	5.1	5.2	5.35	5.55	5.65	5.85									

Table continued...

<sup>3</sup> Below specification is independent of oscilloscope model and is dependent on bandwidth option only.

<b>7 GHz</b>	4.9	5.1	5.2	5.35												
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These limits apply to:

- 8 channel box: ch1, ch2, ch5, ch6
- 6 channel box: ch1, ch2, ch4, ch5
- 4 channel box: all channels

50 mV/div, 25 GS, Sample mode, 50 ohm, TYP								50 mV/div, 12.5 GS, HiRes mode, 50 ohm, TYP								
Channel bandwidth																
Frequency	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
10 MHz	6.25	6.4	6.5	6.6	6.8	7.05	7.25	7.5	7.6	7.8	8.2	8.5	8.65	8.75	8.85	9.75
250 MHz	6.25	6.4	6.5	6.6	6.8	7	7.2	7.4	7.55	7.7	8.1	8.5	8.9	9		
1 GHz	6.25	6.4	6.5	6.6	6.8	7	7.15	7.4	7.5	7.65	8					
2 GHz	6.2	6.3	6.4	6.6	6.7	6.95	7.1	7.35	7.4	7.5						
4 GHz	6.2	6.3	6.4	6.5	6.7	6.95	7									
7 GHz	6.2	6.2	6.3	6.4												

2 mV/div, 25 GS, Sample mode, 50 ohm, TYP								2 mV/div, 12.5 GS, HiRes mode, 50 ohm, TYP								
Channel bandwidth																
Frequency	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
10 MHz	4.8	5	5.1	5.3	5.5	5.65	5.9	6.1	6.2	6.35	6.8	7.2	7.4	7.5	7.75	8.8
250 MHz	4.8	5	5.1	5.3	5.5	5.65	5.9	6.1	6.2	6.35	6.8	7.2	7.4	7.5		
1 GHz	4.8	5	5.1	5.3	5.5	5.65	5.9	6.1	6.2	6.35	6.8					
2 GHz	4.8	5	5.1	5.3	5.5	5.6	5.85	6.1	6.2	6.35						
4 GHz	4.8	5	5.1	5.3	5.5	5.6	5.8									
7 GHz	4.8	5	5.1	5.3												

These limits apply to all channels

50 mV/div, 12.5 GS, Sample mode, 50 ohm, TYP								50 mV/div, 6.25 GS, HiRes mode, 50 ohm, TYP								
Channel bandwidth																
Frequency	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
Table continued...																

10 MHz						6.85	7.05	7.3	7.55	7.7	8.15	8.45	8.65	8.75	8.8	9.7
250 MHz						6.8	7.05	7.25	7.5	7.65	8.05	8.5	8.8	9.1		
1 GHz						6.8	7	7.25	7.45	7.65	8					
2 GHz						6.7	7	7.15	7.4	7.55						
4 GHz						6.7	7									
7 GHz																

2 mV/div, 12.5 GS, Sample mode, 50 ohm, TYP										2 mV/div, 6.25 GS, HiRes Mode, 50 ohm, TYP						
Channel bandwidth																
Frequency	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
10 MHz						5.6	5.8	6	6.15	6.3	6.75	7.2	7.4	7.5	7.75	8.8
250 MHz						5.6	5.75	6	6.15	6.3	6.75	7.2	7.4	7.5		
1 GHz						5.55	5.75	6	6.15	6.3	6.75					
2 GHz						5.55	5.75	6	6.1	6.3						
4 GHz						5.55	5.75									
7 GHz																

## Random Noise

V/div	50 Ω, 50 GS/s, Sample mode, RMS						50 Ω, 25 GS/s, HiRes mode, RMS									
	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
1 mV	259 uV	236 uV	216 uV	197 uV	175 uV	156 uV	138 uV	118 uV	107 uV	97.4 uV	72.2 uV	52.9 uV	45 uV	42 uV	36.2 uV	13 uV
2 mV	266 uV	242 uV	221 uV	199 uV	180 uV	158 uV	139 uV	120 uV	108 uV	98.7 uV	73.2 uV	53.6 uV	45.7 uV	42.6 uV	36.7 uV	13.2 uV
5 mV	322 uV	293 uV	271 uV	247 uV	220 uV	189 uV	165 uV	142 uV	128 uV	115 uV	84.6 uV	61.3 uV	52.2 uV	48.7 uV	41.9 uV	15 uV
10 mV	488 uV	445 uV	406 uV	370 uV	330 uV	278 uV	242 uV	203 uV	181 uV	163 uV	117 uV	84.8 uV	70.5 uV	65.8 uV	56.7 uV	20.6 uV
20 mV	850 uV	775 uV	707 uV	645 uV	581 uV	478 uV	412 uV	346 uV	309 uV	275 uV	195 uV	141 uV	116 uV	107 uV	93.2 uV	34.2 uV
50 mV	1.96 mV	1.79 mV	1.63 mV	1.5 mV	1.34 mV	1.09 mV	949 uV	790 uV	704 uV	627 uV	444 uV	325 uV	261 uV	241 uV	210 uV	79 uV
100 mV	5.05 mV	4.55 mV	4.15 mV	3.79 mV	3.38 mV	2.81 mV	2.45 mV	2.06 mV	1.83 mV	1.65 mV	1.17 mV	858 uV	705 uV	658 uV	573 uV	203 uV

Table continued...



<b>1 V</b>	38.8 mV	35.4 mV	32.6 mV	29.7 mV	26.8 mV	21.8 mV	18.8 mV	15.8 mV	13.9 mV	12.4 mV	8.78 mV	6.51 mV	5.11 mV	4.77 mV	4.15 mV	1.56 mV
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	50 $\Omega$ , 25 GS/s, Sample mode, RMS						50 $\Omega$ , 12.5 GS/s, HiRes mode, RMS									
V/div	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
<b>1 mV</b>	281 $\mu$ V	253 $\mu$ V	223 $\mu$ V	199 $\mu$ V	179 $\mu$ V	162 $\mu$ V	138 $\mu$ V	117 $\mu$ V	108 $\mu$ V	96.3 $\mu$ V	77.3 $\mu$ V	56 $\mu$ V	47.7 $\mu$ V	46.1 $\mu$ V	37.9 $\mu$ V	13 $\mu$ V
<b>2 mV</b>	288 $\mu$ V	260 $\mu$ V	224 $\mu$ V	202 $\mu$ V	180 $\mu$ V	164 $\mu$ V	139 $\mu$ V	119 $\mu$ V	110 $\mu$ V	97.6 $\mu$ V	72.4 $\mu$ V	56.2 $\mu$ V	47.3 $\mu$ V	46.7 $\mu$ V	38 $\mu$ V	13.3 $\mu$ V
<b>5 mV</b>	374 $\mu$ V	337 $\mu$ V	293 $\mu$ V	271 $\mu$ V	233 $\mu$ V	210 $\mu$ V	175 $\mu$ V	149 $\mu$ V	133 $\mu$ V	118 $\mu$ V	89.6 $\mu$ V	68 $\mu$ V	56.5 $\mu$ V	54 $\mu$ V	44.4 $\mu$ V	15.6 $\mu$ V
<b>10 mV</b>	600 $\mu$ V	541 $\mu$ V	482 $\mu$ V	440 $\mu$ V	388 $\mu$ V	330 $\mu$ V	271 $\mu$ V	226 $\mu$ V	203 $\mu$ V	186 $\mu$ V	128 $\mu$ V	91.9 $\mu$ V	77.3 $\mu$ V	74.7 $\mu$ V	65.8 $\mu$ V	22.6 $\mu$ V
<b>20 mV</b>	1.08 mV	976 $\mu$ V	890 $\mu$ V	793 $\mu$ V	691 $\mu$ V	595 $\mu$ V	486 $\mu$ V	398 $\mu$ V	363 $\mu$ V	320 $\mu$ V	226 $\mu$ V	162 $\mu$ V	133 $\mu$ V	120 $\mu$ V	106 $\mu$ V	41.2 $\mu$ V
<b>50 mV</b>	2.53 mV	2.3 mV	2.1 mV	1.85 mV	1.67 mV	1.4 mV	1.15 mV	960 $\mu$ V	856 $\mu$ V	745 $\mu$ V	534 $\mu$ V	396 $\mu$ V	307 $\mu$ V	280 $\mu$ V	247 $\mu$ V	105 $\mu$ V
<b>100 mV</b>	6.14 mV	5.54 mV	4.88 mV	4.4 mV	3.83 mV	3.38 mV	2.71 mV	2.28 mV	2.03 mV	1.81 mV	1.33 mV	941 $\mu$ V	792 $\mu$ V	722 $\mu$ V	666 $\mu$ V	236 $\mu$ V
<b>1 V</b>	49.9 mV	46.1 mV	42 mV	37 mV	33.4 mV	28.1 mV	23.1 mV	19.2 mV	17.1 mV	14.9 mV	10.8 mV	7.92 mV	6.14 mV	5.6 mV	4.94 mV	2.11 mV

	50 $\Omega$ , 12.5 GS/s, Sample mode, RMS			50 $\Omega$ , 6.25 GS/s, HiRes mode, RMS								
V/div	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz	
<b>1 mV</b>	162 $\mu$ V	142 $\mu$ V	123 $\mu$ V	109 $\mu$ V	99.6 $\mu$ V	73.9 $\mu$ V	54.8 $\mu$ V	46.6 $\mu$ V	43.5 $\mu$ V	38.8 $\mu$ V	14.7 $\mu$ V	
<b>2 mV</b>	168 $\mu$ V	148 $\mu$ V	127 $\mu$ V	112 $\mu$ V	101 $\mu$ V	74.9 $\mu$ V	55.5 $\mu$ V	47.3 $\mu$ V	44.1 $\mu$ V	39.3 $\mu$ V	14.8 $\mu$ V	
<b>5 mV</b>	233 $\mu$ V	203 $\mu$ V	173 $\mu$ V	142 $\mu$ V	128 $\mu$ V	92.8 $\mu$ V	68 $\mu$ V	56.5 $\mu$ V	52.8 $\mu$ V	47 $\mu$ V	17.7 $\mu$ V	
<b>10 mV</b>	388 $\mu$ V	334 $\mu$ V	281 $\mu$ V	221 $\mu$ V	197 $\mu$ V	134 $\mu$ V	97.4 $\mu$ V	80.1 $\mu$ V	74.7 $\mu$ V	66.6 $\mu$ V	25.6 $\mu$ V	
<b>20 mV</b>	715 $\mu$ V	609 $\mu$ V	518 $\mu$ V	398 $\mu$ V	350 $\mu$ V	237 $\mu$ V	174 $\mu$ V	138 $\mu$ V	129 $\mu$ V	115 $\mu$ V	44.6 $\mu$ V	
<b>50 mV</b>	1.71 mV	1.47 mV	1.25 mV	938 $\mu$ V	836 $\mu$ V	559 $\mu$ V	410 $\mu$ V	322 $\mu$ V	300 $\mu$ V	271 $\mu$ V	105 $\mu$ V	
<b>100 mV</b>	3.92 mV	3.38 mV	2.84 mV	2.23 mV	1.99 mV	1.36 mV	985 $\mu$ V	801 $\mu$ V	747 $\mu$ V	674 $\mu$ V	256 $\mu$ V	
<b>1 V</b>	34.2 mV	29.4 mV	25 mV	19 mV	16.7 mV	11.1 mV	8.1 mV	6.36 mV	5.94 mV	5.35 mV	2.08 mV	

1 M $\Omega$ , 12.5 GS/s, HiRes mode, RMS					
V/div	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
<b>1 mV</b>	262 $\mu$ V	190 $\mu$ V	153 $\mu$ V	149 $\mu$ V	103 $\mu$ V
<b>2 mV</b>	285 $\mu$ V	195 $\mu$ V	155 $\mu$ V	153 $\mu$ V	103 $\mu$ V
<b>5 mV</b>	297 $\mu$ V	205 $\mu$ V	161 $\mu$ V	154 $\mu$ V	110 $\mu$ V

Table continued...

1 M $\Omega$ , 12.5 GS/s, HiRes mode, RMS					
V/div	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
10 mV	334 $\mu$ V	231 $\mu$ V	186 $\mu$ V	165 $\mu$ V	141 $\mu$ V
20 mV	407 $\mu$ V	305 $\mu$ V	257 $\mu$ V	211 $\mu$ V	224 $\mu$ V
50 mV	737 $\mu$ V	553 $\mu$ V	528 $\mu$ V	387 $\mu$ V	510 $\mu$ V
100 mV	1.77 mV	1.38 mV	1.18 mV	952 $\mu$ V	1.13 mV
1 V	19 mV	14.9 mV	13.6 mV	11.3 mV	11.7 mV

## Random Noise (Typical)

TYP	50 $\Omega$ , 50 GS/s, Sample mode, RMS <sup>4</sup>						50 $\Omega$ , 25 GS/s, HiRes mode, RMS <sup>4</sup>									
	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
1 mV	183 $\mu$ V	167 $\mu$ V	153 $\mu$ V	139 $\mu$ V	124 $\mu$ V	111 $\mu$ V	97.4 $\mu$ V	83.8 $\mu$ V	75.6 $\mu$ V	68.9 $\mu$ V	51.1 $\mu$ V	37.5 $\mu$ V	31.9 $\mu$ V	28.1 $\mu$ V	24.2 $\mu$ V	8.68 $\mu$ V
2 mV	188 $\mu$ V	172 $\mu$ V	156 $\mu$ V	141 $\mu$ V	127 $\mu$ V	112 $\mu$ V	98.7 $\mu$ V	85 $\mu$ V	76.6 $\mu$ V	69.9 $\mu$ V	51.8 $\mu$ V	38 $\mu$ V	32.3 $\mu$ V	28.5 $\mu$ V	24.5 $\mu$ V	8.8 $\mu$ V
5 mV	228 $\mu$ V	208 $\mu$ V	192 $\mu$ V	175 $\mu$ V	156 $\mu$ V	134 $\mu$ V	117 $\mu$ V	101 $\mu$ V	90.7 $\mu$ V	81.7 $\mu$ V	59.9 $\mu$ V	43.4 $\mu$ V	36.9 $\mu$ V	32.5 $\mu$ V	28 $\mu$ V	10.1 $\mu$ V
10 mV	346 $\mu$ V	315 $\mu$ V	287 $\mu$ V	262 $\mu$ V	234 $\mu$ V	197 $\mu$ V	171 $\mu$ V	144 $\mu$ V	128 $\mu$ V	116 $\mu$ V	82.9 $\mu$ V	60 $\mu$ V	49.9 $\mu$ V	44 $\mu$ V	37.9 $\mu$ V	13.8 $\mu$ V
20 mV	602 $\mu$ V	549 $\mu$ V	501 $\mu$ V	457 $\mu$ V	412 $\mu$ V	338 $\mu$ V	291 $\mu$ V	245 $\mu$ V	219 $\mu$ V	195 $\mu$ V	138 $\mu$ V	99.9 $\mu$ V	82.1 $\mu$ V	71.5 $\mu$ V	62.3 $\mu$ V	22.9 $\mu$ V
50 mV	1.39 mV	1.27 mV	1.15 mV	1.07 mV	949 $\mu$ V	772 $\mu$ V	672 $\mu$ V	559 $\mu$ V	498 $\mu$ V	444 $\mu$ V	314 $\mu$ V	230 $\mu$ V	185 $\mu$ V	161 $\mu$ V	140 $\mu$ V	52.8 $\mu$ V
100 mV	3.58 mV	3.22 mV	2.94 mV	2.68 mV	2.39 mV	1.99 mV	1.73 mV	1.46 mV	1.3 mV	1.17 mV	829 $\mu$ V	607 $\mu$ V	499 $\mu$ V	440 $\mu$ V	383 $\mu$ V	136 $\mu$ V
1 V	27.4 mV	25 mV	23.1 mV	21.1 mV	19 mV	15.4 mV	13.3 mV	11.2 mV	9.85 mV	8.78 mV	6.22 mV	4.61 mV	3.62 mV	3.19 mV	2.78 mV	1.04 mV

TYP	50 $\Omega$ , 25 GS/s, Sample mode, RMS					50 $\Omega$ , 12.5 GS/s, HiRes mode, RMS										
	10 GHz	9 GHz	8 GHz	7 GHz	6 GHz	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
1 mV	199 $\mu$ V	179 $\mu$ V	158 $\mu$ V	141 $\mu$ V	127 $\mu$ V	114 $\mu$ V	97.4 $\mu$ V	82.9 $\mu$ V	76.5 $\mu$ V	68.1 $\mu$ V	54.8 $\mu$ V	39.7 $\mu$ V	33.8 $\mu$ V	30.8 $\mu$ V	25.3 $\mu$ V	8.68 $\mu$ V
2 mV	204 $\mu$ V	184 $\mu$ V	158 $\mu$ V	143 $\mu$ V	127 $\mu$ V	116 $\mu$ V	98.7 $\mu$ V	84 $\mu$ V	77.5 $\mu$ V	69.1 $\mu$ V	51.2 $\mu$ V	39.8 $\mu$ V	33.5 $\mu$ V	31.2 $\mu$ V	25.4 $\mu$ V	8.9 $\mu$ V
5 mV	264 $\mu$ V	238 $\mu$ V	208 $\mu$ V	192 $\mu$ V	165 $\mu$ V	149 $\mu$ V	124 $\mu$ V	105 $\mu$ V	93.8 $\mu$ V	83.6 $\mu$ V	63.4 $\mu$ V	48.1 $\mu$ V	40 $\mu$ V	36.1 $\mu$ V	29.7 $\mu$ V	10.4 $\mu$ V
10 mV	425 $\mu$ V	383 $\mu$ V	342 $\mu$ V	311 $\mu$ V	274 $\mu$ V	234 $\mu$ V	192 $\mu$ V	160 $\mu$ V	144 $\mu$ V	131 $\mu$ V	90.9 $\mu$ V	65.1 $\mu$ V	54.8 $\mu$ V	49.9 $\mu$ V	44 $\mu$ V	15.1 $\mu$ V

Table continued...

<sup>4</sup> 50 GS sample mode and 25 GS hires mode not available in Fastacq

<b>20 mV</b>	766 uV	691 uV	630 uV	562 uV	489 uV	421 uV	344 uV	282 uV	257 uV	226 uV	160 uV	115 uV	94.3 uV	80.3 uV	70.7 uV	27.5 uV
<b>50 mV</b>	1.79 mV	1.63 mV	1.49 mV	1.31 mV	1.18 mV	994 uV	817 uV	680 uV	606 uV	528 uV	378 uV	280 uV	217 uV	187 uV	165 uV	70.4 uV
<b>100 mV</b>	4.35 mV	3.92 mV	3.46 mV	3.11 mV	2.71 mV	2.39 mV	1.92 mV	1.62 mV	1.44 mV	1.28 mV	941 uV	666 uV	560 uV	482 uV	445 uV	158 uV
<b>1 V</b>	35.4 mV	32.6 mV	29.7 mV	26.2 mV	23.6 mV	19.9 mV	16.3 mV	13.6 mV	12.1 mV	10.6 mV	7.65 mV	5.6 mV	4.35 mV	3.75 mV	3.3 mV	1.41 mV

TYP	50 $\Omega$ , 12.5 GS/s, Sample mode, RMS						50 $\Omega$ , 6.25 GS/s, HiRes mode, RMS					
	5 GHz	4 GHz	3 GHz	2.5 GHz	2 GHz	1 GHz	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz	
<b>1 mV</b>	114 uV	101 uV	86.8 uV	77.3 uV	70.5 uV	52.3 uV	38.8 uV	33 uV	29.1 uV	25.9 uV	9.85 uV	
<b>2 mV</b>	119 uV	105 uV	90.1 uV	79.3 uV	71.5 uV	53 uV	39.3 uV	33.5 uV	29.5 uV	26.3 uV	9.87 uV	
<b>5 mV</b>	165 uV	144 uV	122 uV	101 uV	90.7 uV	65.7 uV	48.1 uV	40 uV	35.3 uV	31.4 uV	11.8 uV	
<b>10 mV</b>	274 uV	236 uV	199 uV	156 uV	139 uV	95.2 uV	68.9 uV	56.7 uV	49.9 uV	44.5 uV	17.1 uV	
<b>20 mV</b>	506 uV	431 uV	367 uV	282 uV	248 uV	168 uV	123 uV	97.6 uV	86 uV	76.6 uV	29.8 uV	
<b>50 mV</b>	1.21 mV	1.04 mV	886 uV	664 uV	592 uV	396 uV	290 uV	228 uV	201 uV	181 uV	70.4 uV	
<b>100 mV</b>	2.78 mV	2.39 mV	2.01 mV	1.58 mV	1.41 mV	963 uV	697 uV	567 uV	499 uV	450 uV	171 uV	
<b>1 V</b>	24.2 mV	20.8 mV	17.7 mV	13.4 mV	11.8 mV	7.82 mV	5.73 mV	4.5 mV	3.97 mV	3.58 mV	1.39 mV	

V/div	1 M $\Omega$ , 25 GS/s and 12.5 GS/s, Sample Mode, RMS				
	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
1 mV	186 uV	134 uV	108 uV	108 uV	72.2 uV
2 mV	202 uV	138 uV	111 uV	108 uV	78.4 uV
5 mV	220 uV	158 uV	130 uV	124 uV	99.4 uV
10 mV	262 uV	199 uV	183 uV	171 uV	160 uV
20 mV	380 uV	335 uV	282 uV	282 uV	282 uV
50 mV	781 uV	634 uV	704 uV	704 uV	704 uV
100 mV	1.69 mV	1.47 mV	1.41 mV	1.41 mV	1.41 mV
1 V	18.3 mV	15.8 mV	15.6 mV	15.4 mV	14.1 mV

V/div	1 M $\Omega$ , 12.5 GS/s and 6.25 GS/s, HiRes Mode, RMS				
	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
1 mV	186 uV	134 uV	108 uV	106 uV	73 uV
2 mV	202 uV	138 uV	110 uV	108 uV	73.2 uV
5 mV	210 uV	145 uV	114 uV	109 uV	78.1 uV
10 mV	236 uV	163 uV	131 uV	117 uV	99.6 uV

Table continued...

V/div	1 M $\Omega$ , 12.5 GS/s and 6.25 GS/s, HiRes Mode, RMS				
	500 MHz	350 MHz	250 MHz	200 MHz	20 MHz
20 mV	288 $\mu$ V	216 $\mu$ V	182 $\mu$ V	149 $\mu$ V	158 $\mu$ V
50 mV	522 $\mu$ V	391 $\mu$ V	374 $\mu$ V	274 $\mu$ V	361 $\mu$ V
100 mV	1.25 mV	974 $\mu$ V	838 $\mu$ V	674 $\mu$ V	801 $\mu$ V
1 V	13.4 mV	10.6 mV	9.63 mV	8.01 mV	8.29 mV

## Overdrive recovery time

500 ns pulse width:

50 $\Omega$	400% Overdrive			2000% Overdrive		
	Vertical scale	5%	1%	0.2%	5%	1%
2 mV / div	< 50 ns	50 ns	300 ns	—	—	—
10 mV / div	< 50 ns	50 ns	300 ns	50 ns	50 ns	400 ns
0.1 V / div	< 50 ns	50 ns	300 ns	—	—	—

100  $\mu$ s pulse width

50 $\Omega$	400% Overdrive			2000% Overdrive		
	Vertical scale	5%	1%	0.2%	5%	1%
2 mV / div	< 50 ns	50 ns	1 $\mu$ s	—	—	—
10 mV / div	< 50 ns	50 ns	1 $\mu$ s	<50 ns	50 ns	150 $\mu$ s
0.1 V / div	< 50 ns	50 ns	1 $\mu$ s	—	—	—

TPP1000 Probe

Vertical scale	500% Overdrive			5000% Overdrive		
	5%	1%	0.2%	5%	1%	0.2%
10 mV / div	20 $\mu$ s	2.0 ms	2.0 ms	30 $\mu$ s	50 $\mu$ s	2.2 ms
20 mV / div	14 $\mu$ s	2.0 ms	2.0 ms	30 $\mu$ s	50 $\mu$ s	110 $\mu$ s
50 mV / div	12 $\mu$ s	60 $\mu$ s	2.0 ms	---	---	---
0.1 V / div	12 $\mu$ s	60 $\mu$ s	2.0 ms	---	---	---

Crosstalk (Channel Isolation) - 50 Ohm  
 $\geq$ 50 dB up to 2 GHz  
 $\geq$ 45 dB up to 5 GHz  
 $\geq$ 40 dB up to 10 GHz  
 With channels set to 200 mV/div

## SFDR analog channels

SFDR analog channels, typical A single input tone at -1 dBFS is swept from 10 MHz to bandwidth and the largest error spur is recorded.

Bandwidth	Sample rate	Acquisition mode	Vertical scale	SFDR
10 GHz	50 GS/s	Sample	50 mV/div	-45 dB
10 GHz	25 GS/s	Sample	50 mV/div	-45 dB
5 GHz	12.5 GS/s	Sample	50 mV/div	-45 dB
5 GHz	25 GS/s	Hi Res	50 mV/div	-51 dB
5 GHz	12.5 GS/s	Hi Res	50 mV/div	-51 dB
2 GHz	6.25 GS/s	Hi Res	50 mV/div	-52 dB
10 GHz	50 GS/s	Sample	2 mV/div	-42 dB
10 GHz	25 GS/s	Sample	2 mV/div	-42 dB
5 GHz	12.5 GS/s	Sample	2 mV/div	-42 dB
5 GHz	25 GS/s	Hi Res	2 mV/div	-51 dB
5 GHz	12.5 GS/s	Hi Res	2 mV/div	-51 dB
2 GHz	6.25 GS/s	Hi Res	2 mV/div	-52 dB

## RF front-end

<b>Two-tone third intercept point, typical</b>	+25 dBm <6 GHz +20 dBm 6 GHz to 8 GHz 12 dBm 8 GHz to 10 GHz
<b>SFDR, typical</b>	-60 dBc for a 1 GHz input in a 5 GHz span with a 3 GHz CF -70 dBc at 2.35 GHz, 1.5 GHz span
<b>EVM (256 QAM), typical</b>	0.4% rms at 20 M Symbols/s 1.1% rms at 800 M Symbols/s 1.5% rms at 1.2 G Symbols/s 1.6% rms at 2 G Symbols/s
<b>DANL</b>	-163 dBm/Hz 10 MHz to 6 GHz, 1 mV/div -160 dBm/Hz >6 GHz to 10 GHz, 1 mV/div
<b>Harmonic Distortion</b>	2 <sup>nd</sup> harmonic distortion at -58 dBc with a 0 dBm 1 GHz signal. 3 <sup>rd</sup> harmonic distortion at -55 dBc with a 0 dBm 1 GHz signal.
<b>Sensitivity/Noise Density, typical</b>	-157 dBm/Hz (1 mV/div, -38 dBm, 1.0001 GHz CF, 500 kHz span, 3 kHz RBW)
<b>Phase noise at 1 GHz, typical</b>	-118 dBc/Hz 10 kHz offset -119 dBc/Hz 100 kHz offset -132 dBc/Hz 1 MHz offset -140 dBc/Hz 10 MHz offset
<b>Absolute amplitude accuracy, typical</b>	±1 dB (0-8 GHz) for max 10 GHz BW.
<b>Noise figure, typical</b>	1 mv/div, 11 dB 10 MHz to 6 GHz and 14 dB 6 GHz to 10 GHz
<b>SNR/Dynamic Range, typical</b>	112 dB with a 1 GHz signal in a 100 MHz span with 1 kHz RBW ± 20 MHz from the carrier.

## Skew and delay

### Digital skew, typical

Digital-to-Analog skew	1 ns
Digital-to-Digital skew	± 320 ps from bit 0 of any TekVPI + channel to bit 0 of any TekVPI+ channel.
Digital skew within a FlexChannel	< 200 ps within any TEKVPI + channel

**Delay between analog channels, full bandwidth, typical** ≤ 10 ps for any two channels with input impedance set to 50 Ω, DC coupling with equal Volts/div or above 10 mV/div

**Deskew range and resolution** -125 ns to +125 ns with a resolution of 40 ps (for Peak Detect and Envelope acquisition modes).  
-125 ns to +125 ns with a resolution of 1 ps (for all other acquisition modes).

**Acquisition Modes** Sample, Peak Detect, High Res, Envelope, Average, Fast Frame

### Number of digitized bits

	Sample Rate	Acquisition Mode	Digitized Bits	Channel Bandwidth
MSO64B channels 1 and 3 (2 and 4 off)	50 GS/s	Sample	8	10 GHz
	25 GS/s	Hi Res	12	5 GHz
	12.5 GS/s	Hi Res	12	5 GHz
MSO66B channels 1 and 4 (2, 3, 5, and 6 off)	6.25 GS/s	Hi Res	13	2.5 GHz
	3.125 GS/s	Hi Res	14	1 GHz
	1.5625 GS/s	Hi Res	15	500 MHz
MSO68B channels 1 and 5 (2, 3, 4, 6, 7, and 8 off)	625 MS/s	Hi Res	16	200 MHz
MSO64B all channels	25 GS/s	Sample	8	10 GHz
	12.5 GS/s	Sample	12	10 GHz
MSO66B channels 1, 2, 4, and 5 (3 and 6 off)	12.5 GS/s	Hi Res	12	5 GHz
	6.25 GS/s	Hi Res	13	2.5 GHz
	3.125 GS/s	Hi Res	14	1 GHz
MSO68B channels 1, 2, 5, and 6 (3, 4, 7, and 8 off)	1.5625 GS/s	Hi Res	15	500 MHz
	625 MS/s	Hi Res	16	200 MHz
MSO66B all channels	12.5 GS/s	Sample	8	5 GHz
	6.25 GS/s	Sample	12	5 GHz
MSO68B all channels	3.125 GS/s	Hi Res	13	1 GHz
	1.5625 GS/s	Hi Res	14	500 MHz
	1.25 GS/s	Hi Res	15	500 MHz
	312.5 MS/s	Hi Res	16	100 MHz

**Peak Detect or Envelope Mode**  
**Minimum Detectable Pulse,**  
**typical**

Channels	Sample Rate	Minimum Pulse Width
MSO64B channels 1 and 3 (2 and 4 off) MSO66B channels 1 and 4 (2, 3, 5, and 6 off) MSO68B channels 1 and 5 (2,3, 4, 6, 7, and 8 off)	50 GS/s	160 ps
MSO64B channels 2 and 4 MSO66B channels 2 and 5 (3 and 6 off) MSO68B channels 2 and 6 (3, 4, 7 and 8 off)	25 GS/s	160 ps
MSO66B channels 3 and 6 MSO68B channels 3, 4, 7, and 8	12.5 GS/s	320 ps

**Number of waveforms for**  
**average acquisition mode**

2 to 10,240 Waveforms, default 16 waveforms

## TekVPI interface

**TekVPI interconnect**

All analog channel inputs on the front panel conform to the TekVPI+ specification defined in the TEKPROBE, TEKCONNECT, AND TEKVPI STANDARDS specification.

**Total Probe Power**

80 W maximum

**MSO64B**

40 W maximum for channels 1 through 2 and 40 W maximum for channels 3 through 4.

**MSO66B**

40 W maximum for channels 1 through 3 and 40 W maximum for channels 4 through 6.

**MSO68B**

40 W maximum for channels 1 through 4 and 40 W maximum for channels 5 through 8.

**Probe Power per Channel**

5 V Supply: 300 mW (60 mA max)

12 V Supply: 20 W (1.67 A max)

**Low-C Passive Probe Support**

Supports TPP1000 and similar probes

**Digital Probe Support**

Supports TLP058 VPI+ digital probes

**Probe User Interface**

Probe setup menu

Probe menu button support (opens probe setup menu)

Probe warning messages and indicators

Dynamic range indication

Probe bandwidth limiting

## Timebase system

✓ **Timebase factory tolerance** Frequency tolerance at factory calibration is  $\pm 12$  ppb (parts per billion).

At Calibration, 25 °C ambient, over any  $\geq 1$  ms interval.

**Timebase temperature stability**  $\pm 20$  PPB across the full operating range of 0 °C to 50 °C, after a sufficient soak time at the temperature. The instrument needs to soak at a fixed temperature for an extended period of time to insure the time-base frequency is stable. The following is a worst case estimation for the frequency error versus the amount of time the instrument has been soaking at a temperature. Max error (in ppb) =  $\pm 10^{\wedge}[\log[100/\text{soak time}(\text{in hours})]]$

For example, a 1 hour soak will have a max frequency error of  $\pm 100$  ppb, but a 10 hour soak will have a max frequency error of 10 ppb.

$\pm 300$  PPB/Year, and will not exceed  $\pm 2$  PPM over 10 years without calibration.

Calibration will reduce this frequency error to under  $\pm 12$  PPB

Frequency tolerance change at 25 °C over a periods of 1 year and 10 years.

## Sample rate

### Sample rate range

Channels	Sample rate (real time)	Sample rate (interpolated)
2 channels	6.25 S/s to 50 GS/s	100 GS/s to 2.5 TS/s
4 channels	6.25 S/s to 25 GS/s	50 GS/s to 2.5 TS/s
8 channels	6.25 S/s to 12.5 GS/s	25 GS/s to 2.5 TS/s

On 4-channel models, the 2 channels with 50 GS/s capability are 1 and 3 (channels 2 and 4 must be off).

On 6-channel models, the 2 channels with 50 GS/s capability are 1 and 4 (channels 2, 3, 5, and 6 must be off).

On 8-channel models, the 2 channels with 50 GS/s capability are 1 and 5 (channels 2, 3, 4, 6, 7, and 8 must be off).

On 6-channel models, the 4 channels with 25 GS/s capability are 1, 2, 4 and 5 (channels 3 and 6 must be off).

On 8-channel models, the 4 channels with 25 GS/s capability are 1, 2, 5, and 6 (channels 3, 4, 7, and 8 must be off).

### High Res sample rate

Channels	Sample rate
2 channels	up to 25 GS/s
4 channels	up to 12.5 GS/s
8 channels	up to 6.25 GS/s

On 4-channel models, the 2 channels with 25 GS/s capability are 1 and 3 (channels 2 and 4 must be off).

On 6-channel models, the 2 channels with 25 GS/s capability are 1 and 4 (channels 2, 3, 5, and 6 must be off).

On 8-channel models, the 2 channels with 25 GS/s capability are 1 and 5 (channels 2, 3, 4, 6, 7, and 8 must be off).

On 6-channel models, the 4 channels with 12.5 GS/s capability are 1, 2, 4, and 5 (channels 3 and 6 must be off).

On 8-channel models, the 4 channels with 12.5 GS/s capability are 1, 2, 5 and 6 (channels 3, 4, 7, and 8 must be off).



- Interpolated waveform rate (Sample mode):**
- 2.5 TS/s
  - 1 TS/s
  - 500 GS/s
  - 250 GS/s
  - 100 GS/s
  - 50 GS/s (only with a 25 GS/s or 12.5 GS/s channel on)
  - 25 GS/s (only with a 12.5 GS/s channel on)

- Interpolated waveform rate (High Res mode):**
- 2.5 TS/s
  - 1 TS/s
  - 500 GS/s
  - 250 GS/s
  - 100 GS/s
  - 50 GS/s
  - 25 GS/s (only with a 25 GS/s or 12.5 GS/s channel on)
  - 12.5 GS/sec (only with a 12.5 GS/s channel on)

**Record length range** Applies to analog and digital channels. All acquisition modes are 1 G maximum record length, down to 1 k minimum record length, adjustable in 1 sample increments.

Standard: 62.5 Mpoints

Option 6-RL-1: 125 Mpoints

Option 6-RL-2: 250 Mpoints

Option 6-RL-3: 500 Mpoints

Option 6-RL-4: 1 Gpoints

**Horizontal scale range** 40 ps/div to 1000 s/div

The minimum horizontal scale is determined by the record length by dividing the record length by 10 (because there are 10 divisions on-screen) and then dividing by the maximum sample rate (2.5 TS/s). 40 ps/div can only be achieved with a 2.5 TS/s sample rate (maximum) and a 1000 point record length (minimum). The table below shows minimum horizontal scales for a collection of record lengths.

Record length	Minimum Horizontal Scale
1 kS	40 ps/div
10 kS	400 ps/div
100 kS	4 ns/div
1 MS	40 ns/div
10 MS	400 ns/div
62.5 MS	2.5 us/div
125 MS with optional memory length	5 us/div
250 MS with optional memory length	10 us/div
500 MS with optional memory length	20 us/div
Table continued...	

Record length	Minimum Horizontal Scale
1 GS with optional memory length	40 us/div

1000 s/div is the maximum horizontal scale which limits the acquisition length to 10000 s (2 hours, 46 minutes and 40 seconds).

Below a record length of 62.5 kS, the horizontal scale is further limited. The maximum horizontal scale can be calculated by dividing the record length by 10 (because there are 10 division on-screen) and then dividing by the minimum sample rate (6.25 S/s). The table below shows maximum horizontal scales for a collection of record length.

Record length	Maximum Horizontal Scale
1 kS	16 s/div
5 kS	80 s/div
10 kS	160 s/div
25 kS	400 s/div
50 kS	800 s/div
62.5 kS	1000 s/div

Sample jitter (Aperture uncertainty), typical

Time duration	Typical jitter
<1 μs	80 fs
<1 ms	130 fs

## Delta-time measurement accuracy, typical

Delta-time measurement accuracy, typical

Formula for DTA:  $SR_1 =$  Slew Rate (1<sup>st</sup> Edge) around 1<sup>st</sup> point in measurement

$SR_2 =$  Slew Rate (2<sup>nd</sup> Edge) around 2<sup>nd</sup> point in measurement

$N =$  RSS of input-referred noise (volts rms) and Dynamic noise estimate (volts rms).

$$\text{Dynamic noise estimate}^* = \sqrt{\frac{BW}{8GHz}} \times 19.9 \times 10^{-3} \times \text{volts/div}$$



**Note:** Dynamic noise is noise that appears with a signal applied (such as distortion or interleave errors).

$t_j =$  aperture uncertainty (sec rms—80fs for short durations)

TBA = timebase accuracy or reference frequency error (which is 20ppb)

$t_p =$  delta-time measurement duration (sec)

$$DTA_{rms} = \sqrt{\left(\frac{N}{SR_1}\right)^2 + \left(\frac{N}{SR_2}\right)^2 + t_j^2 + TBA \times t_p}$$

### Delta Time Measurement Accuracy (DTA), reference example

These limits apply to:

- MSO64B: Channels 1 and 3
- MSO66B: Channels 1 and 4
- MSO68B: Channels 1 and 5 are the only ones used

Volts/div	BW	Sample rate	Sample mode	Frequency	Amplitude pk-pk	DTA TYP
50 mV	10 GHz	50 GHz	Sample	5.65 GHz	400 mV	327.78 fs
50 mV	8 GHz	50 GHz	Sample	4.52 GHz	400 mV	346.08 fs
50 mV	6 GHz	50 GHz	Sample	3.39 GHz	400 mV	383.01 fs
50 mV	5 GHz	25 GHz	Hi-Res	2.825 GHz	400 mV	387.37 fs
50 mV	4 GHz	25 GHz	Hi-Res	2.26 GHz	400 mV	424.08 fs
50 mV	2.5 GHz	25 GHz	Hi-Res	1.4125 GHz	400 mV	512.12 fs
50 mV	2 GHz	25 GHz	Hi-Res	1.13 GHz	400 mV	569.94 fs
50 mV	1 GHz	25 GHz	Hi-Res	565 MHz	400 mV	802.6 fs
5 mV	10 GHz	50 GHz	Sample	5.65 GHz	40 mV	486.58 fs
5 mV	8 GHz	50 GHz	Sample	4.52 GHz	40 mV	514.54 fs
5 mV	6 GHz	50 GHz	Sample	3.39 GHz	40 mV	561 fs
5 mV	5 GHz	25 GHz	Hi-Res	2.825 GHz	40 mV	583.91 fs
5 mV	4 GHz	25 GHz	Hi-Res	2.26 GHz	40 mV	637.27 fs
5 mV	2.5 GHz	25 GHz	Hi-Res	1.4125 GHz	40 mV	791.51 fs
5 mV	2 GHz	25 GHz	Hi-Res	1.13 GHz	40 mV	889.92 fs
5 mV	1 GHz	25 GHz	Hi-Res	565 MHz	40 mV	1.29 ps

These limits apply to:

- MSO64B: All channels
- MSO66B: Channels 1, 2, 4, and 5
- MSO68B: Channels 1, 2, 5, and 6 are the only ones used

Volts/div	BW	Sample rate	Sample mode	Frequency	Amplitude pk-pk	DTA TYP
50 mV	10 GHz	25 GHz	Sample	5.65 GHz	400 mV	397.32 fs
50 mV	8 GHz	25 GHz	Sample	4.52 GHz	400 mV	417.47 fs
50 mV	6 GHz	25 GHz	Sample	3.39 GHz	400 mV	448.57 fs
50 mV	5 GHz	12.5 GHz	Hi-Res	2.825 GHz	400 mV	460.86 fs
50 mV	4 GHz	12.5 GHz	Hi-Res	2.26 GHz	400 mV	483.23 fs
50 mV	2.5 GHz	12.5 GHz	Hi-Res	1.4125 GHz	400 mV	581.18 fs
50 mV	2 GHz	12.5 GHz	Hi-Res	1.13 GHz	400 mV	636.8 fs
50 mV	1 GHz	12.5 GHz	Hi-Res	565 MHz	400 mV	904.88 fs
5 mV	10 GHz	25 GHz	Sample	5.65 GHz	40 mV	555.49 fs

Table continued...

Volts/div	BW	Sample rate	Sample mode	Frequency	Amplitude pk-pk	DTA TYP
5 mV	8 GHz	25 GHz	Sample	4.52 GHz	40 mV	551.87 fs
5 mV	6 GHz	25 GHz	Sample	3.39 GHz	40 mV	589.36 fs
5 mV	5 GHz	12.5 GHz	Hi-Res	2.825 GHz	40 mV	637.71 fs
5 mV	4 GHz	12.5 GHz	Hi-Res	2.26 GHz	40 mV	668.87 fs
5 mV	2.5 GHz	12.5 GHz	Hi-Res	1.4125 GHz	40 mV	814.74 fs
5 mV	2 GHz	12.5 GHz	Hi-Res	1.13 GHz	40 mV	907.3 fs
5 mV	1 GHz	12.5 GHz	Hi-Res	565 MHz	40 mV	1.36 ps

these limits apply to:

- MSO66B: All channels
- MSO68B: All channels are used

Volts/div	BW	Sample rate	Sample mode	Frequency	Amplitude pk-pk	DTA TYP
50 mV	5 GHz	12.5 GHz	Sample	2.825 GHz	400 mV	536.22 fs
50 mV	4 GHz	12.5 GHz	Sample	2.26 GHz	400 mV	580.12 fs
50 mV	2.5 GHz	6.25 GHz	Hi-Res	1.4125 GHz	400 mV	620.41 fs
50 mV	2 GHz	6.25 GHz	Hi-Res	1.13 GHz	400 mV	690.69 fs
50 mV	1 GHz	6.25 GHz	Hi-Res	565 MHz	400 mV	934.61 fs
5 mV	5 GHz	12.5 GHz	Sample	2.825 GHz	40 mV	698.23 fs
5 mV	4 GHz	12.5 GHz	Sample	2.26 GHz	40 mV	761.47 fs
5 mV	2.5 GHz	6.25 GHz	Hi-Res	1.4125 GHz	40 mV	864.09 fs
5 mV	2 GHz	6.25 GHz	Hi-Res	1.13 GHz	40 mV	971.89 fs
5 mV	1 GHz	6.25 GHz	Hi-Res	565 MHz	40 mV	1.4 ps

## Trigger system

**Trigger types** Edge, Dual Edge, Pulse Width, Timeout, Runt, Logic, Setup & Hold, Rise / Fall Time, Window, Bus, Parallel, I2C, SPI, RS-232, CAN, LIN, FlexRay, USB LS, USB FS, USB HS, Ethernet 10/100, Audio (I2S/LJ/RJ/TDM), CAN-FD, ARINC 429, MIL-STD-1553, SPMI, SENT

**Trigger modes** Normal and Auto

**Trigger coupling** DC, HF Reject, LF Reject, Noise Reject

**Trigger holdoff range** 0 ns minimum to 10 seconds maximum

**Trigger level ranges, typical**

Source	Range
Analog Inputs	±5 divs from center of screen
Line	N/A
AUX Input	±5 V

**Time Range for Glitch, Pulse Width, Timeout, Time-qualified Runt or Time-qualified Window, Transition Time Trigger** 40 ps to 20 s

**Setup/Hold Violation Trigger, Setup and Hold Time Ranges**

Feature	Min	Max
Setup Time	0 ns	20 s
Hold Time	0 ns	20 s
Setup + Hold Time	80 ps	22 s

Input coupling on clock and data channels must be the same.

For Setup Time, positive numbers mean a data transition before the clock.

For Hold Time, positive numbers mean a data transition after the clock edge.

Setup + Hold Time is the algebraic sum of the Setup Time and the Hold Time programmed by the user.

Oscilloscope Trigger position is equal to the Hold Time value.

**Trigger jitter, typical**

Analog Inputs

- Trigger jitter ≤ 1.5 ps RMS for Sample mode, Edge-type trigger, FastAcq, and Pulse width modes
- Trigger jitter ≤ 40 ps RMS for non-Edge-type trigger modes

**Trigger Bandwidth – Edge, Pulse, Logic, typical**

Model	Instrument bandwidth	Edge trigger bandwidth	Pulse, Logic trigger bandwidth
MSO6XB	10 GHz	10 GHz	4 GHz

Table continued...

Model	Instrument bandwidth	Edge trigger bandwidth	Pulse, Logic trigger bandwidth
MSO6XB	8 GHz	8 GHz	4 GHz
MSO6XB	6 GHz	6 GHz	4 GHz
MSO6XB	4 GHz, 2.5 GHz, 1 GHz	Instrument bandwidth	Instrument bandwidth

#### Trigger level accuracy, DC-coupled, typical

For signals having rise and fall times  $\geq 10$  ns, the limits are as follows:

Source	Range
Any Input Channel	$\pm 0.20$ div
Line	N/A

This limit is checked by SPC at very low frequency (nearly DC).

This limit does not include frequency dependent effects, edge type trigger sensitivity not DC coupled, or trigger position error.

Set the trigger level to the desired value. Using an adjustable DC source, inject a voltage into the instrument. Adjust the voltage downward (if checking negative slope) or upward (if checking positive slope) until the scope triggers. The difference between the trigger level setting and the voltage that actually caused the trigger is the trigger level accuracy.

#### Edge-type Trigger Sensitivity, DC-coupled, typical

Trigger Source	Sensitivity
Any input channel, 1 M $\Omega$ path	0.5 mV/div to 0.99 mV/div – 5 mV from DC to instrument bandwidth. $\geq 1$ mV/div – The greater of 5 mV or 0.7 div from DC to the less of 500 MHz or BW.
Any input channel, 50 $\Omega$ path	<ul style="list-style-type: none"> <li>1 mV/div to 1.99 mV/div – 3.5 divisions from DC to 80% of instrument bandwidth.</li> <li>2 mV/div to 4.99 mV/div - 2 divisions from DC to 80% of instrument bandwidth.</li> <li><math>\geq 5</math> mV/div - 1.5 divisions from DC to 80% of instrument bandwidth.</li> </ul>
Line, 90 V to 264 V line voltage at 50-60 Hz line frequency	103.5 V to 126.5 V
AUX Trigger	250 mVpp (DC - 400 MHz)

#### Edge-type trigger sensitivity, not DC-coupled, typical

Trigger Coupling	Typical Sensitivity
NOISE REJ	2.5 times the DC Coupled limits
HF REJ	1.0 times the DC Coupled limits from DC to 50 kHz. Attenuates signals above 50 kHz.

Table continued...

Trigger Coupling	Typical Sensitivity
LF REJ	1.5 times the DC Coupled limits for frequencies above 50 kHz. Attenuates signals below 50 kHz.

**Logic-type, or Logic-qualified trigger, or Events-delay sensitivities, DC-coupled, typical**

2.0 division, at vertical setting  $\geq 5$  mV/div

**Logic-type triggering, Minimum logic or Re-arm time, typical**

For all vertical settings, the minimums are:

Triggering Type	Pulse Width	Re-Arm Time	Time overlap needed for 100% & No Triggering <sup>1</sup>
Logic	120 ps + trise <sup>5</sup>	120 ps + trise <sup>5</sup>	$\geq 160$ ps / $\leq -40$ ps
Time-qualified logic	240 ps + trise <sup>5</sup>	240 ps + trise <sup>5</sup>	$\geq 280$ ps / $\leq -40$ ps

For Logic, time between channels refers to the length of time a logic state derived from more than one channel must exist to be recognized. For Events, the time is the minimum time between a main and delayed event that will be recognized if more than one channel is used.

**Time accuracy for pulse width and timeout triggering**

The limits are as follows:

Time Range	Accuracy
320 ps to 20 s	$\pm(40 \text{ ps} + (\text{Time-Base-Accuracy} * \text{Setting}))$

Time-Base-Accuracy when locked to an external source is equivalent to the accuracy of the external source.

**Pulse-type Trigger, Minimum Pulse, Re-arm Time, Transition Time**

The limits are as follows:

Pulse class	Minimum pulse width	Minimum rearm time
Runt	40 ps + trise <sup>5</sup>	40 ps + trise <sup>5</sup>
Time-qualified runt	40 ps + trise <sup>5</sup>	40 ps + trise <sup>5</sup>
Width	40 ps + trise <sup>5</sup>	40 ps + trise <sup>5</sup>

Trigger class	Minimum transition time	Minimum rearm time
Rise/Fall Time	40 ps + trise <sup>5</sup>	40 ps + trise <sup>5</sup>

**Minimum clock pulse widths for Setup/Hold time violation trigger, typical**

For all vertical settings, the minimums are:

<sup>5</sup> trise = calculated rise time

Minimum Pulse Width, Clock Active <sup>6</sup>	Minimum Pulse Width, Clock Inactive <sup>6</sup>
User's Hold Time <sup>7</sup> 80 ps + trise <sup>5</sup>	80 ps + trise <sup>5</sup>

For Setup/Hold trigger to work properly, Setup + Hold must be less than the clock period.

**B Trigger after events, minimum pulse width, and maximum event frequency, typical**

Minimum pulse width: 40 ps + trise<sup>5</sup>  
Maximum Event Frequency: Instrument BW

**Pulse-type runt trigger sensitivities, typical**

2.0 division, at vertical setting  $\geq 5$  mV/div

**Pulse-type trigger width and glitch sensitivities, typical**

2.0 division, at vertical setting  $\geq 5$  mV/div

**B Trigger, minimum time arm, and trigger, typical**

80 ps  
For trigger after time, this is the time between the end of the time period and the B trigger event.  
For trigger after events, this is the time between the last A trigger event and the first B trigger event.

**B Trigger after time, time range**

40 ps to 20 seconds.  
Accuracy =  $\pm(40 \text{ ps} + (\text{Time-Base-Error} * \text{Setting}))$

**B Trigger after events, event range**

1 to 65,471

**Video-type trigger formats**

NTSC, PAL, and SECAM

**Lowest frequency for successful operation of "Set Level to 50%" function, typical**

45 Hz

**Maximum Triggered Acquisition Rate, typical**

Analysis/measurement mode: Analog or Digital (single channel [Analog or Digital 8-bit channel] on screen, measurements and math turned off): >40/sec  
FastAcq mode (Peak detect or Envelope acquisition mode, OneAnalog channel, with or without digital channel enabled): >500,000 /s  
FastAcq Mode (All other acq modes, One analog channel, with or without digital channel enabled): 30,000 /s  
Fast frame rate (50-point frames): 5,000,000/second in 25 GS/s and 2,500,00/second in 12.5 GS/s  
Digital channels are not capable of acquiring at the FastAcq rate, but can still be enabled and acquiring (at a slower rate) while an analog channel is in FastAcq mode.

<sup>6</sup> Active pulse width is the width of the clock pulse from its active edge (as defined in the Clock Edge setting) to its inactive edge. Inactive pulse width is the width of the pulse from its inactive edge to its active edge.

<sup>7</sup> User Hold Time is the number selected by the user in the "Setup & Hold Times" setting.



<b>Maximum Number of Frames in FastFrame, typical</b>	<p>For system memory depths up to 250 M, and for record length <math>\geq 1,000</math> points, maximum number of frames = system memory depth / record length setting.</p> <p>For system memory depths of 500 M, and when only channels capable of a maximum sample rate of <math>\geq 25</math> GS/s are used, maximum number of frames = system memory depth / record length setting.</p> <p>For system memory depths of 500 M, and when any channels capable of a maximum sample rate of 12.5 GS/s are used, maximum number of frames is <math>\geq 250,000</math>.</p> <p>For system memory depths of 1 G, and when only channels capable of a maximum sample rate of <math>\geq 25</math> GS/s are used, maximum number of frames <math>\geq</math> system memory depth / record length setting / 2.</p> <p>For system memory depths of 1 G, and when only channels capable of a maximum sample rate of 12.5 GS/s are used, maximum number of frames <math>\geq</math> system memory depth / record length setting / 4.</p>
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## Optional Serial Bus Interface Triggering

<b>I<sup>2</sup>C Bus</b>	<p>Trigger on: Start, Repeated Start, Stop, Missing Ack, Data, Address, or Address &amp; Data</p> <p>Data Trigger: 1 – 5 Bytes of user-specified data</p> <p>Address Triggering: 7 &amp; 10 bits of user-specified addresses supported</p> <p>Maximum Data Rate: 10 Mb/s</p>
<b>SPI Bus</b>	<p>Trigger on: SS Active, Data</p> <p>Data Trigger: 1 – 16 Bytes of user-specified data</p> <p>Maximum Data Rate: 20 Mb/s</p>
<b>RS232 Bus</b>	<p>Trigger on: Start, End of Packet, Data, Parity Error</p> <p>Bit Rate: 50 bps – 10 Mbps</p> <p>Data Bits: 7, 8, or 9</p> <p>Parity: None, Odd, or Even</p>
<b>CAN Bus</b>	<p>Trigger on: Start of Frame, Type of Frame, Identifier, Data, Identifier &amp; Data, End of Frame, Missing Ack, or Bit Stuffing Error</p> <p>Frame Type: Data, Remote, Error, Overload</p> <p>Identifier: Standard (11 bit) and Extended (29 bit) identifiers</p> <p>Data Trigger: 1 – 8 Bytes of user-specified data, including qualifiers of equal to (=), not equal to (<math>\neq</math>), less than (&lt;), greater than (&gt;), less than or equal to (<math>\leq</math>), greater than or equal to (<math>\geq</math>).</p> <p>Maximum Data Rate: 1 Mb/s</p>
<b>CAN-FD Bus</b>	<p>Trigger on Start of Frame, Type of Frame (Data, Remote, Error, or Overload), Identifier (Standard or Extended), Data (1-8 bytes), Identifier and Data, End Of Frame, Error (Missing Ack, Bit Stuffing Error, FD Form Error, Any Error) on CAN FD buses up to 16 Mb/s</p>
<b>LIN Bus</b>	<p>Trigger on: Sync, Identifier, Data, Identifier &amp; Data, Wakeup Frame, Sleep Frame, or Error.</p> <p>Identifier Trigger: 6 bits of user-specified data, equal to (=).</p> <p>Data Trigger: 1 – 8 Bytes of user-specified data, including qualifiers of equal to (=), not equal to (<math>\neq</math>), less than (&lt;), greater than (&gt;), less than or equal to (<math>\leq</math>), greater than or equal to (<math>\geq</math>), inside range, outside range.</p> <p>Error Trigger: Sync, Identifier Parity, Checksum.</p> <p>Maximum Data Rate: 100 kb/s</p>

<b>Flexray Bus</b>	<p>Trigger on: Start of Frame, Indicator Bits, Frame ID, Cycle Count, Header Fields, Data, Frame ID &amp; Data, End of Frame, or Error.</p> <p>Indicator Bits: Normal (01XX), Payload (11XX), Null (00XX), Sync (XX10), Startup (XX11).</p> <p>Frame ID Trigger: 11 bits of user-specified data, including qualifiers of equal to (=), not equal to (≠), less than (&lt;), greater than (&gt;), less than or equal to (≤), greater than or equal to (≥).</p> <p>Cycle Count Trigger: 6 bits of user-specified data, including qualifiers of equal to (=), not equal to (≠), less than (&lt;), greater than (&gt;), less than or equal to (≤), greater than or equal to (≥).</p> <p>Header Fields Trigger: 40 bits of user-specified data comprising Indicator Bits, Identifier, Payload Length, Header CRC, and Cycle Count, equal to (=).</p> <p>Data Trigger: 1 – 16 Bytes of user-specified data, with 0 to 253, or "don't care" bytes of data offset, including qualifiers of equal to (=), not equal to (&lt;&gt;), less than (&lt;), greater than (&gt;), less than or equal to (≤), greater than or equal to (≥), Inside Range, Outside Range.</p> <p>End Of Frame: User-chosen types Static, Dynamic (DTS), and All.</p> <p>Error Trigger: Header CRC, Trailer CRC, Null Frame-Static, Null Frame-Dynamic, Sync Frame, Startup Frame (No Sync)</p> <p>Maximum Data Rate: 40 Mb/s</p>
<b>SENT Bus</b>	<p>Trigger on Start of Packet, Fast Channel Status and Data, Slow Channel Message ID and Data, and CRC Errors</p>
<b>SPMI Bus</b>	<p>Trigger on Sequence Start Condition, Reset, Sleep, Shutdown, Wakeup, Authenticate, Master Read, Master Write, Register Read, Register Write, Extended Register Read, Extended Register Write, Extended Register Read Long, Extended Register Write Long, Device Descriptor Block Master Read, Device Descriptor Block Slave Read, Register 0 Write, Transfer Bus Ownership, and Parity Error</p>
<b>Ethernet Bus</b>	<p>Trigger On: Start of Frame, MAC Addresses, MAC Length/Type, IP Header, TCP Header, Client Data, End of Packet, Idle, FCS (CRC) Error, MAC Q-Tag Control Information.</p> <p>Bit rate: 10 BASE-T, 10 Mbps; 100 BASE-TX, 100 Mbps</p>
<b>USB Bus</b>	<p>Trigger On: Sync, Handshake Packet, Special Packet, Error, Token Packet, Data Packet, Reset, Suspend, Resume, End of Packet.</p> <p>Data rates supported: High: 480 Mbs, Full: 12 Mbs, Low: 1.5 Mbs</p>
<b>Audio I<sup>2</sup>S Bus</b>	<p>Trigger on: Word Select, Data</p> <p>Data Trigger: 32 bits of user-specified data in a left word, right word, or either, including qualifiers of equal to (=), not equal to (≠), less than (&lt;), greater than (&gt;), less than or equal to (≤), greater than or equal to (≥), inside range, outside range.</p> <p>Maximum Data Rate: 12.5Mb/s</p> <p>Left Justified (LJ)</p> <p>Trigger on: Word Select, Data</p> <p>Data Trigger: 32 bits of user-specified data in a left word, right word, or either, including qualifiers of equal to (=), not equal to (≠), less than (&lt;), greater than (&gt;), less than or equal to (≤), greater than or equal to (≥), inside range, outside range.</p> <p>Maximum Data Rate: 12.5Mb/s</p>
<b>Audio (LJ) Bus</b>	<p>Trigger on Word Select, Frame Sync, or Data</p> <p>Maximum data rate for LJ is 12.5 Mb/s</p>

<b>Audio (RJ) Bus</b>	<p>Trigger on: Word Select, Data</p> <p>Data Trigger: 32 bits of user-specified data in a left word, right word, or either, including qualifiers of equal to (=), not equal to (<math>\neq</math>), less than (&lt;), greater than (&gt;), less than or equal to (<math>\leq</math>), greater than or equal to (<math>\geq</math>), inside range, outside range.</p> <p>Maximum Data Rate: 12.5 Mb/s</p>
<b>Audio (TDM) Bus</b>	<p>Trigger on: Frame Sync, Data</p> <p>Data Trigger: 32 bits of user-specified data in a channel 1-64, including qualifiers of equal to (=), not equal to (<math>\neq</math>), less than (&lt;), greater than (&gt;), less than or equal to (<math>\leq</math>), greater than or equal to (<math>\geq</math>), inside range, outside range.</p> <p>Maximum Data Rate: 25 Mb/s</p>
<b>MIL-STD-1553 Bus</b>	<p>Trigger on Sync, Command (Transmit/Receive Bit, Parity, Subaddress / Mode, Word Count / Mode Count, RT Address), Status (Parity, Message Error, Instrumentation, Service Request, Broadcast Command Received, Busy, Subsystem Flag, Dynamic Bus Control Acceptance, Terminal Flag), Data, Time (RT/IMG), and Error (Parity Error, Sync Error, Manchester Error, Non-contiguous Data) on MIL-STD-1553 buses</p>
<b>ARINC 429 Bus</b>	<p>Trigger on Word Start, Label, Data, Label and Data, Word End, and Error (Any Error, Parity Error, Word Error, Gap Error) on ARINC 429 buses up to 1 Mb/s</p>

## Analysis

<b>Supported Buses</b>	Parallel, I2C, SPI, RS-232, CAN, CAN-FD, LIN, FlexRay, USB LS, USB FS, USB HS, eUSB2, Ethernet 10/100, Audio (I <sup>2</sup> S/LJ/RJ/TDM), ARINC 429, MIL-STD-1553, SENT, PSI5, I <sup>3</sup> C, MDIO, SPMI, 8b/10b, NRZ, Automotive Ethernet (100Base-T1), Manchester, MIPI D-PHY, Spacewire, SVID
<b>Available Amplitude Measurements</b>	Amplitude, Peak-to-Peak, Mean, Top, Maximum, Positive Overshoot, RMS, Base, Minimum, Negative Overshoot, AC RMS, Area
<b>Available Time Measurements</b>	Period, Data Rate, Skew, Fall Time, Falling Slew Rate, Negative Duty Cycle, Hold Time, Low Time, Frequency, Positive Pulse Width, Delay, Phase, Burst Width, Time Outside Level, Duration N-Periods, Unit Interval, Negative Pulse Width, Rise Time, Rising Slew Rate Positive Duty Cycle, Setup Time, High Time
<b>Available Jitter Measurements</b>	TIE, Phase Noise
<b>Measurements Available with DJA</b>	AC Common Mode, DC Common Mode, Differential Crossover, T/nT Ratio, Bit High, Bit Low, Bit Amplitude, SSC Profile, SSC Freq Deviation, SSC Modulation Rate, Jitter Summary, RJ, RJ-sigmasigma, TJ@BER, DJ, DJ-sigmasigma, PJ, DDJ, DCD, J2, J9, Clock NPJ, SRJ, F/N, Eye Width, Eye Width@BER, Eye Height, Eye Height@BER, Eye High, Eye Low, Q-Factor
<b>Math Waveform Sources</b>	Analog Channels, Math Waveforms, Reference Waveforms, Measurements
<b>Math Waveform Operators</b>	+, -, *, /, <, >, $\geq$ , $\leq$ , =, !=, AND, OR, NAND, NOR, XOR, EQV, square root, absolute value, integral, derivative, log10, ln, exponential, ceiling, floor, invert, minimum, maximum, sine, cosine, tangent, arcsin, arccos, arctan, radians, degrees, spectral magnitude, spectral phase, spectral real, spectral imaginary
<b>Available Cursor Types</b>	Waveform, V Bars, H Bars, V&H Bars
<b>Cursor Waveform Sources</b>	Analog channels, Digital channels, Math Waveforms, Reference Waveforms. Cursors can apply to the same waveform ("Same") or to different waveforms ("Split")
<b>Available Plot Types</b>	Plot menu: XY, XYZ, Eye Diagram Measurement menu: Histogram, Time Trend, Spectrum
<b>Measurement Statistics</b>	Mean, standard deviation, maximum, minimum, waveform count

## Arbitrary function generator

**Function types** Arbitrary, sine, square, pulse, ramp, triangle, DC level, Gaussian, Lorentz, exponential rise/fall, sin(x)/x, random noise, Haversine, Cardiac

**Amplitude range** Values are peak-to-peak voltages

Waveform	50 $\Omega$	1M $\Omega$
Arbitrary	10 mV to 2.5 V	20 mV to 5 V
Sine	10 mV to 2.5 V	20 mV to 5 V
Square	10 mV to 2.5 V	20 mV to 5 V
Pulse	10 mV to 2.5 V	20 mV to 5 V
Ramp	10 mV to 2.5 V	20 mV to 5 V
Triangle	10 mV to 2.5 V	20 mV to 5 V
Gaussian	10 mV to 1.25 V	20 mV to 2.5 V
Lorentz	10 mV to 1.2 V	20 mV to 2.4 V
Exponential Rise	10 mV to 1.25 V	20 mV to 2.5 V
Exponential Fall	10 mV to 1.25 V	20 mV to 2.5 V
Sine(x)/x	10 mV to 1.5 V	20 mV to 3.0 V
Random Noise	10 mV to 2.5 V	20 mV to 5 V
Haversine	10 mV to 1.25 V	20 mV to 2.5 V
Cardiac	10 mV to 2.5 V	20 mV to 5 V

**Maximum sample rate** 250 MS/s

**Arbitrary function length** 128 K Samples

### Sine waveform

**Sine Frequency range** 0.1 Hz to 50 MHz

**Sine Frequency setting resolution** 0.1 Hz

**Sine and Ramp Frequency accuracy** 130 ppm (frequency  $\leq$  10 kHz)  
50 ppm (frequency  $>$  10 kHz)

**Sine amplitude flatness, typical**  $\pm$ 0.5 dB (relative to 1 kHz level) at 30 MHz  
 $\pm$ 1.0 dB (relative to 1 kHz level) at 50 MHz

**Sine total harmonic distortion, typical** 1% for amplitude  $\geq$  200 mV<sub>pp</sub> into 50 ohm load  
2.5% for amplitude  $>$  50 mV and  $<$  200 mV<sub>pp</sub> into 50 ohm load

**Sine spurious-free dynamic range, typical** 40 dB ( $V_{pp} \geq 0.1$  V); 30 dB ( $V_{pp} \geq 0.02$  V), 50 Ohm Load

### Square and pulse waveform

**Frequency range** 0.1 Hz to 25 MHz

**Frequency setting resolution** 0.1 Hz

<b>Square and Pulse Frequency Accuracy</b>	130 ppm (frequency $\leq$ 10 KHz) 50 ppm (frequency > 10 KHz)
<b>Duty cycle range</b>	10% - 90% or 10 ns minimum pulse, whichever is larger Minimum pulse time applies to both on and off time, so maximum duty cycle will reduce at higher frequencies to maintain 10 ns off time
<b>Square and Pulse Duty cycle resolution</b>	0.1%
<b>Minimum pulse width, typical</b>	10 ns. This is the minimum time for either on or off duration.
<b>Rise/Fall time, typical</b>	5 ns, 10% - 90%
<b>Square and Pulse Pulse width resolution</b>	100 ps
<b>Square and Pulse Overshoot, typical</b>	< 6% for signal steps greater than 100 mV <sub>pp</sub>  This applies to overshoot of the positive-going transition (+overshoot) and of the negative-going (-overshoot) transition
<b>Square and Pulse Asymmetry, typical</b>	$\pm 1\% \pm 5$ ns, at 50% duty cycle
<b>Square and Pulse Jitter, typical</b>	< 60 ps TIE <sub>RMS</sub> , $\geq$ 100 mV <sub>pp</sub> amplitude, 40%-60% duty cycle
<b>Ramp and triangle waveform</b>	
<b>Frequency range</b>	0.1 Hz to 500 kHz
<b>Frequency setting resolution</b>	0.1 Hz
<b>Variable symmetry</b>	0% - 100%
<b>Symmetry resolution</b>	0.1%
<b>DC level range</b>	$\pm 2.5$ V into Hi-Z $\pm 1.25$ V into 50 $\Omega$
<b>Gaussian pulse, Haversine, and Lorentz pulse Maximum frequency</b>	5 MHz
<b>Exponential rise fall maximum frequency</b>	5 MHz
<b>Sin(x)/x maximum frequency</b>	2 MHz
<b>Random noise amplitude range</b>	20 mV <sub>pp</sub> to 5 V <sub>pp</sub> into Hi-Z 10 mV <sub>pp</sub> to 2.5 V <sub>pp</sub> into 50 $\Omega$
<b>Signal amplitude resolution</b>	1 mV (Hi-Z) 500 $\mu$ V (50 $\Omega$ )
<b>Signal amplitude accuracy</b>	$\pm [ (1.5\% \text{ of peak-to-peak amplitude setting}) + (1.5\% \text{ of absolute DC offset setting}) + 1 \text{ mV} ]$ (frequency = 1 kHz)
<b>DC offset range</b>	$\pm 2.5$ V into Hi-Z

	±1.25 V into 50 Ω
<b>DC offset resolution</b>	1 mV (Hi-Z) 500 μV (50 Ω)
<b>DC offset accuracy</b>	±[ (1.5% of absolute offset voltage setting) + 1 mV ] Add 3 mV of uncertainty per 10 °C change from 25 °C ambient
<b>Cardiac maximum frequency</b>	500 kHz

## Digital volt meter (DVM)

<b>Measurement types</b>	DC, AC <sub>RMS</sub> +DC, AC <sub>RMS</sub> , Trigger frequency Count
<b>Voltage resolution</b>	4 digits
<b>Voltage accuracy</b>	<b>DC:</b> ±((1.5% *  reading - offset - position ) + (0.5% *  (offset - position) )) + (0.1 * Volts/div) De-rated at 0.100% / °C of  reading - offset - position  above 30 °C Signal ± 5 divisions from screen center <b>AC:</b> ±3% (40 Hz to 1 kHz) with no harmonic content outside 40 Hz to 1 kHz P-TYP: AC: ±2% (20 Hz to 10 kHz) For AC measurements, the input channel vertical settings must allow the V <sub>pp</sub> input signal to cover between 4 and 10 divisions and must be fully visible on the screen.
<b>Resolution</b>	8-digits
<b>Accuracy</b>	For Slew rates ≥ 3 mv/ns ±(1 count + time base accuracy * input frequency) The signal must be at least 8 mV <sub>pp</sub> or 2 div, whichever is greater.
<b>Trigger frequency counter source</b>	Any analog input channel. AC line
<b>Trigger frequency counter max input frequency</b>	10 Hz to maximum bandwidth of the analog channel The signal must be at least 8 mV <sub>pp</sub> or 3 div, whichever is greater.

## Processor system

<b>Host processor</b>	Intel Core i5-8400H @ 2.5 GHz (CoffeeLake 4-core), 16 GB System RAM
<b>Windows operating system</b>	Option 6-WIN: Microsoft Windows 10 Enterprise IoT 2016 LTSC (64 bit) The Windows operating system is available on an optional, customer-installable mass storage device.
<b>Security options</b>	6-SEC Option: USB and Ethernet communication ports, firmware upgrades and BIOS password protected.
<b>Password protected I/O ports</b>	6-SEC option enables password protection of USB and Ethernet ports from oscilloscope application. 6-SEC option has password-protected BIOS

## Input/Output port specifications

<b>Ethernet interface</b>	An 8-pin RJ-45 connector that supports 10/100/1000 Mb/s Oscilloscope is intended for use with unshielded twisted-pair ethernet cables (UTP).
<b>DVI connector</b>	A 29-pin connector; connect to show the oscilloscope display on an external monitor or projector. Maximum supported resolution, Windows: 1920 x 1200 at 60 Hz. Maximum supported resolution, Linux: 1920 x 1080 at 60 Hz. Only a single TMDS link is provided by the interface. Analog VGA signaling is not provided by the interface.
<b>VGA Connector</b>	A 15-pin, 3-row, D-sub VGA connector Recommended resolution: 1920x1080 at 60 Hz
<b>DisplayPort connector</b>	A 20-pin DisplayPort connector Maximum supported resolution: Windows: 2560x1440 @ 60Hz Linux: 1920 x 1080 @ 60Hz DP++ Adapter: Maximum supported resolution: 2560x1440 @ 60Hz
<b>Simultaneous displays</b>	Up to 3 displays (including the internal display) with a maximum of 1 display per port.
<b>USB interface</b>	Three USB host ports on the front of the instrument: two USB 2.0 High Speed ports and one USB 3.0 SuperSpeed port. Four USB host ports on the rear of the instruments: two USB 2.0 High Speed ports and two USB 3.0 SuperSpeed ports. One USB 3.0 SuperSpeed device port on the rear of the instrument providing USBTMC support.

## Probe compensator

<b>Output Voltage and Frequency</b>	Output Voltage Amplitude: 2.5 V $\pm$ 2% (nominally 0-2.5 V) Output Frequency: 1 kHz $\pm$ 25% Output Source Impedance is nominally 1 k $\Omega$
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## Auxiliary output, Trigger out, or Reference clock out

<b>AUX OUT Connector and Functional Modes</b>	A single BNC connector. Acquisition Trigger Out, Reference Clock Out, and AFG Trigger Out.
<b>AUX OUT Output Voltage</b>	Voltage thresholds are listed in the following table:

Characteristic	Limits
Vout (HI)	$\geq$ 2.5 V open circuit; $\geq$ 1.0 V into a 50 W load to ground.
Vout (LO)	$\leq$ 0.7 V into a load of $\leq$ 4 mA; $\leq$ 0.25 V into a 50 W load to ground.

<b>AUX OUT Acquisition Trigger Jitter</b>	Acquisition Trigger Out Jitter: < 50 ps standard deviation
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**AUX OUT Acquisition Trigger Polarity** A leading edge, which is user selectable transition from HIGH to LOW or from LOW to HIGH, marks the trigger event.  
The pulse width is approximately 100 ns.

**AUX OUT Reference Clock** Reference clock output can be referenced from either the internal clock reference or the external clock reference.

**AUX OUT AFG Trigger** The output frequency is dependent the frequency of the AFG signal using the table below:

AFG Signal Frequency	AFG Trigger Frequency
≤ 4.9 MHz	Signal frequency
>4.9 MHz to 14.7 MHz	Signal frequency / 3
>14.7 MHz to 24.5 MHz	Signal frequency / 5
>24.5 MHz to 34.3 MHz	Signal frequency / 7
>34.3 MHz to 44.1 MHz	Signal frequency / 9
>44.1 MHz to 50 MHz	Signal frequency / 11

**External reference input** BNC interface

**External reference input**

**Nominal input frequency** 10 MHz  
User must select either 10 MHz external ( $\pm 1$  kppm), 10 MHz external ( $\pm 1$ ppm), or the internal reference (default) from the UI.

**Frequency Variation Tolerance** Low Phase Noise Mode: 9.99999 MHz to 10.00001 MHz ( $\pm 1$  ppm)  
Tracking Mode: 9.99 MHz to 10.01 MHz ( $\pm 1000$ ppm)\*  
Loop Bandwidth of external tracking mode is a function of the PLL loop maximum slew rate capability, and is not linear. The modulation deviation frequency ( $\pm$ Hz) is dependent upon the maximum modulation rate (Hz). For example, a deviation of  $\pm 50$  Hz or less can tolerate any modulation rate. A deviation of the maximum amount specified for this mode ( $\pm 10$  kHz or 1 kppm) will tolerate up to 80 Hz of modulation rate. A deviation of  $\pm 500$ Hz will tolerate up to about 1240 Hz of modulation rate. This is based on a measured instrument response to the reference clock being modulated. Example measurement is in the below table.

Deviation (+/-Hz)	Modulation Rate (Hz)	Notes
10000	80	
5000	190	
2500	320	
1000	760	
500	1240	
250	1720	
100	2150	
50		Won't lose lock at 50Hz and below

**Sensitivity, typical**  $V_{in}$  is 200 mV<sub>p-p</sub> up to 7 V<sub>p-p</sub>, using an external 50  $\Omega$  termination on the input BNC.

**Maximum input signal** 7 V<sub>pp</sub>

**Impedance** 745  $\Omega \pm 20\%$  with 18 pf  $\pm 20\%$  to ground at 10 MHz



**AUX IN trigger input impedance**

<b>Interface</b>	SMA
<b>Input Impedance</b>	50 $\Omega$
<b>Maximum Input Voltage</b>	5 $V_{RMS}$
<b>Trigger Skew</b>	Trigger skew variation improves for pulse input voltages $\geq 1 V_{p-p}$ . When sample rate is $\geq 25$ GS/s and no channels with a maximum sample rate of 12.5 GS/s (channels 3 or 6 on an MSO66B, or channels 3, 4, 7, or 8 on MSO68B) are used: 200 ps $\pm$ 200 ps When sample rate is 12.5 GS/s and at least one channel with a maximum sample rate of 12.5 GS/s (channels 3 or 6 on an MSO66B, or channels 3, 4, 7, or 8 on MSO68B) is used: 7.87 ns $\pm$ 200 ps
<b>Trigger Jitter</b>	Trigger Jitter $\leq 40$ ps RMS for Sample Mode and Edge-Type Trigger Trigger Jitter $\leq 40$ ps RMS for Edge-Type Trigger and FastAcq Mode
<b>Front panel knob</b>	Multipurpose Knob A, Multipurpose Knob B, Trigger Level, Vertical Position, Vertical Scale, Horizontal Position, Horizontal Scale, Wave Inspector (two-tier knob)
<b>Front Panel Buttons</b>	Run/Stop, Single/Seq, Cursors, Fast Acq, High Res, Clear, Force Trigger, Trigger Slope, Trigger Mode, Vertical Input Selection (one for each analog input), Reference Waveform, Math Waveform, Bus Waveform, Zoom, Navigate Previous, Navigate Next, Touchscreen Off, Default Setup (recessed), Save, Autoset (recessed)
<b>Waveform Save Options</b>	Analog Waveforms can be saved as: Reference Waveforms, .wfm files, .csv files, .h5 files, .mat files Digital Waveforms can be saved as: Reference Waveforms, .wfm files, .csv files Math Waveforms can be saved as: .wfm files, .csv files
<b>Waveform Recall Options</b>	Analog Waveforms can be recalled to reference waveforms from: .wfm files, .csv files, .bin (keysight format) files, .trc (LeCroy format) files, .h5 files Digital Waveforms can be recalled to reference waveforms from: .wfm files, .csvfiles Math Waveforms can be recalled to reference waveforms from: .wfm files, .csv files Reference files can be imported from .tr0 binary files.

**Display system**

<b>Display type</b>	Display size: 15.6 inches diagonal Display type: TFT liquid crystal display (LCD)
<b>Display resolution</b>	1,920 horizontal $\times$ 1,080 vertical pixels (High Definition)
<b>Luminance, typical</b>	500 $cd/m^2$ , (Minimum: 400 $cd/m^2$ ), Display luminance is specified for a new display set at full brightness.
<b>Color Support</b>	16.2M colors (6-bit RGB+FRC)
<b>Display Options</b>	
<b>Persistence</b>	Off, Infinite, Variable (Persistence Time is variable) or Auto
<b>Waveform styles</b>	Vectors, dots
<b>Graticule</b>	Grid, Time, Full or None
<b>Graticule Intensity</b>	variable
<b>Display Mode</b>	Overlay or Stacked
<b>Interpolation</b>	Sin(x)/x or Linear
<b>Waveform Intensity</b>	variable

## Data storage specifications

<b>Nonvolatile memory retention time, typical</b>	No time limit for front panel settings, saved waveforms, setups, product licensing, and calibration constants.
<b>Real-time clock</b>	A programmable clock maintaining and reporting the current time in the units of years, months, days, hours, minutes, and seconds.
<b>Nonvolatile memory capacity</b>	
<b>Instrument S/N</b>	A 2 kbit EEPROM on the main board that stores the instrument serial number, instrument start up count, total uptime and administration passwords.
<b>Companion CvP</b>	A pair of 16 Mbit flash memory devices that stores a portion of the Companion FPGA image data. One device serves as a backup for the other device.
<b>AFG S/N</b>	A 2 kbit EEPROM on the AFG riser card that stores a copy of the instrument serial number which is used to validate the AFG calibration.
<b>Front Panel ID</b>	A 64 kbit EEPROM on the LED board that stores the USB vendor ID and device ID for the internal front panel controller.
<b>Front Panel Memory</b>	A 4 GB EEPROM on the LED board stores licence options and calibration data
<b>BIOS</b>	A 128 Mbit flash memory device that stores the firmware image and device configuration for the host processor and chipset sub-processors. This includes the Basic Input Output System (BIOS), Management Engine (ME), Embedded Controller (EC) and Network Interface Controller (NIC). The Ethernet MAC address is stored in this device.
<b>CMOS Memory</b>	The host processor chipset includes an integrated memory device, powered by the real-time clock (RTC) battery, which stores BIOS configuration settings. A customer accessible switch disconnects the RTC battery from the chipset which clears the contents of the integrated CMOS memory device.
<b>Memory SPD</b>	Each SODIMM (memory module) contains a serial presence detect (SPD) memory device implemented using an unspecified memory technology. Each SPD device contains the parameter data specific to its memory module. All SPD devices are treated by the instrument as read only. The size of a given SPD is unspecified. The 4 channel instrument includes 4 SPD devices.
<b>UCD9248</b>	The instrument includes 3 UCD9248 power supply controllers. Each controller contains an <i>unspecified</i> quantity of nonvolatile memory that stores various power supply configuration settings.
<b>PMU</b>	A power management unit (PMU) microcontroller is used to manage instrument power supplies and hardware initialization. The PMU includes 32 KB of nonvolatile memory for storage of its own binary executable and redundant storage of UCD9248 device settings.
<b>Analog Board Controller</b>	A microcontroller is used to manage analog board operation. The PMU includes 64 KB of nonvolatile memory for storage of its own binary executable.
<b>Carrier FPGA</b>	The carrier FPGA stores its own configuration in its own internal 0.33 Mbit nonvolatile memory. The carrier FPGA implements simple "glue logic" for the instrument.
<b>Mass storage device capacity</b>	
<b>Linux</b>	≥ 250 GB. Form factor is a 2.5 inch SSD with a SATA-3 interface. Waveforms and setups are stored on the solid state drive. Provides storage for saved customer data and the Linux operating system.
<b>Windows (optional)</b>	≥ 500 GB. Form factor is a 2.5 inch SSD with a SATA-3 interface. This drive is customer installable and provides storage for the Windows operating system option, and saved customer data.

## Power supply system

<b>Power consumption</b>	500 Watts maximum
<b>Fuse rating</b>	12.5 A / 250 VAC
	The fuse is not customer replaceable. The line lead is fused, but the neutral lead is not fused.

## Safety characteristics

<b>Safety certification</b>	US NRTL Listed - UL61010-1 and UL61010-2-030. Canadian Certification - CAN/CSA-C22.2 No. 61010-1 and CAN/CSA C22.2 No. 61010-2-030. EU Compliance - Low Voltage Directive 2014-35-EU and EN61010-1 and EN61010-2-030. International Compliance - IEC 61010-1 and IEC 61010-2-030.
<b>Pollution degree</b>	Pollution degree 2, indoor, dry location use only

## Environmental specifications

### Temperature

<b>Operating</b>	+0 °C to +50 °C (32 °F to 122 °F)
<b>Non-operating</b>	-20 °C to +60 °C (-4 °F to 140 °F)

### Humidity

<b>Operating</b>	5% to 90% relative humidity (% RH) at up to +40 °C 5% to 55% RH above +40 °C up to +50 °C, noncondensing
<b>Non-operating</b>	5% to 90% relative humidity (% RH) at up to +60 °C, noncondensing and as limited by a maximum wet-bulb temperature of +39°C.

### Altitude

<b>Operating</b>	Up to 3,000 meters (9,843 feet)
<b>Non-operating</b>	Up to 12,000 meters (39,370 feet)

## Dynamics

<b>Random Vibration: Operating</b>	0.31 GRMS, 5-500 Hz, 10 minutes per axis, 3 axes (30 minutes total).
<b>Mechanical Shock: Operating</b>	Half-sine mechanical shocks, 40 g peak amplitude, 11 ms duration, 3 drops in each direction of each axis (18 total).

## Comparison against MIL-PRF-28800F Environmental Requirements

### Comparison against MIL-PRF28800F Environmental Requirements

YES/NO indicates whether the instrument meets the minimum requirement for each combination of Class and Environmental Condition. The spec's here are those found in the MIL-PRF-28800F. The corresponding instrument spec's (if any) are listed above. If the instrument has no corresponding spec an N/A is used. If the MIL-PRF-28800F lists the spec as "invoked by the purchase description", an IPD is used

Environmental Condition	Class			
	1	2	3	4
Temperature Non-operating	No	No	No	No
	-51 °C/71 °C	-51 °C/71 °C	-40 °C/71 °C	-40 °C/71 °C
Temperature Operating	No	No	Yes	Yes
	-40 °C/55 °C	-10 °C/55 °C	0 °C/50 °C	+10 °C/40 °C
Relative Humidity	No	No	No	No
	5% to 95%, 30 °C to 40 °C	5% to 80%, 30 °C to 40 °C	5% to 80%, 30 °C to 40 °C	5% to 80%, 30 °C to 40 °C
	5% to 65%, > 40 °C	5% to 50% > 40 °C	5% to 50%, > 40 °C	5% to 50%, > 40 °C
Altitude non-operating	Yes	Yes	Yes	Yes
	4600 m	4600 m	4600 m	4600 m
Altitude operating	No	No	No	No
	4600 m	4600 m	4600 m	4600 m
Vibration Non-Operating	No	No	Yes	Yes
	Random	Random	Random	Random
	10-500 Hz 0.03 g2/Hz Overall GRMS: 3.83 Time/Axis: 30 minutes	10-500 Hz 0.03 g2/Hz Overall GRMS: 3.83 Time/Axis: 30 minutes	5-100 Hz 0.015 g2/Hz 100-137Hz -6dB/octave 137-350 Hz 0.0075 g2/Hz 350-500 Hz -6 dB/octave 500 Hz 0.0039 g2/Hz Overall GRMS: 2.09 Time/Axis: 10 minute	5-100 Hz 0.015 g2/Hz 100-137 Hz -6dB/octave 137-350 Hz 0.0075 g2/Hz 350-500 Hz -6 dB/octave 500 Hz 0.0039 g2/Hz Overall GRMS: 2.09 Time/Axis: 10 minutes
Bounce	N/A	N/A	N/A	N/A
	IPD	IPD	IPD	IPD

Table continued...

Environmental Condition	Class			
	1	2	3	4
<b>Shock, Functional</b>	Yes	Yes	Yes	Yes
	30 G Half-sine, 11 ms pulse duration, 3 shocks in each direction of each axis for 18 total shocks.	30 G Half-sine, 11 ms pulse duration, 3 shocks in each direction of each axis for 18 total shocks.	30 G Half-sine, 11ms pulse duration, 3 shocks in each direction of each axis for 18 total shocks.	30 G Half-sine, 11ms pulse duration, 3 shocks in each direction of each axis for 18 total shocks.
<b>Transit Drop</b>	No	No	Yes	Yes
	46 cm 10 impacts 4 bottom corners and 6 faces	30 cm 10 impacts 4 bottom corners and 6 faces	20 cm 10 impacts 4 bottom corners and 6 faces	20 cm 10 impacts 4 bottom corners and 6 faces
<b>Bench Handling</b>	Yes	Yes	Yes	Yes
	Lift edge of chassis 45°, 10.16 cm, or point of balance and drop	Lift edge of chassis 45°, 10.16 cm, or point of balance and drop	Lift edge of chassis 45°, 10.16 cm, or point of balance and drop	Lift edge of chassis 45°, 10.16 cm, or point of balance and drop
<b>Shock High Impact</b>	N/A	N/A	N/A	N/A
	IPD	IPD	IPD	IPD
<b>Watertight</b>	N/A	N/A	N/A	N/A
	IPD	IPD	IPD	IPD
<b>Splash Proof</b>	N/A	N/A	N/A	N/A
	IPD	IPD	IPD	IPD
<b>Drip Proof</b>	N/A	N/A	N/A	N/A
	IPD	IPD	IPD	IPD
<b>Fungus Resistance</b>	N/A	N/A	N/A	N/A
	28 days	28 days	28 days	28 days
<b>Salt Exposure Enclosure</b>	N/A	N/A	N/A	N/A
	48 hours	48 hours	48 hours	48 hours
<b>Salt Exposure Structural</b>	N/A	N/A	N/A	N/A
	48 hours	48 hours	48 hours	48 hours
<b>Explosive Atmosphere</b>	N/A	N/A	N/A	N/A
	3000m			
<b>Dust Resistance</b>	N/A	N/A	N/A	N/A
	10.7±7.1 g/m <sup>3</sup>			
<b>Solar Radiation</b>	N/A	N/A	N/A	N/A
	IPD	IPD	IPD	IPD

## Mechanical specifications

### Weight

Weight of instruments by model:

- MSO68B 29.8 lbs
- MSO66B 29.6 lbs
- MSO64B 29.2 lbs
- Weight corrections of standard accessories:
- Instrument with protective front cover: + 1.8 lbs
- Instrument with front cover and soft pouch: + 3.4 lbs
- MSO68B Instrument when packaged for shipping: 42.95 lbs
- MSO66B Instrument when packaged for shipping: 42.75 lbs
- MSO64B Instrument when packaged for shipping: 42.35 lbs
- Instrument when configured for rack mount: -2.2 lbs
- Rack Mount: 15 lbs

### Dimensions

Requirements that follow are nominal and unboxed:

Unit fits into rackmount configuration (7U)

<b>Height</b>	371 mm (14.6 in) feet folded in, handle folded up 309 mm (12.2in) feet folded in, handle folded to the backside of the instrument
<b>Width</b>	454 mm (17.9 in) from handle hub to handle hub
<b>Depth</b>	205 mm (8.0 in) from back of feet to front of knobs 297.2 mm (11.7in) feet folded in, handle folded to the backside of the instrument

**Clearance Requirements** The clearance requirement for adequate cooling is 2.0 in (50.8 mm) on the right side (when looking at the front of the instrument) and on the rear of the instrument

**Audible Noise** Audible noise (fan noise) produced by the instrument at ambient temperature ( $\leq 28^{\circ}\text{C}$ ):  $\leq 45\text{dB}$

**Kensington Lock** Oscilloscope includes a Kensington Lock.

## Environmental Compliance

### Material Selection - RoHS Compliance

EU Directive 2011/65/EU Less than 0.1% by mass (1000 ppm) in homogeneous material for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE), and less than 0.01% by mass (100 ppm) of homogeneous material for cadmium, unless used in an application that is specifically exempted by the EU RoHS Directive or its amendments.

Complies with RoHS2 Directive 2011/65/EU.

## Regional Certifications, Classifications, and Standards List

Meets intent of Directive 2014/30/EU for Electromagnetic compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

**EN 61326-1, EN 61326-2-1** EMC requirements for electrical equipment for measurement, control, and laboratory use.

- CISPR 11. Radiated and conducted emissions, Group 1, Class A
- IEC 61000-4-2. Electrostatic discharge immunity
- IEC 61000-4-3. RF electromagnetic field immunity<sup>8</sup>
- IEC 61000-4-4. Electrical fast transient / burst immunity
- IEC 61000-4-5. Power line surge immunity
- IEC 61000-4-6. Conducted RF immunity
- IEC 61000-4-11. Voltage dips and interruptions immunity

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**EN 61000-3-2** AC power line harmonic emissions

**EN 61000-3-3** Voltage changes, fluctuations, and flicker

### Australia / New Zealand Declaration of Conformity – EMC

Complies with the EMC provision of the Radiocommunications Act per the following standard, in accordance with ACMA.

**EN 61326-1 and EN 61326-2-1** Radiated and conducted emissions, Group 1, Class A.

<sup>8</sup> 10 mV/division to 1 V/division:  $\leq 0.1$  division waveform displacement or  $\leq 0.2$  division increase in peak-to-peak noise is allowed when the instrument is subjected to fields and signals as defined in the IEC 61000-4-3.

<sup>9</sup> This product is intended for use in nonresidential areas only. Use in residential areas may cause electromagnetic interference.

<sup>10</sup> Emissions which exceed the levels required by this standard may occur when this equipment is connected to a test object.

<sup>11</sup> For compliance with the EMC standards listed here, high quality shielded interface cables that incorporate low impedance connection between the cable shield and the connector shell should be used.

<sup>12</sup> Equipment may not meet the immunity requirements of applicable listed standards when test leads and/or test probes are connected due to coupling of electromagnetic interference onto those leads/probes. To minimize the influence of electromagnetic interference, minimize the loop area between the unshielded portions of signal and associated return leads, and keep leads as far away as possible from electromagnetic disturbance sources. Twisting unshielded test leads together is an effective way to reduce loop area. For probes, keep the ground return lead as short as possible and close to the probe body. Some probes have accessory probe tip adapters to accomplish this most effectively. In all cases, observe all safety instructions for the probes or leads used.

## Performance verification procedures

This chapter contains performance verification procedures for the specifications marked with the ✓ symbol. The following equipment, or a suitable equivalent, is required to complete these procedures.

### Required equipment

Required equipment	Minimum requirements	Examples
DC voltage source	3 mV to 4 V, $\pm 0.1\%$ accuracy	Fluke 9500B Oscilloscope Calibrator with a 9530 Output Module
Leveled sine wave generator	50 kHz to 10 GHz, $\pm 4\%$ amplitude accuracy	
Time mark generator	80 ms period, $\pm 1.0 \times 10^{-6}$ accuracy, rise time <50 ns	
Logic probe	Low capacitance digital probe, 8 channels.	TLP058 probe
BNC-to-0.1 inch pin adapter to connect the logic probe to the signal source.	BNC-to-0.1 inch pin adapter; female BNC to 2x16 .01 inch pin headers.	Tektronix adapter part number 878-1429-00; to connect the Fluke 9500B to the TLP058 probe.
Digital multimeter (DMM)	0.1% accuracy or better	Tektronix DMM4020
One 50 $\Omega$ terminator	Impedance 50 $\Omega$ ; connectors: female BNC input, male BNC output	Tektronix part number 011-0049-02
One 50 $\Omega$ BNC cable	Male-to-male connectors	Tektronix part number 012-0057-01
Optical mouse	USB, PS2	Tektronix part number 119-7054-00
Frequency counter	Parts per billion accuracy	Tektronix FCA3000 Timer/Counter/Analyzer

You might need additional cables and adapters, depending on the actual test equipment you use.

These procedures cover all MSO64B, MSO66B, and MSO68B models. Disregard checks that do not apply to the specific model you are testing.

Print the test record on the following pages and use it to record the performance test results for your oscilloscope.



**Note:** Completion of the performance verification procedure does not update the stored time and date of the latest successful adjustment. The date and time are updated only when the adjustment procedures in the service manual are successfully completed.

The performance verification procedures verify the performance of your instrument. They do not adjust your instrument. If your instrument fails any of the performance verification tests, you should return the instrument to Tektronix for adjustment or repair.



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## Test records

### Instrument information, self test record

Model	Serial #	Procedure performed by	Date

Test	Passed	Failed
Self Test		

## DC Offset Accuracy test record

Offset Accuracy					
Performance checks	Vertical scale	Vertical offset <sup>13</sup>	Low limit	Test result	High limit
<b>All models</b>					
Channel 1 DC Offset Accuracy, 20 MHz BW, 50 Ω	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.9663 V		5.0337 V
	100 mV/div	-5.0 V	-5.0337 V		-4.9663 V
Channel 1 DC Offset Accuracy, 20 MHz BW, 1 MΩ	1 mV/div	900 mV	895.12 mV		904.88 mV
	1 mV/div	-900 mV	-904.88 mV		-895.12 mV
	100 mV/div	1.0 V	0.975 V		1.025 V
	100 mV/div	- 1.0 V	-1.025 V		-0.975 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.75 V		10.25 V
	1.01 V/div	-10.0 V	-10.25 V		-9.75 V
	5 V/div	10.0 V	8.95 V		11.05 V
5 V/div	-10.0 V	-11.05 V		-8.95 V	
Channel 2 DC Offset Accuracy, 20 MHz BW, 50 Ω	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.965 V		5.035 V
	100 mV/div	-5.0 V	-5.035 V		-4.965 V
Channel 2 DC Offset Accuracy, 20 MHz BW, 1 MΩ	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	1.0 V	0.935 V		1.065 V
	100 mV/div	- 1.0 V	-1.065 V		-0.935 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.3 V		10.7 V
	1.01 V/div	-10.0 V	-10.7 V		-9.3 V
	5 V/div	10.0 V	8.5 V		11.5 V
5 V/div	-10.0 V	-11.5 V		-8.5 V	
Channel 3 DC Offset Accuracy, 20 MHz BW, 50 Ω	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.965 V		5.035 V
	100 mV/div	-5.0 V	-5.035 V		-4.965 V

Table continued...

<sup>13</sup> Use this value for both the calibrator output and the oscilloscope offset setting.

Offset Accuracy					
Performance checks	Vertical scale	Vertical offset <sup>13</sup>	Low limit	Test result	High limit
Channel 3 DC Offset Accuracy, 20 MHz BW, 1 M $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	1.0 V	0.935 V		1.065 V
	100 mV/div	- 1.0 V	-1.065 V		-0.935 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.3 V		10.7 V
	1.01 V/div	-10.0 V	-10.7 V		-9.3 V
	5 V/div	10.0 V	8.5 V		11.5 V
	5 V/div	-10.0 V	-11.5 V		-8.5 V
Channel 4 DC Offset Accuracy, 20 MHz BW, 50 $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.965 V		5.035 V
	100 mV/div	-5.0 V	-5.035 V		-4.965 V
Channel 4 DC Offset Accuracy, 20 MHz BW, 1 M $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	1.0 V	0.935 V		1.065 V
	100 mV/div	- 1.0 V	-1.065 V		-0.935 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.3 V		10.7 V
	1.01 V/div	-10.0 V	-10.7 V		-9.3 V
	5 V/div	10.0 V	8.5 V		11.5 V
	5 V/div	-10.0 V	-11.5 V		-8.5 V
Channel 5 DC Offset Accuracy, 20 MHz BW, 50 $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.965 V		5.035 V
	100 mV/div	-5.0 V	-5.035 V		-4.965 V

Table continued...

<sup>13</sup> Use this value for both the calibrator output and the oscilloscope offset setting.

Offset Accuracy					
Performance checks	Vertical scale	Vertical offset <sup>13</sup>	Low limit	Test result	High limit
Channel 5 DC Offset Accuracy, 20 MHz BW, 1 M $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	1.0 V	0.975 V		1.025 V
	100 mV/div	- 1.0 V	-1.025 V		-0.975 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.75 V		10.25 V
	1.01 V/div	-10.0 V	-10.25 V		-9.75 V
	5 V/div	10.0 V	8.95 V		11.05 V
	5 V/div	-10.0 V	-11.05 V		-8.95 V
Channel 6 DC Offset Accuracy, 20 MHz BW, 50 $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.965 V		5.035 V
	100 mV/div	-5.0 V	-5.035 V		-4.965 V
Channel 6 DC Offset Accuracy, 20 MHz BW, 1 M $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	1.0 V	0.975 V		1.025 V
	100 mV/div	- 1.0 V	-1.025 V		-0.975 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.75 V		10.25 V
	1.01 V/div	-10.0 V	-10.25 V		-9.75 V
	5 V/div	10.0 V	8.95 V		11.05 V
	5 V/div	-10.0 V	-11.05 V		-8.95 V
Channel 7 DC Offset Accuracy, 20 MHz BW, 50 $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.965 V		5.035 V
	100 mV/div	-5.0 V	-5.035 V		-4.965 V

Table continued...

<sup>13</sup> Use this value for both the calibrator output and the oscilloscope offset setting.

Offset Accuracy					
Performance checks	Vertical scale	Vertical offset <sup>13</sup>	Low limit	Test result	High limit
Channel 7 DC Offset Accuracy, 20 MHz BW, 1 M $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	1.0 V	0.975 V		1.025 V
	100 mV/div	- 1.0 V	-1.025 V		-0.975 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.75 V		10.25 V
	1.01 V/div	-10.0 V	-10.25 V		-9.75 V
	5 V/div	10.0 V	8.95 V		11.05 V
	5 V/div	-10.0 V	-11.05 V		-8.95 V
Channel 8 DC Offset Accuracy, 20 MHz BW, 50 $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	5.0 V	4.965 V		5.035 V
	100 mV/div	-5.0 V	-5.035 V		-4.965 V
Channel 8 DC Offset Accuracy, 20 MHz BW, 1 M $\Omega$	1 mV/div	900 mV	895.3 mV		904.7 mV
	1 mV/div	-900 mV	-904.7 mV		-895.3 mV
	100 mV/div	1.0 V	0.975 V		1.025 V
	100 mV/div	- 1.0 V	-1.025 V		-0.975 V
	500 mV/div	9.0 V	8.855 V		9.145 V
	500 mV/div	- 9.0 V	-9.145 V		-8.855 V
	1.01 V/div	10.0 V	9.75 V		10.25 V
	1.01 V/div	-10.0 V	-10.25 V		-9.75 V
	5 V/div	10.0 V	8.95 V		11.05 V
	5 V/div	-10.0 V	-11.05 V		-8.95 V

<sup>13</sup> Use this value for both the calibrator output and the oscilloscope offset setting.

## Analog Bandwidth test record

Analog Bandwidth							
Performance checks							
Bandwidth at Channel	Impedance	Vertical scale	Horizontal scale	$V_{in-pp}$	$V_{bw-pp}$	Limit	Test result Gain = $V_{bw-pp}/V_{in-pp}$
<b>All models</b>							
Channel 1	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 1	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 2	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 2	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	

Table continued...

Analog Bandwidth							
Performance checks							
Bandwidth at Channel	Impedance	Vertical scale	Horizontal scale	$V_{in-pp}$	$V_{bw-pp}$	Limit	Test result Gain = $V_{bw-pp}/V_{in-pp}$
Channel 3	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 3	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 4	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 4	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	

Table continued...

Analog Bandwidth							
Performance checks							
Bandwidth at Channel	Impedance	Vertical scale	Horizontal scale	$V_{in-pp}$	$V_{bw-pp}$	Limit	Test result Gain = $V_{bw-pp}/V_{in-pp}$
Channel 5	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 5	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 6	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 6	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	

Table continued...



Analog Bandwidth							
Performance checks							
Bandwidth at Channel	Impedance	Vertical scale	Horizontal scale	$V_{in-pp}$	$V_{bw-pp}$	Limit	Test result Gain = $V_{bw-pp}/V_{in-pp}$
Channel 7	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 7	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 8	50 $\Omega$	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	
Channel 8	1 M $\Omega$ , typical	1 mV/div	1 ns/div			$\geq 0.707$	
		2 mV/div	1 ns/div			$\geq 0.707$	
		4 mV/div	1 ns/div			$\geq 0.707$	
		10 mV/div	1 ns/div			$\geq 0.707$	
		25 mV/div	1 ns/div			$\geq 0.707$	
		50 mV/div	1 ns/div			$\geq 0.707$	
		100 mV/div	1 ns/div			$\geq 0.707$	

## Input impedance test record

Input Impedance				
Performance checks	Vertical scale	Low limit	Test result	High limit
<b>All models</b>				
Channel 1 Input Impedance, 1 M $\Omega$	100 mV/div	990 k $\Omega$		1.01 M $\Omega$
Channel 1 Input Impedance, 50 $\Omega$	10 mV/div	48.5 $\Omega$		51.5 $\Omega$
	100 mV/div	48.5 $\Omega$		51.5 $\Omega$
Channel 2 Input Impedance, 1 M $\Omega$	100 mV/div	990 k $\Omega$		1.01 M $\Omega$
Channel 2 Input Impedance, 50 $\Omega$	10 mV/div	48.5 $\Omega$		51.5 $\Omega$
	100 mV/div	48.5 $\Omega$		51.5 $\Omega$
Channel 3 Input Impedance, 1 M $\Omega$	100 mV/div	990 k $\Omega$		1.01 M $\Omega$
Channel 3 Input Impedance, 50 $\Omega$	10 mV/div	48.5 $\Omega$		51.5 $\Omega$
	100 mV/div	48.5 $\Omega$		51.5 $\Omega$
Channel 4 Input Impedance, 1 M $\Omega$	100 mV/div	990 k $\Omega$		1.01 M $\Omega$
Channel 4, Input Impedance, 50 $\Omega$	10 mV/div	48.5 $\Omega$		51.5 $\Omega$
	100 mV/div	48.5 $\Omega$		51.5 $\Omega$

## DC Gain Accuracy test record

DC Gain Accuracy					
Performance checks	Bandwidth	Vertical scale	Low limit	Test result	High limit
Channel 1 DC Gain Accuracy, 0 V offset, 0 V vertical position, 50 $\Omega$	20 MHz	1 mV/div	-4%		4%
		2 mV/div	-2%		2%
		5 mV/div	-2%		2%
		10 mV/div	-2%		2%
		20 mV/div	-2%		2%
		50 mV/div	-2%		2%
		100 mV/div	-2%		2%
		200 mV/div	-2%		2%
		500 mV/div	-2%		2%
		1 V/div	-2%		2%
	250 MHz	20 mV/div	-2%		2%
	FULL	20 mV/div	-2%		2%

Table continued...

DC Gain Accuracy					
Performance checks	Bandwidth	Vertical scale	Low limit	Test result	High limit
Channel 1 DC Gain Accuracy, 0 V offset, 0 V vertical position, 1 M $\Omega$	20 MHz	1 mV/div	-2.5%		2.5%
		2 mV/div	-2%		2%
		5 mV/div	-2%		2%
		10 mV/div	-2%		2%
		20 mV/div	-2%		2%
		50 mV/div	-2%		2%
		100 mV/div	-2%		2%
		200 mV/div	-2%		2%
		500 mV/div	-2%		2%
		1 V/div	-2%		2%
	250 MHz	20 mV/div	-2%		2%
	FULL	20 mV/div	-2%		2%
	Channel 2 DC Gain Accuracy, 0 V offset, 0 V vertical position, 50 $\Omega$	20 MHz	1 mV/div	-4%	
2 mV/div			-2%		2%
5 mV/div			-2%		2%
10 mV/div			-2%		2%
20 mV/div			-2%		2%
50 mV/div			-2%		2%
100 mV/div			-2%		2%
200 mV/div			-2%		2%
500 mV/div			-2%		2%
1 V/div			-2%		2%
250 MHz		20 mV/div	-2%		2%
FULL		20 mV/div	-2%		2%

Table continued...

DC Gain Accuracy					
Performance checks	Bandwidth	Vertical scale	Low limit	Test result	High limit
Channel 2 DC Gain Accuracy, 0 V offset, 0 V vertical position, 1 M $\Omega$	20 MHz	1 mV/div	-2.5%		2.5%
		2 mV/div	-2%		2%
		5 mV/div	-2%		2%
		10 mV/div	-2%		2%
		20 mV/div	-2%		2%
		50 mV/div	-2%		2%
		100 mV/div	-2%		2%
		200 mV/div	-2%		2%
		500 mV/div	-2%		2%
		1 V/div	-2%		2%
	250 MHz	20 mV/div	-2%		2%
	FULL	20 mV/div	-2%		2%
	Channel 3 DC Gain Accuracy, 0 V offset, 0 V vertical position, 50 $\Omega$	20 MHz	1 mV/div	-4%	
2 mV/div			-2%		2%
5 mV/div			-2%		2%
10 mV/div			-2%		2%
20 mV/div			-2%		2%
50 mV/div			-2%		2%
100 mV/div			-2%		2%
200 mV/div			-2%		2%
500 mV/div			-2%		2%
1 V/div			-2%		2%
250 MHz		20 mV/div	-2%		2%
FULL		20 mV/div	-2%		2%

Table continued...

DC Gain Accuracy					
Performance checks	Bandwidth	Vertical scale	Low limit	Test result	High limit
Channel 3 DC Gain Accuracy, 0 V offset, 0 V vertical position, 1 M $\Omega$	20 MHz	1 mV/div	-2.5%		2.5%
		2 mV/div	-2%		2%
		5 mV/div	-2%		2%
		10 mV/div	-2%		2%
		20 mV/div	-2%		2%
		50 mV/div	-2%		2%
		100 mV/div	-2%		2%
		200 mV/div	-2%		2%
		500 mV/div	-2%		2%
		1 V/div	-2%		2%
	250 MHz	20 mV/div	-2%		2%
FULL	20 mV/div	-2%		2%	
Channel 4 DC Gain Accuracy, 0 V offset, 0 V vertical position, 50 $\Omega$	20 MHz	1 mV/div	-4%		4%
		2 mV/div	-2%		2%
		5 mV/div	-2%		2%
		10 mV/div	-2%		2%
		20 mV/div	-2%		2%
		50 mV/div	-2%		2%
		100 mV/div	-2%		2%
		200 mV/div	-2%		2%
		500 mV/div	-2%		2%
		1 V/div	-2%		2%
	250 MHz	20 mV/div	-2%		2%
FULL	20 mV/div	-2%		2%	
Channel 4 DC Gain Accuracy, 0 V offset, 0 V vertical position, 1 M $\Omega$	20 MHz	1 mV/div	-2.5%		2.5%
		2 mV/div	-2%		2%
		5 mV/div	-2%		2%
		10 mV/div	-2%		2%
		20 mV/div	-2%		2%
		50 mV/div	-2%		2%
		100 mV/div	-2%		2%
		200 mV/div	-2%		2%
		500 mV/div	-2%		2%
		1 V/div	-2%		2%
	250 MHz	20 mV/div	-2%		2%
FULL	20 mV/div	-2%		2%	

## Random Noise, sample acquisition mode test record

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>14</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 1	1 mV/div	10 GHz limit		259 $\mu$ V
		9 GHz limit		236 $\mu$ V
		8 GHz limit		216 $\mu$ V
		7 GHz limit		197 $\mu$ V
		6 GHz limit		175 $\mu$ V
	2 mV/div	10 GHz limit		266 $\mu$ V
		9 GHz limit		242 $\mu$ V
		8 GHz limit		221 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 1	5 mV/div	10 GHz limit		322 $\mu$ V
		9 GHz limit		293 $\mu$ V
		8 GHz limit		271 $\mu$ V
		7 GHz limit		247 $\mu$ V
		6 GHz limit		220 $\mu$ V
	10 mV/div	10 GHz limit		488 $\mu$ V
		9 GHz limit		445 $\mu$ V
		8 GHz limit		406 $\mu$ V
		7 GHz limit		370 $\mu$ V
		6 GHz limit		330 $\mu$ V

Table continued...

<sup>14</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>14</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 1	20 mV/div	10 GHz limit		850 $\mu$ V
		9 GHz limit		775 $\mu$ V
		8 GHz limit		707 $\mu$ V
		7 GHz limit		645 $\mu$ V
		6 GHz limit		581 $\mu$ V
	50 mV/div	10 GHz limit		1.96 mV
		9 GHz limit		1.79 mV
		8 GHz limit		1.63 mV
		7 GHz limit		1.5 mV
		6 GHz limit		1.34 mV
Channel 1	100 mV/div	10 GHz limit		5.05 mV
		9 GHz limit		4.55 mV
		8 GHz limit		4.15 mV
		7 GHz limit		3.79 mV
		6 GHz limit		3.38 mV
	1 V/div	10 GHz limit		38.8 mV
		9 GHz limit		35.4 mV
		8 GHz limit		32.6 mV
		7 GHz limit		29.7 mV
		6 GHz limit		26.8 mV

<sup>14</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>15</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 1	1 mV/div	10 GHz limit		281 $\mu$ V
		9 GHz limit		253 $\mu$ V
		8 GHz limit		223 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		179 $\mu$ V
	2 mV/div	10 GHz limit		288 $\mu$ V
		9 GHz limit		260 $\mu$ V
		8 GHz limit		224 $\mu$ V
		7 GHz limit		202 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 1	5 mV/div	10 GHz limit		374 $\mu$ V
		9 GHz limit		337 $\mu$ V
		8 GHz limit		293 $\mu$ V
		7 GHz limit		271 $\mu$ V
		6 GHz limit		233 $\mu$ V
	10 mV/div	10 GHz limit		600 $\mu$ V
		9 GHz limit		541 $\mu$ V
		8 GHz limit		482 $\mu$ V
		7 GHz limit		440 $\mu$ V
		6 GHz limit		388 $\mu$ V

Table continued...

<sup>15</sup> Start with the highest bandwidth setting you can select.



Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>15</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 1	20 mV/div	10 GHz limit		1.08 mV
		9 GHz limit		976 $\mu$ V
		8 GHz limit		890 $\mu$ V
		7 GHz limit		793 $\mu$ V
		6 GHz limit		691 $\mu$ V
	50 mV/div	10 GHz limit		2.53 mV
		9 GHz limit		2.3 mV
		8 GHz limit		2.1 mV
		7 GHz limit		1.85 mV
		6 GHz limit		1.67 mV
Channel 1	100 mV/div	10 GHz limit		6.14 mV
		9 GHz limit		5.54 mV
		8 GHz limit		4.88 mV
		7 GHz limit		4.4 mV
		6 GHz limit		3.83 mV
	1 V/div	10 GHz limit		49.9 mV
		9 GHz limit		46.1 mV
		8 GHz limit		42 mV
		7 GHz limit		37 mV
		6 GHz limit		33.4 mV

<sup>15</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>16</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 1	1 mV/div	5 GHz		162 $\mu$ V
		4 GHz		142 $\mu$ V
		3 GHz		123 $\mu$ V
	2 mV/div	5 GHz		168 $\mu$ V
		4 GHz		148 $\mu$ V
		3 GHz		127 $\mu$ V
Channel 1	5 mV/div	5 GHz		233 $\mu$ V
		4 GHz		203 $\mu$ V
		3 GHz		173 $\mu$ V
	10 mV/div	5 GHz		388 $\mu$ V
		4 GHz		334 $\mu$ V
		3 GHz		281 $\mu$ V
Channel 1	20 mV/div	5 GHz		715 $\mu$ V
		4 GHz		609 $\mu$ V
		3 GHz		518 $\mu$ V
	50 mV/div	5 GHz		1.71 mV
		4 GHz		1.47 mV
		3 GHz		1.25 mV
Channel 1	100 mV/div	5 GHz		3.92 mV
		4 GHz		3.38 mV
		3 GHz		2.84 mV
	1 V/div	5 GHz		34.2 mV
		4 GHz		29.4 mV
		3 GHz		25 mV

<sup>16</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>17</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 1</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 1</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 1</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 1</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>17</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>17</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 1</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 1</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 1</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 1</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>17</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>18</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 1</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 1</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 1</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 1</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>18</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>18</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 1</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 1</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 1</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 1</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>18</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>20</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 2	1 mV/div	10 GHz limit		281 $\mu$ V
		9 GHz limit		253 $\mu$ V
		8 GHz limit		223 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		179 $\mu$ V
	2 mV/div	10 GHz limit		288 $\mu$ V
		9 GHz limit		260 $\mu$ V
		8 GHz limit		224 $\mu$ V
		7 GHz limit		202 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 2	5 mV/div	10 GHz limit		374 $\mu$ V
		9 GHz limit		337 $\mu$ V
		8 GHz limit		293 $\mu$ V
		7 GHz limit		271 $\mu$ V
		6 GHz limit		233 $\mu$ V
	10 mV/div	10 GHz limit		600 $\mu$ V
		9 GHz limit		541 $\mu$ V
		8 GHz limit		482 $\mu$ V
		7 GHz limit		440 $\mu$ V
		6 GHz limit		388 $\mu$ V

Table continued...

<sup>20</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>20</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 2	20 mV/div	10 GHz limit		1.08 mV
		9 GHz limit		976 $\mu$ V
		8 GHz limit		890 $\mu$ V
		7 GHz limit		793 $\mu$ V
		6 GHz limit		691 $\mu$ V
	50 mV/div	10 GHz limit		2.53 mV
		9 GHz limit		2.3 mV
		8 GHz limit		2.1 mV
		7 GHz limit		1.85 mV
		6 GHz limit		1.67 mV
Channel 2	100 mV/div	10 GHz limit		6.14 mV
		9 GHz limit		5.54 mV
		8 GHz limit		4.88 mV
		7 GHz limit		4.4 mV
		6 GHz limit		3.83 mV
	1 V/div	10 GHz limit		49.9 mV
		9 GHz limit		46.1 mV
		8 GHz limit		42 mV
		7 GHz limit		37 mV
		6 GHz limit		33.4 mV

<sup>20</sup> Start with the highest bandwidth setting you can select.



Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>21</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 2	1 mV/div	5GHz		162 $\mu$ V
		4GHz		142 $\mu$ V
		3GHz		123 $\mu$ V
	2 mV/div	5GHz		168 $\mu$ V
		4GHz		148 $\mu$ V
		3GHz		127 $\mu$ V
Channel 2	5 mV/div	5GHz		233 $\mu$ V
		4GHz		203 $\mu$ V
		3GHz		173 $\mu$ V
	10 mV/div	5GHz		388 $\mu$ V
		4GHz		334 $\mu$ V
		3GHz		281 $\mu$ V
Channel 2	20 mV/div	5GHz		715 $\mu$ V
		4GHz		609 $\mu$ V
		3GHz		518 $\mu$ V
	50 mV/div	5GHz		1.71 mV
		4GHz		1.47 mV
		3GHz		1.25 mV
Channel 2	100 mV/div	5GHz		3.92 mV
		4GHz		3.38 mV
		3GHz		2.84 mV
	1 V/div	5GHz		34.2 mV
		4GHz		29.4 mV
		3GHz		25 mV

<sup>21</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>22</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 2</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 2</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 2</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 2</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>22</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>22</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 2</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 2</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 2</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 2</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>22</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>23</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 2</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 2</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 2</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 2</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>23</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>23</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 2</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 2</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 2</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 2</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>23</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>24</sup>	Test result (mV)	High limit
Models: MSO64B				
Channel 3	1 mV/div	10 GHz limit		259 $\mu$ V
		9 GHz limit		236 $\mu$ V
		8 GHz limit		216 $\mu$ V
		7 GHz limit		197 $\mu$ V
		6 GHz limit		175 $\mu$ V
	2 mV/div	10 GHz limit		266 $\mu$ V
		9 GHz limit		242 $\mu$ V
		8 GHz limit		221 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 3	5 mV/div	10 GHz limit		322 $\mu$ V
		9 GHz limit		293 $\mu$ V
		8 GHz limit		271 $\mu$ V
		7 GHz limit		247 $\mu$ V
		6 GHz limit		220 $\mu$ V
	10 mV/div	10 GHz limit		488 $\mu$ V
		9 GHz limit		445 $\mu$ V
		8 GHz limit		406 $\mu$ V
		7 GHz limit		370 $\mu$ V
		6 GHz limit		330 $\mu$ V

Table continued...

<sup>24</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>24</sup>	Test result (mV)	High limit
Models: MSO64B				
Channel 3	20 mV/div	10 GHz limit		850 $\mu$ V
		9 GHz limit		775 $\mu$ V
		8 GHz limit		707 $\mu$ V
		7 GHz limit		645 $\mu$ V
		6 GHz limit		581 $\mu$ V
	50 mV/div	10 GHz limit		1.96 mV
		9 GHz limit		1.79 mV
		8 GHz limit		1.63 mV
		7 GHz limit		1.5 mV
		6 GHz limit		1.34 mV
Channel 3	100 mV/div	10 GHz limit		5.05 mV
		9 GHz limit		4.55 mV
		8 GHz limit		4.15 mV
		7 GHz limit		3.79 mV
		6 GHz limit		3.38 mV
	1 V/div	10 GHz limit		38.8 mV
		9 GHz limit		35.4 mV
		8 GHz limit		32.6 mV
		7 GHz limit		29.7 mV
		6 GHz limit		26.8 mV

<sup>24</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>25</sup>	Test result (mV)	High limit
Models: MSO64B				
Channel 3	1 mV/div	10 GHz limit		281 $\mu$ V
		9 GHz limit		253 $\mu$ V
		8 GHz limit		223 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		179 $\mu$ V
	2 mV/div	10 GHz limit		288 $\mu$ V
		9 GHz limit		260 $\mu$ V
		8 GHz limit		224 $\mu$ V
		7 GHz limit		202 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 3	5 mV/div	10 GHz limit		374 $\mu$ V
		9 GHz limit		337 $\mu$ V
		8 GHz limit		293 $\mu$ V
		7 GHz limit		271 $\mu$ V
		6 GHz limit		233 $\mu$ V
	10 mV/div	10 GHz limit		600 $\mu$ V
		9 GHz limit		541 $\mu$ V
		8 GHz limit		482 $\mu$ V
		7 GHz limit		440 $\mu$ V
		6 GHz limit		388 $\mu$ V

Table continued...

<sup>25</sup> Start with the highest bandwidth setting you can select.



Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>25</sup>	Test result (mV)	High limit
Models: MSO64B				
Channel 3	20 mV/div	10 GHz limit		1.08 mV
		9 GHz limit		976 $\mu$ V
		8 GHz limit		890 $\mu$ V
		7 GHz limit		793 $\mu$ V
		6 GHz limit		691 $\mu$ V
	50 mV/div	10 GHz limit		2.53 mV
		9 GHz limit		2.3 mV
		8 GHz limit		2.1 mV
		7 GHz limit		1.85 mV
		6 GHz limit		1.67 mV
Channel 3	100 mV/div	10 GHz limit		6.14 mV
		9 GHz limit		5.54 mV
		8 GHz limit		4.88 mV
		7 GHz limit		4.4 mV
		6 GHz limit		3.83 mV
	1 V/div	10 GHz limit		49.9 mV
		9 GHz limit		46.1 mV
		8 GHz limit		42 mV
		7 GHz limit		37 mV
		6 GHz limit		33.4 mV

<sup>25</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>26</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 3	1 mV/div	5GHz		162 $\mu$ V
		4GHz		142 $\mu$ V
		3GHz		123 $\mu$ V
	2 mV/div	5GHz		168 $\mu$ V
		4GHz		148 $\mu$ V
		3GHz		127 $\mu$ V
Channel 3	5 mV/div	5GHz		233 $\mu$ V
		4GHz		203 $\mu$ V
		3GHz		173 $\mu$ V
	10 mV/div	5GHz		388 $\mu$ V
		4GHz		334 $\mu$ V
		3GHz		281 $\mu$ V
Channel 3	20 mV/div	5GHz		715 $\mu$ V
		4GHz		609 $\mu$ V
		3GHz		518 $\mu$ V
	50 mV/div	5GHz		1.71 mV
		4GHz		1.47 mV
		3GHz		1.25 mV
Channel 3	100 mV/div	5GHz		3.92 mV
		4GHz		3.38 mV
		3GHz		2.84 mV
	1 V/div	5GHz		34.2 mV
		4GHz		29.4 mV
		3GHz		25 mV

<sup>26</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>27</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>				
<b>Channel 3</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 3</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 3</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 3</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>27</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>27</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>				
<b>Channel 3</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 3</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 3</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 3</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>27</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>28</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 3</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 3</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 3</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 3</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>28</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>28</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 3</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 3</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 3</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 3</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>28</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>29</sup>	Test result (mV)	High limit
Models: MSO66B				
Channel 4	1 mV/div	10 GHz limit		259 $\mu$ V
		9 GHz limit		236 $\mu$ V
		8 GHz limit		216 $\mu$ V
		7 GHz limit		197 $\mu$ V
		6 GHz limit		175 $\mu$ V
	2 mV/div	10 GHz limit		266 $\mu$ V
		9 GHz limit		242 $\mu$ V
		8 GHz limit		221 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 4	5 mV/div	10 GHz limit		322 $\mu$ V
		9 GHz limit		293 $\mu$ V
		8 GHz limit		271 $\mu$ V
		7 GHz limit		247 $\mu$ V
		6 GHz limit		220 $\mu$ V
	10 mV/div	10 GHz limit		488 $\mu$ V
		9 GHz limit		445 $\mu$ V
		8 GHz limit		406 $\mu$ V
		7 GHz limit		370 $\mu$ V
		6 GHz limit		330 $\mu$ V

Table continued...

<sup>29</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>29</sup>	Test result (mV)	High limit
Models: MSO66B				
Channel 4	20 mV/div	10 GHz limit		850 $\mu$ V
		9 GHz limit		775 $\mu$ V
		8 GHz limit		707 $\mu$ V
		7 GHz limit		645 $\mu$ V
		6 GHz limit		581 $\mu$ V
	50 mV/div	10 GHz limit		1.96 mV
		9 GHz limit		1.79 mV
		8 GHz limit		1.63 mV
		7 GHz limit		1.5 mV
		6 GHz limit		1.34 mV
Channel 4	100 mV/div	10 GHz limit		5.05 mV
		9 GHz limit		4.55 mV
		8 GHz limit		4.15 mV
		7 GHz limit		3.79 mV
		6 GHz limit		3.38 mV
	1 V/div	10 GHz limit		38.8 mV
		9 GHz limit		35.4 mV
		8 GHz limit		32.6 mV
		7 GHz limit		29.7 mV
		6 GHz limit		26.8 mV

<sup>29</sup> Start with the highest bandwidth setting you can select.



Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>30</sup>	Test result (mV)	High limit
Models: MSO66B, MSO64B				
Channel 4	1 mV/div	10 GHz limit		281 $\mu$ V
		9 GHz limit		253 $\mu$ V
		8 GHz limit		223 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		179 $\mu$ V
	2 mV/div	10 GHz limit		288 $\mu$ V
		9 GHz limit		260 $\mu$ V
		8 GHz limit		224 $\mu$ V
		7 GHz limit		202 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 4	5 mV/div	10 GHz limit		374 $\mu$ V
		9 GHz limit		337 $\mu$ V
		8 GHz limit		293 $\mu$ V
		7 GHz limit		271 $\mu$ V
		6 GHz limit		233 $\mu$ V
	10 mV/div	10 GHz limit		600 $\mu$ V
		9 GHz limit		541 $\mu$ V
		8 GHz limit		482 $\mu$ V
		7 GHz limit		440 $\mu$ V
		6 GHz limit		388 $\mu$ V

Table continued...

<sup>30</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>30</sup>	Test result (mV)	High limit
Models: MSO66B, MSO64B				
Channel 4	20 mV/div	10 GHz limit		1.08 mV
		9 GHz limit		976 $\mu$ V
		8 GHz limit		890 $\mu$ V
		7 GHz limit		793 $\mu$ V
		6 GHz limit		691 $\mu$ V
	50 mV/div	10 GHz limit		2.53 mV
		9 GHz limit		2.3 mV
		8 GHz limit		2.1 mV
		7 GHz limit		1.85 mV
		6 GHz limit		1.67 mV
Channel 4	100 mV/div	10 GHz limit		6.14 mV
		9 GHz limit		5.54 mV
		8 GHz limit		4.88 mV
		7 GHz limit		4.4 mV
		6 GHz limit		3.83 mV
	1 V/div	10 GHz limit		49.9 mV
		9 GHz limit		46.1 mV
		8 GHz limit		42 mV
		7 GHz limit		37 mV
		6 GHz limit		33.4 mV

<sup>30</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>31</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B, MSO64B				
Channel 4	1 mV/div	5GHz		162 $\mu$ V
		4GHz		142 $\mu$ V
		3GHz		123 $\mu$ V
	2 mV/div	5GHz		168 $\mu$ V
		4GHz		148 $\mu$ V
		3GHz		127 $\mu$ V
Channel 4	5 mV/div	5GHz		233 $\mu$ V
		4GHz		203 $\mu$ V
		3GHz		173 $\mu$ V
	10 mV/div	5GHz		388 $\mu$ V
		4GHz		334 $\mu$ V
		3GHz		281 $\mu$ V
Channel 4	20 mV/div	5GHz		715 $\mu$ V
		4GHz		609 $\mu$ V
		3GHz		518 $\mu$ V
	50 mV/div	5GHz		1.71 mV
		4GHz		1.47 mV
		3GHz		1.25 mV
Channel 4	100 mV/div	5GHz		3.92 mV
		4GHz		3.38 mV
		3GHz		2.84 mV
	1 V/div	5GHz		34.2 mV
		4GHz		29.4 mV
		3GHz		25 mV

<sup>31</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>32</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO66B, MSO64B</b>				
<b>Channel 4</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 4</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 4</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 4</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>32</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>32</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO66B, MSO64B</b>				
<b>Channel 4</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 4</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 4</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 4</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>32</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>33</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 4</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 4</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 4</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 4</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>33</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>33</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>				
<b>Channel 4</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 4</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 4</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 4</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>33</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>34</sup>	Test result (mV)	High limit
Models: MSO68B				
Channel 5	1 mV/div	10 GHz limit		259 $\mu$ V
		9 GHz limit		236 $\mu$ V
		8 GHz limit		216 $\mu$ V
		7 GHz limit		197 $\mu$ V
		6 GHz limit		175 $\mu$ V
	2 mV/div	10 GHz limit		266 $\mu$ V
		9 GHz limit		242 $\mu$ V
		8 GHz limit		221 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 5	5 mV/div	10 GHz limit		322 $\mu$ V
		9 GHz limit		293 $\mu$ V
		8 GHz limit		271 $\mu$ V
		7 GHz limit		247 $\mu$ V
		6 GHz limit		220 $\mu$ V
	10 mV/div	10 GHz limit		488 $\mu$ V
		9 GHz limit		445 $\mu$ V
		8 GHz limit		406 $\mu$ V
		7 GHz limit		370 $\mu$ V
		6 GHz limit		330 $\mu$ V

Table continued...

<sup>34</sup> Start with the highest bandwidth setting you can select.



Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 50 GS/s			
	V/div	Bandwidth <sup>34</sup>	Test result (mV)	High limit
Models: MSO68B				
Channel 5	20 mV/div	10 GHz limit		850 $\mu$ V
		9 GHz limit		775 $\mu$ V
		8 GHz limit		707 $\mu$ V
		7 GHz limit		645 $\mu$ V
		6 GHz limit		581 $\mu$ V
	50 mV/div	10 GHz limit		1.96 mV
		9 GHz limit		1.79 mV
		8 GHz limit		1.63 mV
		7 GHz limit		1.5 mV
		6 GHz limit		1.34 mV
Channel 5	100 mV/div	10 GHz limit		5.05 mV
		9 GHz limit		4.55 mV
		8 GHz limit		4.15 mV
		7 GHz limit		3.79 mV
		6 GHz limit		3.38 mV
	1 V/div	10 GHz limit		38.8 mV
		9 GHz limit		35.4 mV
		8 GHz limit		32.6 mV
		7 GHz limit		29.7 mV
		6 GHz limit		26.8 mV

<sup>34</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>35</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B				
Channel 5	1 mV/div	10 GHz limit		281 $\mu$ V
		9 GHz limit		253 $\mu$ V
		8 GHz limit		223 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		179 $\mu$ V
	2 mV/div	10 GHz limit		288 $\mu$ V
		9 GHz limit		260 $\mu$ V
		8 GHz limit		224 $\mu$ V
		7 GHz limit		202 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 5	5 mV/div	10 GHz limit		374 $\mu$ V
		9 GHz limit		337 $\mu$ V
		8 GHz limit		293 $\mu$ V
		7 GHz limit		271 $\mu$ V
		6 GHz limit		233 $\mu$ V
	10 mV/div	10 GHz limit		600 $\mu$ V
		9 GHz limit		541 $\mu$ V
		8 GHz limit		482 $\mu$ V
		7 GHz limit		440 $\mu$ V
		6 GHz limit		388 $\mu$ V

Table continued...

<sup>35</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>35</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B				
Channel 5	20 mV/div	10 GHz limit		1.08 mV
		9 GHz limit		976 $\mu$ V
		8 GHz limit		890 $\mu$ V
		7 GHz limit		793 $\mu$ V
		6 GHz limit		691 $\mu$ V
	50 mV/div	10 GHz limit		2.53 mV
		9 GHz limit		2.3 mV
		8 GHz limit		2.1 mV
		7 GHz limit		1.85 mV
		6 GHz limit		1.67 mV
Channel 5	100 mV/div	10 GHz limit		6.14 mV
		9 GHz limit		5.54 mV
		8 GHz limit		4.88 mV
		7 GHz limit		4.4 mV
		6 GHz limit		3.83 mV
	1 V/div	10 GHz limit		49.9 mV
		9 GHz limit		46.1 mV
		8 GHz limit		42 mV
		7 GHz limit		37 mV
		6 GHz limit		33.4 mV

<sup>35</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>36</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B				
Channel 5	1 mV/div	5GHz		162 $\mu$ V
		4GHz		142 $\mu$ V
		3GHz		123 $\mu$ V
	2 mV/div	5GHz		168 $\mu$ V
		4GHz		148 $\mu$ V
		3GHz		127 $\mu$ V
Channel 5	5 mV/div	5GHz		233 $\mu$ V
		4GHz		203 $\mu$ V
		3GHz		173 $\mu$ V
	10 mV/div	5GHz		388 $\mu$ V
		4GHz		334 $\mu$ V
		3GHz		281 $\mu$ V
Channel 5	20 mV/div	5GHz		715 $\mu$ V
		4GHz		609 $\mu$ V
		3GHz		518 $\mu$ V
	50 mV/div	5GHz		1.71 mV
		4GHz		1.47 mV
		3GHz		1.25 mV
Channel 5	100 mV/div	5GHz		3.92 mV
		4GHz		3.38 mV
		3GHz		2.84 mV
	1 V/div	5GHz		34.2 mV
		4GHz		29.4 mV
		3GHz		25 mV

<sup>36</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>37</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>				
<b>Channel 5</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 5</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 5</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 5</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>37</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>37</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>				
<b>Channel 5</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 5</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 5</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 5</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>37</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>38</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>				
<b>Channel 5</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 5</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 5</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 5</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>38</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>38</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>				
<b>Channel 5</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 5</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 5</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 5</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>38</sup> Full = the highest bandwidth setting you can select.



Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>40</sup>	Test result (mV)	High limit
Models: MSO68B				
Channel 6	1 mV/div	10 GHz limit		281 $\mu$ V
		9 GHz limit		253 $\mu$ V
		8 GHz limit		223 $\mu$ V
		7 GHz limit		199 $\mu$ V
		6 GHz limit		179 $\mu$ V
	2 mV/div	10 GHz limit		288 $\mu$ V
		9 GHz limit		260 $\mu$ V
		8 GHz limit		224 $\mu$ V
		7 GHz limit		202 $\mu$ V
		6 GHz limit		180 $\mu$ V
Channel 6	5 mV/div	10 GHz limit		374 $\mu$ V
		9 GHz limit		337 $\mu$ V
		8 GHz limit		293 $\mu$ V
		7 GHz limit		271 $\mu$ V
		6 GHz limit		233 $\mu$ V
	10 mV/div	10 GHz limit		600 $\mu$ V
		9 GHz limit		541 $\mu$ V
		8 GHz limit		482 $\mu$ V
		7 GHz limit		440 $\mu$ V
		6 GHz limit		388 $\mu$ V

Table continued...

<sup>40</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 25 GS/s			
	V/div	Bandwidth <sup>40</sup>	Test result (mV)	High limit
Models: MSO68B				
Channel 6	20 mV/div	10 GHz limit		1.08 mV
		9 GHz limit		976 $\mu$ V
		8 GHz limit		890 $\mu$ V
		7 GHz limit		793 $\mu$ V
		6 GHz limit		691 $\mu$ V
	50 mV/div	10 GHz limit		2.53 mV
		9 GHz limit		2.3 mV
		8 GHz limit		2.1 mV
		7 GHz limit		1.85 mV
		6 GHz limit		1.67 mV
Channel 6	100 mV/div	10 GHz limit		6.14 mV
		9 GHz limit		5.54 mV
		8 GHz limit		4.88 mV
		7 GHz limit		4.4 mV
		6 GHz limit		3.83 mV
	1 V/div	10 GHz limit		49.9 mV
		9 GHz limit		46.1 mV
		8 GHz limit		42 mV
		7 GHz limit		37 mV
		6 GHz limit		33.4 mV

<sup>40</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>41</sup>	Test result (mV)	High limit
Models: MSO68B, MSO66B				
Channel 6	1 mV/div	5GHz		162 $\mu$ V
		4GHz		142 $\mu$ V
		3GHz		123 $\mu$ V
	2 mV/div	5GHz		168 $\mu$ V
		4GHz		148 $\mu$ V
		3GHz		127 $\mu$ V
Channel 6	5 mV/div	5GHz		233 $\mu$ V
		4GHz		203 $\mu$ V
		3GHz		173 $\mu$ V
	10 mV/div	5GHz		388 $\mu$ V
		4GHz		334 $\mu$ V
		3GHz		281 $\mu$ V
Channel 6	20 mV/div	5GHz		715 $\mu$ V
		4GHz		609 $\mu$ V
		3GHz		518 $\mu$ V
	50 mV/div	5GHz		1.71 mV
		4GHz		1.47 mV
		3GHz		1.25 mV
Channel 6	100 mV/div	5GHz		3.92 mV
		4GHz		3.38 mV
		3GHz		2.84 mV
	1 V/div	5GHz		34.2 mV
		4GHz		29.4 mV
		3GHz		25 mV

<sup>41</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>42</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>				
<b>Channel 6</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 6</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 6</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 6</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>42</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>42</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>				
<b>Channel 6</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 6</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 6</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 6</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>42</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>43</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>				
<b>Channel 6</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 6</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 6</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 6</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>43</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>43</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>				
<b>Channel 6</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 6</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 6</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 6</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>43</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>44</sup>	Test result (mV)	High limit
Models: MSO68B				
Channel 7	1 mV/div	5GHz		162 $\mu$ V
		4GHz		142 $\mu$ V
		3GHz		123 $\mu$ V
	2 mV/div	5GHz		168 $\mu$ V
		4GHz		148 $\mu$ V
		3GHz		127 $\mu$ V
Channel 7	5 mV/div	5GHz		233 $\mu$ V
		4GHz		203 $\mu$ V
		3GHz		173 $\mu$ V
	10 mV/div	5GHz		388 $\mu$ V
		4GHz		334 $\mu$ V
		3GHz		281 $\mu$ V
Channel 7	20 mV/div	5GHz		715 $\mu$ V
		4GHz		609 $\mu$ V
		3GHz		518 $\mu$ V
	50 mV/div	5GHz		1.71 mV
		4GHz		1.47 mV
		3GHz		1.25 mV
Channel 7	100 mV/div	5GHz		3.92 mV
		4GHz		3.38 mV
		3GHz		2.84 mV
	1 V/div	5GHz		34.2 mV
		4GHz		29.4 mV
		3GHz		25 mV

<sup>44</sup> Start with the highest bandwidth setting you can select.



Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>45</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>				
<b>Channel 7</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 7</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 7</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 7</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>45</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>45</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>				
<b>Channel 7</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 7</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 7</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 7</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>45</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks	50 $\Omega$ , 12.5 GS/s			
	V/div	Bandwidth <sup>46</sup>	Test result (mV)	High limit
Models: MSO68B				
Channel 8	1 mV/div	5GHz		162 $\mu$ V
		4GHz		142 $\mu$ V
		3GHz		123 $\mu$ V
	2 mV/div	5GHz		168 $\mu$ V
		4GHz		148 $\mu$ V
		3GHz		127 $\mu$ V
Channel 8	5 mV/div	5GHz		233 $\mu$ V
		4GHz		203 $\mu$ V
		3GHz		173 $\mu$ V
	10 mV/div	5GHz		388 $\mu$ V
		4GHz		334 $\mu$ V
		3GHz		281 $\mu$ V
Channel 8	20 mV/div	5GHz		715 $\mu$ V
		4GHz		609 $\mu$ V
		3GHz		518 $\mu$ V
	50 mV/div	5GHz		1.71 mV
		4GHz		1.47 mV
		3GHz		1.25 mV
Channel 8	100 mV/div	5GHz		3.92 mV
		4GHz		3.38 mV
		3GHz		2.84 mV
	1 V/div	5GHz		34.2 mV
		4GHz		29.4 mV
		3GHz		25 mV

<sup>46</sup> Start with the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>47</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>				
<b>Channel 8</b>	1 mV/div	500 MHz limit		262 $\mu$ V
		350 MHz limit		190 $\mu$ V
		250 MHz limit		153 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		102 $\mu$ V
<b>Channel 8</b>	2 mV/div	500 MHz limit		285 $\mu$ V
		350 MHz limit		195 $\mu$ V
		250 MHz limit		156 $\mu$ V
		200 MHz limit		153 $\mu$ V
		20 MHz limit		111 $\mu$ V
<b>Channel 8</b>	5 mV/div	500 MHz limit		311 $\mu$ V
		350 MHz limit		223 $\mu$ V
		250 MHz limit		183 $\mu$ V
		200 MHz limit		175 $\mu$ V
		20 MHz limit		140 $\mu$ V
<b>Channel 8</b>	10 mV/div	500 MHz limit		370 $\mu$ V
		350 MHz limit		281 $\mu$ V
		250 MHz limit		259 $\mu$ V
		200 MHz limit		242 $\mu$ V
		20 MHz limit		226 $\mu$ V

Table continued...

<sup>47</sup> Full = the highest bandwidth setting you can select.

Random Noise, sample acquisition mode: MSO68B, MSO66B, MSO64B				
Performance checks			1 M $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>47</sup>	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>				
<b>Channel 8</b>	20 mV/div	500 MHz limit		536 $\mu$ V
		350 MHz limit		473 $\mu$ V
		250 MHz limit		398 $\mu$ V
		200 MHz limit		398 $\mu$ V
		20 MHz limit		398 $\mu$ V
<b>Channel 8</b>	50 mV/div	500 MHz limit		1.1 mV
		350 MHz limit		896 $\mu$ V
		250 MHz limit		994 $\mu$ V
		200 MHz limit		994 $\mu$ V
		20 MHz limit		994 $\mu$ V
<b>Channel 8</b>	100 mV/div	500 MHz limit		2.39 mV
		350 MHz limit		2.08 mV
		250 MHz limit		1.99 mV
		200 MHz limit		1.99 mV
		20 MHz limit		1.99 mV
<b>Channel 8</b>	1 V/div	500 MHz limit		25.9 mV
		350 MHz limit		22.3 mV
		250 MHz limit		22.1 mV
		200 MHz limit		21.8 mV
		20 MHz limit		19.9 mV

<sup>47</sup> Full = the highest bandwidth setting you can select.

## Random Noise, High Res mode test record

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	1 mV/div	5 GHz				156 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				118 $\mu$ V
		2.5 GHz limit				107 $\mu$ V
		2 GHz limit				97.4 $\mu$ V
		1 GHz limit				72.2 $\mu$ V
		500 MHz limit				52.9 $\mu$ V
		350 MHz limit				45 $\mu$ V
		250 MHz limit				42 $\mu$ V
		200 MHz limit				36.2 $\mu$ V
		20 MHz limit				13 $\mu$ V

Table continued...

<sup>48</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	2 mV/div	5 GHz				158 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				120 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				98.7 $\mu$ V
		1 GHz limit				73.2 $\mu$ V
		500 MHz limit				53.6 $\mu$ V
		350 MHz limit				45.7 $\mu$ V
		250 MHz limit				42.6 $\mu$ V
		200 MHz limit				36.7 $\mu$ V
		20 MHz limit				13.2 $\mu$ V

Table continued...

<sup>48</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
Models: MSO68B, MSO66B, MSO64B						
<b>Channel 1</b>	5 mV/div	5 GHz				189 $\mu$ V
		4 GHz limit				165 $\mu$ V
		3 GHz limit				142 $\mu$ V
		2.5 GHz limit				128 $\mu$ V
		2 GHz limit				115 $\mu$ V
		1 GHz limit				84.6 $\mu$ V
		500 MHz limit				61.3 $\mu$ V
		350 MHz limit				52.2 $\mu$ V
		250 MHz limit				48.7 $\mu$ V
		200 MHz limit				41.9 $\mu$ V
		20 MHz limit				15 $\mu$ V

Table continued...

<sup>48</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
Models: MSO68B, MSO66B, MSO64B						
Channel 1	10 mV/div	5 GHz				278 $\mu$ V
		4 GHz limit				242 $\mu$ V
		3 GHz limit				203 $\mu$ V
		2.5 GHz limit				181 $\mu$ V
		2 GHz limit				163 $\mu$ V
		1 GHz limit				117 $\mu$ V
		500 MHz limit				84.8 $\mu$ V
		350 MHz limit				70.5 $\mu$ V
		250 MHz limit				65.8 $\mu$ V
		200 MHz limit				56.7 $\mu$ V
		20 MHz limit				20.6 $\mu$ V

Table continued...

<sup>48</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
Models: MSO68B, MSO66B, MSO64B						
<b>Channel 1</b>	20 mV/div	5 GHz				478 $\mu$ V
		4 GHz limit				412 $\mu$ V
		3 GHz limit				346 $\mu$ V
		2.5 GHz limit				309 $\mu$ V
		2 GHz limit				275 $\mu$ V
		1 GHz limit				195 $\mu$ V
		500 MHz limit				141 $\mu$ V
		350 MHz limit				116 $\mu$ V
		250 MHz limit				107 $\mu$ V
		200 MHz limit				93.2 $\mu$ V
		20 MHz limit				34.2 $\mu$ V

Table continued...

<sup>48</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
Models: MSO68B, MSO66B, MSO64B						
<b>Channel 1</b>	50 mV/div	5 GHz				1.09 mV
		4 GHz limit				949 $\mu$ V
		3 GHz limit				790 $\mu$ V
		2.5 GHz limit				704 $\mu$ V
		2 GHz limit				627 $\mu$ V
		1 GHz limit				444 $\mu$ V
		500 MHz limit				325 $\mu$ V
		350 MHz limit				261 $\mu$ V
		250 MHz limit				241 $\mu$ V
		200 MHz limit				210 $\mu$ V
		20 MHz limit				79 $\mu$ V

Table continued...

<sup>48</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
Models: MSO68B, MSO66B, MSO64B						
<b>Channel 1</b>	100 mV/div	5 GHz				2.81 mV
		4 GHz limit				2.45 mV
		3 GHz limit				2.06 mV
		2.5 GHz limit				1.83 mV
		2 GHz limit				1.65 mV
		1 GHz limit				1.17 mV
		500 MHz limit				858 $\mu$ V
		350 MHz limit				705 $\mu$ V
		250 MHz limit				658 $\mu$ V
		200 MHz limit				573 $\mu$ V
		20 MHz limit				203 $\mu$ V

Table continued...

<sup>48</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>48</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	1 V/div	5 GHz				21.8 mV
		4 GHz limit				18.8 mV
		3 GHz limit				15.8 mV
		2.5 GHz limit				13.9 mV
		2 GHz limit				12.4 mV
		1 GHz limit				8.78 mV
		500 MHz limit				6.51 mV
		350 MHz limit				5.11 mV
		250 MHz limit				4.77 mV
		200 MHz limit				4.15 mV
		20 MHz limit				1.56 mV

<sup>48</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>49</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	1 mV/div	5 GHz				162 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				117 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				96.3 $\mu$ V
		1 GHz limit				77.3 $\mu$ V
		500 MHz limit		262 $\mu$ V		56 $\mu$ V
		350 MHz limit		190 $\mu$ V		47.7 $\mu$ V
		250 MHz limit		153 $\mu$ V		46.1 $\mu$ V
		200 MHz limit		149 $\mu$ V		37.9 $\mu$ V
		20 MHz limit		103 $\mu$ V		13 $\mu$ V

Table continued...

<sup>49</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>49</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	2 mV/div	5 GHz				164 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				119 $\mu$ V
		2.5 GHz limit				110 $\mu$ V
		2 GHz limit				97.6 $\mu$ V
		1 GHz limit				72.4 $\mu$ V
		500 MHz limit		285 $\mu$ V		56.2 $\mu$ V
		350 MHz limit		195 $\mu$ V		47.3 $\mu$ V
		250 MHz limit		155 $\mu$ V		46.7 $\mu$ V
		200 MHz limit		153 $\mu$ V		38 $\mu$ V
		20 MHz limit		103 $\mu$ V		13.3 $\mu$ V

Table continued...

<sup>49</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>49</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	5 mV/div	5 GHz				210 $\mu$ V
		4 GHz limit				175 $\mu$ V
		3 GHz limit				149 $\mu$ V
		2.5 GHz limit				133 $\mu$ V
		2 GHz limit				118 $\mu$ V
		1 GHz limit				89.6 $\mu$ V
		500 MHz limit		297 $\mu$ V		68 $\mu$ V
		350 MHz limit		205 $\mu$ V		56.5 $\mu$ V
		250 MHz limit		161 $\mu$ V		54 $\mu$ V
		200 MHz limit		154 $\mu$ V		44.4 $\mu$ V
		20 MHz limit		110 $\mu$ V		15.6 $\mu$ V

Table continued...

<sup>49</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>49</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	10 mV/div	5 GHz				330 $\mu$ V
		4 GHz limit				271 $\mu$ V
		3 GHz limit				226 $\mu$ V
		2.5 GHz limit				203 $\mu$ V
		2 GHz limit				186 $\mu$ V
		1 GHz limit				128 $\mu$ V
		500 MHz limit		334 $\mu$ V		91.9 $\mu$ V
		350 MHz limit		231 $\mu$ V		77.3 $\mu$ V
		250 MHz limit		186 $\mu$ V		74.7 $\mu$ V
		200 MHz limit		165 $\mu$ V		65.8 $\mu$ V
		20 MHz limit		141 $\mu$ V		22.6 $\mu$ V

Table continued...

<sup>49</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>49</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	20 mV/div	5 GHz				595 $\mu$ V
		4 GHz limit				486 $\mu$ V
		3 GHz limit				398 $\mu$ V
		2.5 GHz limit				363 $\mu$ V
		2 GHz limit				320 $\mu$ V
		1 GHz limit				226 $\mu$ V
		500 MHz limit		407 $\mu$ V		162 $\mu$ V
		350 MHz limit		305 $\mu$ V		133 $\mu$ V
		250 MHz limit		257 $\mu$ V		120 $\mu$ V
		200 MHz limit		211 $\mu$ V		106 $\mu$ V
		20 MHz limit		224 $\mu$ V		41.2 $\mu$ V

Table continued...

<sup>49</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B							
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s		
	V/div	Bandwidth <sup>49</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)	
<b>Models: MSO68B, MSO66B, MSO64B</b>							
<b>Channel 1</b>	50 mV/div	5 GHz				1.4 mV	
		4 GHz limit				1.15 mV	
		3 GHz limit				960 $\mu$ V	
		2.5 GHz limit				856 $\mu$ V	
		2 GHz limit				745 $\mu$ V	
		1 GHz limit				534 $\mu$ V	
		500 MHz limit			737 $\mu$ V		396 $\mu$ V
		350 MHz limit			553 $\mu$ V		307 $\mu$ V
		250 MHz limit			528 $\mu$ V		280 $\mu$ V
		200 MHz limit			387 $\mu$ V		247 $\mu$ V
		20 MHz limit			510 $\mu$ V		105 $\mu$ V

Table continued...

<sup>49</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>49</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	100 mV/div	5 GHz				3.38 mV
		4 GHz limit				2.71 mV
		3 GHz limit				2.28 mV
		2.5 GHz limit				2.03 mV
		2 GHz limit				1.81 mV
		1 GHz limit				1.33 mV
		500 MHz limit		1.77 mV		941 $\mu$ V
		350 MHz limit		1.38 mV		792 $\mu$ V
		250 MHz limit		1.18 mV		722 $\mu$ V
		200 MHz limit		952 $\mu$ V		666 $\mu$ V
		20 MHz limit		1.13 mV		236 $\mu$ V
<b>Channel 1</b>	1 V/div	5 GHz				28.1 mV
		4 GHz limit				23.1 mV
		3 GHz limit				19.2 mV
		2.5 GHz limit				17.1 mV
		2 GHz limit				14.9 mV
		1 GHz limit				10.8 mV
		500 MHz limit		19 mV		7.92 mV
		350 MHz limit		14.9 mV		6.14 mV
		250 MHz limit		13.6 mV		5.6 mV
		200 MHz limit		11.3 mV		4.94 mV
		20 MHz limit		11.7 mV		2.11 mV

<sup>49</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>50</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 1</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>50</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>50</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 1</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>50</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>50</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 1</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>50</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>50</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 1</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 1</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>50</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>52</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	1 mV/div	5 GHz				162 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				117 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				96.3 $\mu$ V
		1 GHz limit				77.3 $\mu$ V
		500 MHz limit		262 $\mu$ V		56 $\mu$ V
		350 MHz limit		190 $\mu$ V		47.7 $\mu$ V
		250 MHz limit		153 $\mu$ V		46.1 $\mu$ V
		200 MHz limit		149 $\mu$ V		37.9 $\mu$ V
		20 MHz limit		103 $\mu$ V		13 $\mu$ V

Table continued...

<sup>52</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>52</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	2 mV/div	5 GHz				164 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				119 $\mu$ V
		2.5 GHz limit				110 $\mu$ V
		2 GHz limit				97.6 $\mu$ V
		1 GHz limit				72.4 $\mu$ V
		500 MHz limit		285 $\mu$ V		56.2 $\mu$ V
		350 MHz limit		195 $\mu$ V		47.3 $\mu$ V
		250 MHz limit		155 $\mu$ V		46.7 $\mu$ V
		200 MHz limit		153 $\mu$ V		38 $\mu$ V
		20 MHz limit		103 $\mu$ V		13.3 $\mu$ V

Table continued...

<sup>52</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>52</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	5 mV/div	5 GHz				210 $\mu$ V
		4 GHz limit				175 $\mu$ V
		3 GHz limit				149 $\mu$ V
		2.5 GHz limit				133 $\mu$ V
		2 GHz limit				118 $\mu$ V
		1 GHz limit				89.6 $\mu$ V
		500 MHz limit		297 $\mu$ V		68 $\mu$ V
		350 MHz limit		205 $\mu$ V		56.5 $\mu$ V
		250 MHz limit		161 $\mu$ V		54 $\mu$ V
		200 MHz limit		154 $\mu$ V		44.4 $\mu$ V
		20 MHz limit		110 $\mu$ V		15.6 $\mu$ V

Table continued...

<sup>52</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>52</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	10 mV/div	5 GHz				330 $\mu$ V
		4 GHz limit				271 $\mu$ V
		3 GHz limit				226 $\mu$ V
		2.5 GHz limit				203 $\mu$ V
		2 GHz limit				186 $\mu$ V
		1 GHz limit				128 $\mu$ V
		500 MHz limit		334 $\mu$ V		91.9 $\mu$ V
		350 MHz limit		231 $\mu$ V		77.3 $\mu$ V
		250 MHz limit		186 $\mu$ V		74.7 $\mu$ V
		200 MHz limit		165 $\mu$ V		65.8 $\mu$ V
		20 MHz limit		141 $\mu$ V		22.6 $\mu$ V

Table continued...

<sup>52</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>52</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	20 mV/div	5 GHz				595 $\mu$ V
		4 GHz limit				486 $\mu$ V
		3 GHz limit				398 $\mu$ V
		2.5 GHz limit				363 $\mu$ V
		2 GHz limit				320 $\mu$ V
		1 GHz limit				226 $\mu$ V
		500 MHz limit		407 $\mu$ V		162 $\mu$ V
		350 MHz limit		305 $\mu$ V		133 $\mu$ V
		250 MHz limit		257 $\mu$ V		120 $\mu$ V
		200 MHz limit		211 $\mu$ V		106 $\mu$ V
		20 MHz limit		224 $\mu$ V		41.2 $\mu$ V

Table continued...

<sup>52</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>52</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	50 mV/div	5 GHz				1.4 mV
		4 GHz limit				1.15 mV
		3 GHz limit				960 $\mu$ V
		2.5 GHz limit				856 $\mu$ V
		2 GHz limit				745 $\mu$ V
		1 GHz limit				534 $\mu$ V
		500 MHz limit		737 $\mu$ V		396 $\mu$ V
		350 MHz limit		553 $\mu$ V		307 $\mu$ V
		250 MHz limit		528 $\mu$ V		280 $\mu$ V
		200 MHz limit		387 $\mu$ V		247 $\mu$ V
		20 MHz limit		510 $\mu$ V		105 $\mu$ V

Table continued...

<sup>52</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>52</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	100 mV/div	5 GHz				3.38 mV
		4 GHz limit				2.71 mV
		3 GHz limit				2.28 mV
		2.5 GHz limit				2.03 mV
		2 GHz limit				1.81 mV
		1 GHz limit				1.33 mV
		500 MHz limit		1.77 mV		941 $\mu$ V
		350 MHz limit		1.38 mV		792 $\mu$ V
		250 MHz limit		1.18 mV		722 $\mu$ V
		200 MHz limit		952 $\mu$ V		666 $\mu$ V
		20 MHz limit		1.13 mV		236 $\mu$ V
<b>Channel 2</b>	1 V/div	5 GHz				28.1 mV
		4 GHz limit				23.1 mV
		3 GHz limit				19.2 mV
		2.5 GHz limit				17.1 mV
		2 GHz limit				14.9 mV
		1 GHz limit				10.8 mV
		500 MHz limit		19 mV		7.92 mV
		350 MHz limit		14.9 mV		6.14 mV
		250 MHz limit		13.6 mV		5.6 mV
		200 MHz limit		11.3 mV		4.94 mV
		20 MHz limit		11.7 mV		2.11 mV

<sup>52</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>53</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 2</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>53</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>53</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 2</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>53</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>53</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 2</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>53</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>53</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 2</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 2</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>53</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	1 mV/div	5 GHz				156 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				118 $\mu$ V
		2.5 GHz limit				107 $\mu$ V
		2 GHz limit				97.4 $\mu$ V
		1 GHz limit				72.2 $\mu$ V
		500 MHz limit				52.9 $\mu$ V
		350 MHz limit				45 $\mu$ V
		250 MHz limit				42 $\mu$ V
		200 MHz limit				36.2 $\mu$ V
		20 MHz limit				13 $\mu$ V

Table continued...

<sup>54</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	2 mV/div	5 GHz				158 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				120 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				98.7 $\mu$ V
		1 GHz limit				73.2 $\mu$ V
		500 MHz limit				53.6 $\mu$ V
		350 MHz limit				45.7 $\mu$ V
		250 MHz limit				42.6 $\mu$ V
		200 MHz limit				36.7 $\mu$ V
		20 MHz limit				13.2 $\mu$ V

Table continued...

<sup>54</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	5 mV/div	5 GHz				189 $\mu$ V
		4 GHz limit				165 $\mu$ V
		3 GHz limit				142 $\mu$ V
		2.5 GHz limit				128 $\mu$ V
		2 GHz limit				115 $\mu$ V
		1 GHz limit				84.6 $\mu$ V
		500 MHz limit				61.3 $\mu$ V
		350 MHz limit				52.2 $\mu$ V
		250 MHz limit				48.7 $\mu$ V
		200 MHz limit				41.9 $\mu$ V
		20 MHz limit				15 $\mu$ V

Table continued...

<sup>54</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	10 mV/div	5 GHz				278 $\mu$ V
		4 GHz limit				242 $\mu$ V
		3 GHz limit				203 $\mu$ V
		2.5 GHz limit				181 $\mu$ V
		2 GHz limit				163 $\mu$ V
		1 GHz limit				117 $\mu$ V
		500 MHz limit				84.8 $\mu$ V
		350 MHz limit				70.5 $\mu$ V
		250 MHz limit				65.8 $\mu$ V
		200 MHz limit				56.7 $\mu$ V
		20 MHz limit				20.6 $\mu$ V

Table continued...

<sup>54</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	20 mV/div	5 GHz				478 $\mu$ V
		4 GHz limit				412 $\mu$ V
		3 GHz limit				346 $\mu$ V
		2.5 GHz limit				309 $\mu$ V
		2 GHz limit				275 $\mu$ V
		1 GHz limit				195 $\mu$ V
		500 MHz limit				141 $\mu$ V
		350 MHz limit				116 $\mu$ V
		250 MHz limit				107 $\mu$ V
		200 MHz limit				93.2 $\mu$ V
		20 MHz limit				34.2 $\mu$ V

Table continued...

<sup>54</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	50 mV/div	5 GHz				1.09 mV
		4 GHz limit				949 $\mu$ V
		3 GHz limit				790 $\mu$ V
		2.5 GHz limit				704 $\mu$ V
		2 GHz limit				627 $\mu$ V
		1 GHz limit				444 $\mu$ V
		500 MHz limit				325 $\mu$ V
		350 MHz limit				261 $\mu$ V
		250 MHz limit				241 $\mu$ V
		200 MHz limit				210 $\mu$ V
		20 MHz limit				79 $\mu$ V

Table continued...

<sup>54</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	100 mV/div	5 GHz				2.81 mV
		4 GHz limit				2.45 mV
		3 GHz limit				2.06 mV
		2.5 GHz limit				1.83 mV
		2 GHz limit				1.65 mV
		1 GHz limit				1.17 mV
		500 MHz limit				858 $\mu$ V
		350 MHz limit				705 $\mu$ V
		250 MHz limit				658 $\mu$ V
		200 MHz limit				573 $\mu$ V
		20 MHz limit				203 $\mu$ V

Table continued...

<sup>54</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>54</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO64B</b>						
<b>Channel 3</b>	1 V/div	5 GHz				21.8 mV
		4 GHz limit				18.8 mV
		3 GHz limit				15.8 mV
		2.5 GHz limit				13.9 mV
		2 GHz limit				12.4 mV
		1 GHz limit				8.78 mV
		500 MHz limit				6.51 mV
		350 MHz limit				5.11 mV
		250 MHz limit				4.77 mV
		200 MHz limit				4.15 mV
		20 MHz limit				1.56 mV

<sup>54</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>55</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	1 mV/div	5 GHz				162 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				117 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				96.3 $\mu$ V
		1 GHz limit				77.3 $\mu$ V
		500 MHz limit		262 $\mu$ V		56 $\mu$ V
		350 MHz limit		190 $\mu$ V		47.7 $\mu$ V
		250 MHz limit		153 $\mu$ V		46.1 $\mu$ V
		200 MHz limit		149 $\mu$ V		37.9 $\mu$ V
		20 MHz limit		103 $\mu$ V		13 $\mu$ V

Table continued...

<sup>55</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>55</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	2 mV/div	5 GHz				164 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				119 $\mu$ V
		2.5 GHz limit				110 $\mu$ V
		2 GHz limit				97.6 $\mu$ V
		1 GHz limit				72.4 $\mu$ V
		500 MHz limit		285 $\mu$ V		56.2 $\mu$ V
		350 MHz limit		195 $\mu$ V		47.3 $\mu$ V
		250 MHz limit		155 $\mu$ V		46.7 $\mu$ V
		200 MHz limit		153 $\mu$ V		38 $\mu$ V
		20 MHz limit		103 $\mu$ V		13.3 $\mu$ V

Table continued...

<sup>55</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>55</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	5 mV/div	5 GHz				210 $\mu$ V
		4 GHz limit				175 $\mu$ V
		3 GHz limit				149 $\mu$ V
		2.5 GHz limit				133 $\mu$ V
		2 GHz limit				118 $\mu$ V
		1 GHz limit				89.6 $\mu$ V
		500 MHz limit		297 $\mu$ V		68 $\mu$ V
		350 MHz limit		205 $\mu$ V		56.5 $\mu$ V
		250 MHz limit		161 $\mu$ V		54 $\mu$ V
		200 MHz limit		154 $\mu$ V		44.4 $\mu$ V
		20 MHz limit		110 $\mu$ V		15.6 $\mu$ V

Table continued...

<sup>55</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>55</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	10 mV/div	5 GHz				330 $\mu$ V
		4 GHz limit				271 $\mu$ V
		3 GHz limit				226 $\mu$ V
		2.5 GHz limit				203 $\mu$ V
		2 GHz limit				186 $\mu$ V
		1 GHz limit				128 $\mu$ V
		500 MHz limit		334 $\mu$ V		91.9 $\mu$ V
		350 MHz limit		231 $\mu$ V		77.3 $\mu$ V
		250 MHz limit		186 $\mu$ V		74.7 $\mu$ V
		200 MHz limit		165 $\mu$ V		65.8 $\mu$ V
		20 MHz limit		141 $\mu$ V		22.6 $\mu$ V

Table continued...

<sup>55</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>55</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	20 mV/div	5 GHz				595 $\mu$ V
		4 GHz limit				486 $\mu$ V
		3 GHz limit				398 $\mu$ V
		2.5 GHz limit				363 $\mu$ V
		2 GHz limit				320 $\mu$ V
		1 GHz limit				226 $\mu$ V
		500 MHz limit		407 $\mu$ V		162 $\mu$ V
		350 MHz limit		305 $\mu$ V		133 $\mu$ V
		250 MHz limit		257 $\mu$ V		120 $\mu$ V
		200 MHz limit		211 $\mu$ V		106 $\mu$ V
		20 MHz limit		224 $\mu$ V		41.2 $\mu$ V

Table continued...

<sup>55</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B							
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s		
	V/div	Bandwidth <sup>55</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)	
<b>Models: MSO68B, MSO66B, MSO64B</b>							
<b>Channel 3</b>	50 mV/div	5 GHz				1.4 mV	
		4 GHz limit				1.15 mV	
		3 GHz limit				960 $\mu$ V	
		2.5 GHz limit				856 $\mu$ V	
		2 GHz limit				745 $\mu$ V	
		1 GHz limit				534 $\mu$ V	
		500 MHz limit			737 $\mu$ V		396 $\mu$ V
		350 MHz limit			553 $\mu$ V		307 $\mu$ V
		250 MHz limit			528 $\mu$ V		280 $\mu$ V
		200 MHz limit			387 $\mu$ V		247 $\mu$ V
		20 MHz limit			510 $\mu$ V		105 $\mu$ V

Table continued...

<sup>55</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>55</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	100 mV/div	5 GHz				3.38 mV
		4 GHz limit				2.71 mV
		3 GHz limit				2.28 mV
		2.5 GHz limit				2.03 mV
		2 GHz limit				1.81 mV
		1 GHz limit				1.33 mV
		500 MHz limit		1.77 mV		941 $\mu$ V
		350 MHz limit		1.38 mV		792 $\mu$ V
		250 MHz limit		1.18 mV		722 $\mu$ V
		200 MHz limit		952 $\mu$ V		666 $\mu$ V
		20 MHz limit		1.13 mV		236 $\mu$ V
<b>Channel 3</b>	1 V/div	5 GHz				28.1 mV
		4 GHz limit				23.1 mV
		3 GHz limit				19.2 mV
		2.5 GHz limit				17.1 mV
		2 GHz limit				14.9 mV
		1 GHz limit				10.8 mV
		500 MHz limit		19 mV		7.92 mV
		350 MHz limit		14.9 mV		6.14 mV
		250 MHz limit		13.6 mV		5.6 mV
		200 MHz limit		11.3 mV		4.94 mV
		20 MHz limit		11.7 mV		2.11 mV

<sup>55</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>56</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 3</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>56</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>56</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 3</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>56</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>56</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 3</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>56</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>56</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 3</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 3</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>56</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	1 mV/div	5 GHz				156 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				118 $\mu$ V
		2.5 GHz limit				107 $\mu$ V
		2 GHz limit				97.4 $\mu$ V
		1 GHz limit				72.2 $\mu$ V
		500 MHz limit				52.9 $\mu$ V
		350 MHz limit				45 $\mu$ V
		250 MHz limit				42 $\mu$ V
		200 MHz limit				36.2 $\mu$ V
		20 MHz limit				13 $\mu$ V

Table continued...

<sup>57</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	2 mV/div	5 GHz				158 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				120 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				98.7 $\mu$ V
		1 GHz limit				73.2 $\mu$ V
		500 MHz limit				53.6 $\mu$ V
		350 MHz limit				45.7 $\mu$ V
		250 MHz limit				42.6 $\mu$ V
		200 MHz limit				36.7 $\mu$ V
		20 MHz limit				13.2 $\mu$ V

Table continued...

<sup>57</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	5 mV/div	5 GHz				189 $\mu$ V
		4 GHz limit				165 $\mu$ V
		3 GHz limit				142 $\mu$ V
		2.5 GHz limit				128 $\mu$ V
		2 GHz limit				115 $\mu$ V
		1 GHz limit				84.6 $\mu$ V
		500 MHz limit				61.3 $\mu$ V
		350 MHz limit				52.2 $\mu$ V
		250 MHz limit				48.7 $\mu$ V
		200 MHz limit				41.9 $\mu$ V
		20 MHz limit				15 $\mu$ V

Table continued...

<sup>57</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	10 mV/div	5 GHz				278 $\mu$ V
		4 GHz limit				242 $\mu$ V
		3 GHz limit				203 $\mu$ V
		2.5 GHz limit				181 $\mu$ V
		2 GHz limit				163 $\mu$ V
		1 GHz limit				117 $\mu$ V
		500 MHz limit				84.8 $\mu$ V
		350 MHz limit				70.5 $\mu$ V
		250 MHz limit				65.8 $\mu$ V
		200 MHz limit				56.7 $\mu$ V
		20 MHz limit				20.6 $\mu$ V

Table continued...

<sup>57</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	20 mV/div	5 GHz				478 $\mu$ V
		4 GHz limit				412 $\mu$ V
		3 GHz limit				346 $\mu$ V
		2.5 GHz limit				309 $\mu$ V
		2 GHz limit				275 $\mu$ V
		1 GHz limit				195 $\mu$ V
		500 MHz limit				141 $\mu$ V
		350 MHz limit				116 $\mu$ V
		250 MHz limit				107 $\mu$ V
		200 MHz limit				93.2 $\mu$ V
		20 MHz limit				34.2 $\mu$ V

Table continued...

<sup>57</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	50 mV/div	5 GHz				1.09 mV
		4 GHz limit				949 $\mu$ V
		3 GHz limit				790 $\mu$ V
		2.5 GHz limit				704 $\mu$ V
		2 GHz limit				627 $\mu$ V
		1 GHz limit				444 $\mu$ V
		500 MHz limit				325 $\mu$ V
		350 MHz limit				261 $\mu$ V
		250 MHz limit				241 $\mu$ V
		200 MHz limit				210 $\mu$ V
		20 MHz limit				79 $\mu$ V

Table continued...

<sup>57</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	100 mV/div	5 GHz				2.81 mV
		4 GHz limit				2.45 mV
		3 GHz limit				2.06 mV
		2.5 GHz limit				1.83 mV
		2 GHz limit				1.65 mV
		1 GHz limit				1.17 mV
		500 MHz limit				858 $\mu$ V
		350 MHz limit				705 $\mu$ V
		250 MHz limit				658 $\mu$ V
		200 MHz limit				573 $\mu$ V
		20 MHz limit				203 $\mu$ V

Table continued...

<sup>57</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>57</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B</b>						
<b>Channel 4</b>	1 V/div	5 GHz				21.8 mV
		4 GHz limit				18.8 mV
		3 GHz limit				15.8 mV
		2.5 GHz limit				13.9 mV
		2 GHz limit				12.4 mV
		1 GHz limit				8.78 mV
		500 MHz limit				6.51 mV
		350 MHz limit				5.11 mV
		250 MHz limit				4.77 mV
		200 MHz limit				4.15 mV
		20 MHz limit				1.56 mV

<sup>57</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>58</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B, MSO64B</b>						
<b>Channel 4</b>	1 mV/div	5 GHz				162 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				117 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				96.3 $\mu$ V
		1 GHz limit				77.3 $\mu$ V
		500 MHz limit		262 $\mu$ V		56 $\mu$ V
		350 MHz limit		190 $\mu$ V		47.7 $\mu$ V
		250 MHz limit		153 $\mu$ V		46.1 $\mu$ V
		200 MHz limit		149 $\mu$ V		37.9 $\mu$ V
		20 MHz limit		103 $\mu$ V		13 $\mu$ V

Table continued...

<sup>58</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>58</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B, MSO64B</b>						
<b>Channel 4</b>	2 mV/div	5 GHz				164 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				119 $\mu$ V
		2.5 GHz limit				110 $\mu$ V
		2 GHz limit				97.6 $\mu$ V
		1 GHz limit				72.4 $\mu$ V
		500 MHz limit		285 $\mu$ V		56.2 $\mu$ V
		350 MHz limit		195 $\mu$ V		47.3 $\mu$ V
		250 MHz limit		155 $\mu$ V		46.7 $\mu$ V
		200 MHz limit		153 $\mu$ V		38 $\mu$ V
		20 MHz limit		103 $\mu$ V		13.3 $\mu$ V

Table continued...

<sup>58</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>58</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B, MSO64B</b>						
<b>Channel 4</b>	5 mV/div	5 GHz				210 $\mu$ V
		4 GHz limit				175 $\mu$ V
		3 GHz limit				149 $\mu$ V
		2.5 GHz limit				133 $\mu$ V
		2 GHz limit				118 $\mu$ V
		1 GHz limit				89.6 $\mu$ V
		500 MHz limit		297 $\mu$ V		68 $\mu$ V
		350 MHz limit		205 $\mu$ V		56.5 $\mu$ V
		250 MHz limit		161 $\mu$ V		54 $\mu$ V
		200 MHz limit		154 $\mu$ V		44.4 $\mu$ V
		20 MHz limit		110 $\mu$ V		15.6 $\mu$ V

Table continued...

<sup>58</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B							
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s		
	V/div	Bandwidth <sup>58</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)	
<b>Models: MSO66B, MSO64B</b>							
<b>Channel 4</b>	10 mV/div	5 GHz				330 $\mu$ V	
		4 GHz limit				271 $\mu$ V	
		3 GHz limit				226 $\mu$ V	
		2.5 GHz limit				203 $\mu$ V	
		2 GHz limit				186 $\mu$ V	
		1 GHz limit				128 $\mu$ V	
		500 MHz limit			334 $\mu$ V		91.9 $\mu$ V
		350 MHz limit			231 $\mu$ V		77.3 $\mu$ V
		250 MHz limit			186 $\mu$ V		74.7 $\mu$ V
		200 MHz limit			165 $\mu$ V		65.8 $\mu$ V
		20 MHz limit			141 $\mu$ V		22.6 $\mu$ V

Table continued...

<sup>58</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>58</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B, MSO64B</b>						
<b>Channel 4</b>	20 mV/div	5 GHz				595 $\mu$ V
		4 GHz limit				486 $\mu$ V
		3 GHz limit				398 $\mu$ V
		2.5 GHz limit				363 $\mu$ V
		2 GHz limit				320 $\mu$ V
		1 GHz limit				226 $\mu$ V
		500 MHz limit		407 $\mu$ V		162 $\mu$ V
		350 MHz limit		305 $\mu$ V		133 $\mu$ V
		250 MHz limit		257 $\mu$ V		120 $\mu$ V
		200 MHz limit		211 $\mu$ V		106 $\mu$ V
		20 MHz limit		224 $\mu$ V		41.2 $\mu$ V

Table continued...

<sup>58</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B							
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s		
	V/div	Bandwidth <sup>58</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)	
<b>Models: MSO66B, MSO64B</b>							
<b>Channel 4</b>	50 mV/div	5 GHz				1.4 mV	
		4 GHz limit				1.15 mV	
		3 GHz limit				960 $\mu$ V	
		2.5 GHz limit				856 $\mu$ V	
		2 GHz limit				745 $\mu$ V	
		1 GHz limit				534 $\mu$ V	
		500 MHz limit			737 $\mu$ V		396 $\mu$ V
		350 MHz limit			553 $\mu$ V		307 $\mu$ V
		250 MHz limit			528 $\mu$ V		280 $\mu$ V
		200 MHz limit			387 $\mu$ V		247 $\mu$ V
		20 MHz limit			510 $\mu$ V		105 $\mu$ V

Table continued...

<sup>58</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>58</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO66B, MSO64B</b>						
<b>Channel 4</b>	100 mV/div	5 GHz				3.38 mV
		4 GHz limit				2.71 mV
		3 GHz limit				2.28 mV
		2.5 GHz limit				2.03 mV
		2 GHz limit				1.81 mV
		1 GHz limit				1.33 mV
		500 MHz limit		1.77 mV		941 $\mu$ V
		350 MHz limit		1.38 mV		792 $\mu$ V
		250 MHz limit		1.18 mV		722 $\mu$ V
		200 MHz limit		952 $\mu$ V		666 $\mu$ V
		20 MHz limit		1.13 mV		236 $\mu$ V
<b>Channel 4</b>	1 V/div	5 GHz				28.1 mV
		4 GHz limit				23.1 mV
		3 GHz limit				19.2 mV
		2.5 GHz limit				17.1 mV
		2 GHz limit				14.9 mV
		1 GHz limit				10.8 mV
		500 MHz limit		19 mV		7.92 mV
		350 MHz limit		14.9 mV		6.14 mV
		250 MHz limit		13.6 mV		5.6 mV
		200 MHz limit		11.3 mV		4.94 mV
		20 MHz limit		11.7 mV		2.11 mV

<sup>58</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>59</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 4</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 4</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>59</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>59</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 4</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 4</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>59</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>59</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 4</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 4</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>59</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>59</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B, MSO64B</b>						
<b>Channel 4</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 4</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>59</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	1 mV/div	5 GHz				156 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				118 $\mu$ V
		2.5 GHz limit				107 $\mu$ V
		2 GHz limit				97.4 $\mu$ V
		1 GHz limit				72.2 $\mu$ V
		500 MHz limit				52.9 $\mu$ V
		350 MHz limit				45 $\mu$ V
		250 MHz limit				42 $\mu$ V
		200 MHz limit				36.2 $\mu$ V
		20 MHz limit				13 $\mu$ V

Table continued...

<sup>60</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	2 mV/div	5 GHz				158 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				120 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				98.7 $\mu$ V
		1 GHz limit				73.2 $\mu$ V
		500 MHz limit				53.6 $\mu$ V
		350 MHz limit				45.7 $\mu$ V
		250 MHz limit				42.6 $\mu$ V
		200 MHz limit				36.7 $\mu$ V
		20 MHz limit				13.2 $\mu$ V

Table continued...

<sup>60</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	5 mV/div	5 GHz				189 $\mu$ V
		4 GHz limit				165 $\mu$ V
		3 GHz limit				142 $\mu$ V
		2.5 GHz limit				128 $\mu$ V
		2 GHz limit				115 $\mu$ V
		1 GHz limit				84.6 $\mu$ V
		500 MHz limit				61.3 $\mu$ V
		350 MHz limit				52.2 $\mu$ V
		250 MHz limit				48.7 $\mu$ V
		200 MHz limit				41.9 $\mu$ V
		20 MHz limit				15 $\mu$ V

Table continued...

<sup>60</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	10 mV/div	5 GHz				278 $\mu$ V
		4 GHz limit				242 $\mu$ V
		3 GHz limit				203 $\mu$ V
		2.5 GHz limit				181 $\mu$ V
		2 GHz limit				163 $\mu$ V
		1 GHz limit				117 $\mu$ V
		500 MHz limit				84.8 $\mu$ V
		350 MHz limit				70.5 $\mu$ V
		250 MHz limit				65.8 $\mu$ V
		200 MHz limit				56.7 $\mu$ V
		20 MHz limit				20.6 $\mu$ V

Table continued...

<sup>60</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	20 mV/div	5 GHz				478 $\mu$ V
		4 GHz limit				412 $\mu$ V
		3 GHz limit				346 $\mu$ V
		2.5 GHz limit				309 $\mu$ V
		2 GHz limit				275 $\mu$ V
		1 GHz limit				195 $\mu$ V
		500 MHz limit				141 $\mu$ V
		350 MHz limit				116 $\mu$ V
		250 MHz limit				107 $\mu$ V
		200 MHz limit				93.2 $\mu$ V
		20 MHz limit				34.2 $\mu$ V

Table continued...

<sup>60</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	50 mV/div	5 GHz				1.09 mV
		4 GHz limit				949 $\mu$ V
		3 GHz limit				790 $\mu$ V
		2.5 GHz limit				704 $\mu$ V
		2 GHz limit				627 $\mu$ V
		1 GHz limit				444 $\mu$ V
		500 MHz limit				325 $\mu$ V
		350 MHz limit				261 $\mu$ V
		250 MHz limit				241 $\mu$ V
		200 MHz limit				210 $\mu$ V
		20 MHz limit				79 $\mu$ V

Table continued...

<sup>60</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	100 mV/div	5 GHz				2.81 mV
		4 GHz limit				2.45 mV
		3 GHz limit				2.06 mV
		2.5 GHz limit				1.83 mV
		2 GHz limit				1.65 mV
		1 GHz limit				1.17 mV
		500 MHz limit				858 $\mu$ V
		350 MHz limit				705 $\mu$ V
		250 MHz limit				658 $\mu$ V
		200 MHz limit				573 $\mu$ V
		20 MHz limit				203 $\mu$ V

Table continued...

<sup>60</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 25 GS/s	
	V/div	Bandwidth <sup>60</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 5</b>	1 V/div	5 GHz				21.8 mV
		4 GHz limit				18.8 mV
		3 GHz limit				15.8 mV
		2.5 GHz limit				13.9 mV
		2 GHz limit				12.4 mV
		1 GHz limit				8.78 mV
		500 MHz limit				6.51 mV
		350 MHz limit				5.11 mV
		250 MHz limit				4.77 mV
		200 MHz limit				4.15 mV
		20 MHz limit				1.56 mV

<sup>60</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>61</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	1 mV/div	5 GHz				162 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				117 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				96.3 $\mu$ V
		1 GHz limit				77.3 $\mu$ V
		500 MHz limit		262 $\mu$ V		56 $\mu$ V
		350 MHz limit		190 $\mu$ V		47.7 $\mu$ V
		250 MHz limit		153 $\mu$ V		46.1 $\mu$ V
		200 MHz limit		149 $\mu$ V		37.9 $\mu$ V
		20 MHz limit		103 $\mu$ V		13 $\mu$ V

Table continued...

<sup>61</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>61</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	2 mV/div	5 GHz				164 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				119 $\mu$ V
		2.5 GHz limit				110 $\mu$ V
		2 GHz limit				97.6 $\mu$ V
		1 GHz limit				72.4 $\mu$ V
		500 MHz limit		285 $\mu$ V		56.2 $\mu$ V
		350 MHz limit		195 $\mu$ V		47.3 $\mu$ V
		250 MHz limit		155 $\mu$ V		46.7 $\mu$ V
		200 MHz limit		153 $\mu$ V		38 $\mu$ V
		20 MHz limit		103 $\mu$ V		13.3 $\mu$ V

Table continued...

<sup>61</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>61</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	5 mV/div	5 GHz				210 $\mu$ V
		4 GHz limit				175 $\mu$ V
		3 GHz limit				149 $\mu$ V
		2.5 GHz limit				133 $\mu$ V
		2 GHz limit				118 $\mu$ V
		1 GHz limit				89.6 $\mu$ V
		500 MHz limit		297 $\mu$ V		68 $\mu$ V
		350 MHz limit		205 $\mu$ V		56.5 $\mu$ V
		250 MHz limit		161 $\mu$ V		54 $\mu$ V
		200 MHz limit		154 $\mu$ V		44.4 $\mu$ V
		20 MHz limit		110 $\mu$ V		15.6 $\mu$ V

Table continued...

<sup>61</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>61</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	10 mV/div	5 GHz				330 $\mu$ V
		4 GHz limit				271 $\mu$ V
		3 GHz limit				226 $\mu$ V
		2.5 GHz limit				203 $\mu$ V
		2 GHz limit				186 $\mu$ V
		1 GHz limit				128 $\mu$ V
		500 MHz limit		334 $\mu$ V		91.9 $\mu$ V
		350 MHz limit		231 $\mu$ V		77.3 $\mu$ V
		250 MHz limit		186 $\mu$ V		74.7 $\mu$ V
		200 MHz limit		165 $\mu$ V		65.8 $\mu$ V
		20 MHz limit		141 $\mu$ V		22.6 $\mu$ V

Table continued...

<sup>61</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>61</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	20 mV/div	5 GHz				595 $\mu$ V
		4 GHz limit				486 $\mu$ V
		3 GHz limit				398 $\mu$ V
		2.5 GHz limit				363 $\mu$ V
		2 GHz limit				320 $\mu$ V
		1 GHz limit				226 $\mu$ V
		500 MHz limit		407 $\mu$ V		162 $\mu$ V
		350 MHz limit		305 $\mu$ V		133 $\mu$ V
		250 MHz limit		257 $\mu$ V		120 $\mu$ V
		200 MHz limit		211 $\mu$ V		106 $\mu$ V
		20 MHz limit		224 $\mu$ V		41.2 $\mu$ V

Table continued...

<sup>61</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>61</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	50 mV/div	5 GHz				1.4 mV
		4 GHz limit				1.15 mV
		3 GHz limit				960 $\mu$ V
		2.5 GHz limit				856 $\mu$ V
		2 GHz limit				745 $\mu$ V
		1 GHz limit				534 $\mu$ V
		500 MHz limit		737 $\mu$ V		396 $\mu$ V
		350 MHz limit		553 $\mu$ V		307 $\mu$ V
		250 MHz limit		528 $\mu$ V		280 $\mu$ V
		200 MHz limit		387 $\mu$ V		247 $\mu$ V
		20 MHz limit		510 $\mu$ V		105 $\mu$ V

Table continued...

<sup>61</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>61</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	100 mV/div	5 GHz				3.38 mV
		4 GHz limit				2.71 mV
		3 GHz limit				2.28 mV
		2.5 GHz limit				2.03 mV
		2 GHz limit				1.81 mV
		1 GHz limit				1.33 mV
		500 MHz limit		1.77 mV		941 $\mu$ V
		350 MHz limit		1.38 mV		792 $\mu$ V
		250 MHz limit		1.18 mV		722 $\mu$ V
		200 MHz limit		952 $\mu$ V		666 $\mu$ V
		20 MHz limit		1.13 mV		236 $\mu$ V
<b>Channel 5</b>	1 V/div	5 GHz				28.1 mV
		4 GHz limit				23.1 mV
		3 GHz limit				19.2 mV
		2.5 GHz limit				17.1 mV
		2 GHz limit				14.9 mV
		1 GHz limit				10.8 mV
		500 MHz limit		19 mV		7.92 mV
		350 MHz limit		14.9 mV		6.14 mV
		250 MHz limit		13.6 mV		5.6 mV
		200 MHz limit		11.3 mV		4.94 mV
		20 MHz limit		11.7 mV		2.11 mV

<sup>61</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>62</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 5</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>62</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>62</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 5</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>62</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>62</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 5</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>62</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>62</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 5</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 5</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>62</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>64</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 6</b>	1 mV/div	5 GHz				162 $\mu$ V
		4 GHz limit				138 $\mu$ V
		3 GHz limit				117 $\mu$ V
		2.5 GHz limit				108 $\mu$ V
		2 GHz limit				96.3 $\mu$ V
		1 GHz limit				77.3 $\mu$ V
		500 MHz limit		262 $\mu$ V		56 $\mu$ V
		350 MHz limit		190 $\mu$ V		47.7 $\mu$ V
		250 MHz limit		153 $\mu$ V		46.1 $\mu$ V
		200 MHz limit		149 $\mu$ V		37.9 $\mu$ V
		20 MHz limit		103 $\mu$ V		13 $\mu$ V

Table continued...

<sup>64</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>64</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 6</b>	2 mV/div	5 GHz				164 $\mu$ V
		4 GHz limit				139 $\mu$ V
		3 GHz limit				119 $\mu$ V
		2.5 GHz limit				110 $\mu$ V
		2 GHz limit				97.6 $\mu$ V
		1 GHz limit				72.4 $\mu$ V
		500 MHz limit		285 $\mu$ V		56.2 $\mu$ V
		350 MHz limit		195 $\mu$ V		47.3 $\mu$ V
		250 MHz limit		155 $\mu$ V		46.7 $\mu$ V
		200 MHz limit		153 $\mu$ V		38 $\mu$ V
		20 MHz limit		103 $\mu$ V		13.3 $\mu$ V

Table continued...

<sup>64</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>64</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 6</b>	5 mV/div	5 GHz				210 $\mu$ V
		4 GHz limit				175 $\mu$ V
		3 GHz limit				149 $\mu$ V
		2.5 GHz limit				133 $\mu$ V
		2 GHz limit				118 $\mu$ V
		1 GHz limit				89.6 $\mu$ V
		500 MHz limit		297 $\mu$ V		68 $\mu$ V
		350 MHz limit		205 $\mu$ V		56.5 $\mu$ V
		250 MHz limit		161 $\mu$ V		54 $\mu$ V
		200 MHz limit		154 $\mu$ V		44.4 $\mu$ V
		20 MHz limit		110 $\mu$ V		15.6 $\mu$ V

Table continued...

<sup>64</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B							
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s		
	V/div	Bandwidth <sup>64</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)	
<b>Models: MSO68B</b>							
<b>Channel 6</b>	10 mV/div	5 GHz				330 $\mu$ V	
		4 GHz limit				271 $\mu$ V	
		3 GHz limit				226 $\mu$ V	
		2.5 GHz limit				203 $\mu$ V	
		2 GHz limit				186 $\mu$ V	
		1 GHz limit				128 $\mu$ V	
		500 MHz limit			334 $\mu$ V		91.9 $\mu$ V
		350 MHz limit			231 $\mu$ V		77.3 $\mu$ V
		250 MHz limit			186 $\mu$ V		74.7 $\mu$ V
		200 MHz limit			165 $\mu$ V		65.8 $\mu$ V
		20 MHz limit			141 $\mu$ V		22.6 $\mu$ V

Table continued...

<sup>64</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>64</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 6</b>	20 mV/div	5 GHz				595 $\mu$ V
		4 GHz limit				486 $\mu$ V
		3 GHz limit				398 $\mu$ V
		2.5 GHz limit				363 $\mu$ V
		2 GHz limit				320 $\mu$ V
		1 GHz limit				226 $\mu$ V
		500 MHz limit		407 $\mu$ V		162 $\mu$ V
		350 MHz limit		305 $\mu$ V		133 $\mu$ V
		250 MHz limit		257 $\mu$ V		120 $\mu$ V
		200 MHz limit		211 $\mu$ V		106 $\mu$ V
		20 MHz limit		224 $\mu$ V		41.2 $\mu$ V

Table continued...

<sup>64</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B							
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s		
	V/div	Bandwidth <sup>64</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)	
<b>Models: MSO68B</b>							
<b>Channel 6</b>	50 mV/div	5 GHz				1.4 mV	
		4 GHz limit				1.15 mV	
		3 GHz limit				960 $\mu$ V	
		2.5 GHz limit				856 $\mu$ V	
		2 GHz limit				745 $\mu$ V	
		1 GHz limit				534 $\mu$ V	
		500 MHz limit			737 $\mu$ V		396 $\mu$ V
		350 MHz limit			553 $\mu$ V		307 $\mu$ V
		250 MHz limit			528 $\mu$ V		280 $\mu$ V
		200 MHz limit			387 $\mu$ V		247 $\mu$ V
		20 MHz limit			510 $\mu$ V		105 $\mu$ V

Table continued...

<sup>64</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 12.5 GS/s	
	V/div	Bandwidth <sup>64</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit (mV)
<b>Models: MSO68B</b>						
<b>Channel 6</b>	100 mV/div	5 GHz				3.38 mV
		4 GHz limit				2.71 mV
		3 GHz limit				2.28 mV
		2.5 GHz limit				2.03 mV
		2 GHz limit				1.81 mV
		1 GHz limit				1.33 mV
		500 MHz limit		1.77 mV		941 $\mu$ V
		350 MHz limit		1.38 mV		792 $\mu$ V
		250 MHz limit		1.18 mV		722 $\mu$ V
		200 MHz limit		952 $\mu$ V		666 $\mu$ V
		20 MHz limit		1.13 mV		236 $\mu$ V
<b>Channel 6</b>	1 V/div	5 GHz				28.1 mV
		4 GHz limit				23.1 mV
		3 GHz limit				19.2 mV
		2.5 GHz limit				17.1 mV
		2 GHz limit				14.9 mV
		1 GHz limit				10.8 mV
		500 MHz limit		19 mV		7.92 mV
		350 MHz limit		14.9 mV		6.14 mV
		250 MHz limit		13.6 mV		5.6 mV
		200 MHz limit		11.3 mV		4.94 mV
		20 MHz limit		11.7 mV		2.11 mV

<sup>64</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>65</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 6</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 6</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>65</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>65</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 6</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 6</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>65</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>65</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 6</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 6</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>65</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>65</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B, MSO66B</b>						
<b>Channel 6</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 6</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>65</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>66</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 7</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 7</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>66</sup> Full = the highest bandwidth setting you can select.



Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>66</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 7</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 7</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>66</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>66</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 7</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 7</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>66</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>66</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 7</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 7</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>66</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>67</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 8</b>	1 mV/div	2.5 GHz limit				109 $\mu$ V
		2 GHz limit				99.6 $\mu$ V
		1 GHz limit				73.9 $\mu$ V
		500 MHz limit				54.8 $\mu$ V
		350 MHz limit				46.6 $\mu$ V
		250 MHz limit				43.5 $\mu$ V
		200 MHz limit				38.8 $\mu$ V
		20 MHz limit				14.7 $\mu$ V
<b>Channel 8</b>	2 mV/div	2.5 GHz limit				112 $\mu$ V
		2 GHz limit				101 $\mu$ V
		1 GHz limit				74.9 $\mu$ V
		500 MHz limit				55.5 $\mu$ V
		350 MHz limit				47.3 $\mu$ V
		250 MHz limit				44.1 $\mu$ V
		200 MHz limit				39.3 $\mu$ V
		20 MHz limit				14.8 $\mu$ V

Table continued...

<sup>67</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>67</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 8</b>	5 mV/div	2.5 GHz limit				142 $\mu$ V
		2 GHz limit				128 $\mu$ V
		1 GHz limit				92.8 $\mu$ V
		500 MHz limit				68 $\mu$ V
		350 MHz limit				56.5 $\mu$ V
		250 MHz limit				52.8 $\mu$ V
		200 MHz limit				47 $\mu$ V
		20 MHz limit				17.7 $\mu$ V
<b>Channel 8</b>	10 mV/div	2.5 GHz limit				221 $\mu$ V
		2 GHz limit				197 $\mu$ V
		1 GHz limit				134 $\mu$ V
		500 MHz limit				97.4 $\mu$ V
		350 MHz limit				80.1 $\mu$ V
		250 MHz limit				74.7 $\mu$ V
		200 MHz limit				66.6 $\mu$ V
		20 MHz limit				25.6 $\mu$ V

Table continued...

<sup>67</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>67</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 8</b>	20 mV/div	2.5 GHz limit				398 uV
		2 GHz limit				350 uV
		1 GHz limit				237 uV
		500 MHz limit				174 uV
		350 MHz limit				138 uV
		250 MHz limit				129 uV
		200 MHz limit				115 uV
		20 MHz limit				44.6 uV
<b>Channel 8</b>	50 mV/div	2.5 GHz limit				938 uV
		2 GHz limit				836 uV
		1 GHz limit				559 uV
		500 MHz limit				410 uV
		350 MHz limit				322 uV
		250 MHz limit				300 uV
		200 MHz limit				271 uV
		20 MHz limit				105 uV

Table continued...

<sup>67</sup> Full = the highest bandwidth setting you can select.

Random Noise, High Res mode: MSO68B, MSO66B, MSO64B						
Performance checks			1 M $\Omega$		50 $\Omega$ , 6.25 GS/s	
	V/div	Bandwidth <sup>67</sup>	Test result (mV)	High limit (mV)	Test result (mV)	High limit
<b>Models: MSO68B</b>						
<b>Channel 8</b>	100 mV/div	2.5 GHz limit				2.23 mV
		2 GHz limit				1.99 mV
		1 GHz limit				1.36 mV
		500 MHz limit				985 $\mu$ V
		350 MHz limit				801 $\mu$ V
		250 MHz limit				747 $\mu$ V
		200 MHz limit				674 $\mu$ V
		20 MHz limit				256 $\mu$ V
<b>Channel 8</b>	1 V/div	2.5 GHz limit				19 mV
		2 GHz limit				16.7 mV
		1 GHz limit				11.1 mV
		500 MHz limit				8.1 mV
		350 MHz limit				6.36 mV
		250 MHz limit				5.94 mV
		200 MHz limit				5.35 mV
		20 MHz limit				2.08 mV

<sup>67</sup> Full = the highest bandwidth setting you can select.

## Long term sample rate through AFG DC offset accuracy test records

Long Term Sample Rate			
Performance checks	Low limit	Test result	High limit
Long Term Sample Rate	9.999997 MHz		10.000003 MHz

Digital Threshold Accuracy, typical						
Performance checks:						
Digital channel	Threshold	$V_{s-}$	$V_{s+}$	Low limit	Test result	High limit
<b>Channel 1</b>						
D0	0 V			-0.1 V		0.1 V
D1	0 V			-0.1 V		0.1 V
D2	0 V			-0.1 V		0.1 V
D3	0 V			-0.1 V		0.1 V
D4	0 V			-0.1 V		0.1 V
D5	0 V			-0.1 V		0.1 V
D6	0 V			-0.1 V		0.1 V
D7	0 V			-0.1 V		0.1 V
<b>Channel 2</b>						
D0	0 V			-0.1 V		0.1 V
D1	0 V			-0.1 V		0.1 V
D2	0 V			-0.1 V		0.1 V
D3	0 V			-0.1 V		0.1 V
D4	0 V			-0.1 V		0.1 V
D5	0 V			-0.1 V		0.1 V
D6	0 V			-0.1 V		0.1 V

Table continued...



Digital Threshold Accuracy, typical						
Performance checks:						
Digital channel	Threshold	$V_{s-}$	$V_{s+}$	Low limit	Test result	High limit
D7	0 V			-0.1 V		0.1 V
<b>Channel 3</b>						
D0	0 V			-0.1 V		0.1 V
D1	0 V			-0.1 V		0.1 V
D2	0 V			-0.1 V		0.1 V
D3	0 V			-0.1 V		0.1 V
D4	0 V			-0.1 V		0.1 V
D5	0 V			-0.1 V		0.1 V
D6	0 V			-0.1 V		0.1 V
D7	0 V			-0.1 V		0.1 V
<b>Channel 4</b>						
D0	0 V			-0.1 V		0.1 V
D1	0 V			-0.1 V		0.1 V
D2	0 V			-0.1 V		0.1 V
D3	0 V			-0.1 V		0.1 V
D4	0 V			-0.1 V		0.1 V
D5	0 V			-0.1 V		0.1 V
D6	0 V			-0.1 V		0.1 V
D7	0 V			-0.1 V		0.1 V
<b>MSO66 models</b>						
<b>Channel 5</b>						
D0	0 V			-0.1 V		0.1 V
D1	0 V			-0.1 V		0.1 V
Table continued...						

D2	0 V	-0.1 V	0.1 V
D3	0 V	-0.1 V	0.1 V
D4	0 V	-0.1 V	0.1 V
D5	0 V	-0.1 V	0.1 V
D6	0 V	-0.1 V	0.1 V
D7	0 V	-0.1 V	0.1 V
<b>Channel 6</b>			
D0	0 V	-0.1 V	0.1 V
D1	0 V	-0.1 V	0.1 V
D2	0 V	-0.1 V	0.1 V
D3	0 V	-0.1 V	0.1 V
D4	0 V	-0.1 V	0.1 V
D5	0 V	-0.1 V	0.1 V
D6	0 V	-0.1 V	0.1 V
D7	0 V	-0.1 V	0.1 V

AUX Out output voltage levels				
Performance checks	Vout	Low limit	Test result	High limit
Output levels, 1 M $\Omega$ input impedance	Max	$\geq 2.5$ V		n/a
	Min	n/a		$\leq 700$ mV
Output levels, 50 $\Omega$ Input Impedance,	Max	$\geq 1.0$ V		n/a
	Min	n/a		$\leq 250$ mV

DVM voltage accuracy (DC)					
Channel 1					
Vertical Scale	Input Voltage	Offset Voltage	Low limit	Test result	High limit
1	-5	-5	-5.125		-4.875
0.5	-2	-2	-2.06		-1.94

Table continued...

DVM voltage accuracy (DC)					
0.5	-1	-0.5	-1.06		-0.94
0.2	-0.5	-0.5	-0.5225		-0.4775
0.01	0.002	0	0.00097		0.00303
0.2	0.5	0.5	0.4775		0.5225
0.5	1	0.5	0.94		1.06
0.5	2	2	1.94		2.06
1	5	5	4.875		5.125
Channel 2					
Vertical Scale	Input Voltage	Offset Voltage	Low limit	Test result	High limit
1	-5	-5	-5.125		-4.875
0.5	-2	-2	-2.06		-1.94
0.5	-1	-0.5	-1.06		-0.94
0.2	-0.5	-0.5	-0.5225		-0.4775
0.01	0.002	0	0.00097		0.00303
0.2	0.5	0.5	0.4775		0.5225
0.5	1	0.5	0.94		1.06
0.5	2	2	1.94		2.06
1	5	5	4.875		5.125
Channel 3					
Vertical Scale	Input Voltage	Offset Voltage	Low limit	Test result	High limit
1	-5	-5	-5.125		-4.875
0.5	-2	-2	-2.06		-1.94
0.5	-1	-0.5	-1.06		-0.94
0.2	-0.5	-0.5	-0.5225		-0.4775
0.01	0.002	0	0.00097		0.00303
0.2	0.5	0.5	0.4775		0.5225
0.5	1	0.5	0.94		1.06
0.5	2	2	1.94		2.06
1	5	5	4.875		5.125
Channel 4					
Vertical Scale	Input Voltage	Offset Voltage	Low limit	Test result	High limit
1	-5	-5	-5.125		-4.875
0.5	-2	-2	-2.06		-1.94
0.5	-1	-0.5	-1.06		-0.94
0.2	-0.5	-0.5	-0.5225		-0.4775
0.01	0.002	0	0.00097		0.00303
0.2	0.5	0.5	0.4775		0.5225

Table continued...

DVM voltage accuracy (DC)					
0.5	1	0.5	0.94		1.06
0.5	2	2	1.94		2.06
1	5	5	4.875		5.125

DVM voltage accuracy (DC)					
Channel 5					
Vertical Scale	Input Voltage	Offset Voltage	Low limit	Test result	High limit
1	-5	-5	-5.125		-4.875
0.5	-2	-2	-2.06		-1.94
0.5	-1	-0.5	-1.06		-0.94
0.2	-0.5	-0.5	-0.5225		-0.4775
0.01	0.002	0	0.00097		0.00303
0.2	0.5	0.5	0.4775		0.5225
0.5	1	0.5	0.94		1.06
0.5	2	2	1.94		2.06
1	5	5	4.875		5.125
Channel 6					
Vertical Scale	Input Voltage	Offset Voltage	Low limit	Test result	High limit
1	-5	-5	-5.125		-4.875
0.5	-2	-2	-2.06		-1.94
0.5	-1	-0.5	-1.06		-0.94
0.2	-0.5	-0.5	-0.5225		-0.4775
0.01	0.002	0	0.00097		0.00303
0.2	0.5	0.5	0.4775		0.5225
0.5	1	0.5	0.94		1.06
0.5	2	2	1.94		2.06
1	5	5	4.875		5.125

DVM voltage accuracy (AC)				
All models				
Channel 1				
Vertical Scale	Input Signal	Low limit	Test result	High limit
5 mV	20 mV <sub>pp</sub> at 1 kHz	9.700 mV		10.300 mV
10 mV	50 mV <sub>pp</sub> at 1 kHz	24.25 mV		25.750 mV
100 mV	0.5 V <sub>pp</sub> at 1 kHz	242.500 mV		257.500 mV
200 mV	1 V <sub>pp</sub> at 1 kHz	485.000 mV		515.000 mV
1 V	5 V <sub>pp</sub> at 1 kHz	2.425 V		2.575 V

Table continued...

<b>DVM voltage accuracy (AC)</b>				
<b>Channel 2</b>				
Vertical Scale	Input Signal	Low limit	Test result	High limit
5 mV	20 mV <sub>pp</sub> at 1 kHz	9.700 mV		10.300 mV
10 mV	50 mV <sub>pp</sub> at 1 kHz	24.25 mV		25.750 mV
100 mV	0.5 V <sub>pp</sub> at 1 kHz	242.500 mV		257.500 mV
200 mV	1 V <sub>pp</sub> at 1 kHz	485.000 mV		515.000 mV
1 V	5 V <sub>pp</sub> at 1 kHz	2.425 V		2.575 V
<b>Channel 3</b>				
Vertical Scale	Input Signal	Low limit	Test result	High limit
5 mV	20 mV <sub>pp</sub> at 1 kHz	9.700 mV		10.300 mV
10 mV	50 mV <sub>pp</sub> at 1 kHz	24.25 mV		25.750 mV
100 mV	0.5 V <sub>pp</sub> at 1 kHz	242.500 mV		257.500 mV
200 mV	1 V <sub>pp</sub> at 1 kHz	485.000 mV		515.000 mV
1 V	5 V <sub>pp</sub> at 1 kHz	2.425 V		2.575 V
<b>Channel 4</b>				
Vertical Scale	Input Signal	Low limit	Test result	High limit
5 mV	20 mV <sub>pp</sub> at 1 kHz	9.700 mV		10.300 mV
10 mV	50 mV <sub>pp</sub> at 1 kHz	24.25 mV		25.750 mV
100 mV	0.5 V <sub>pp</sub> at 1 kHz	242.500 mV		257.500 mV
200 mV	1 V <sub>pp</sub> at 1 kHz	485.000 mV		515.000 mV
1 V	5 V <sub>pp</sub> at 1 kHz	2.425 V		2.575 V

<b>DVM voltage accuracy (AC)</b>				
<b>M5066 models</b>				
<b>Channel 5</b>				
Vertical Scale	Input Signal	Low limit	Test result	High limit
5 mV	20 mV <sub>pp</sub> at 1 kHz	9.700 mV		10.300 mV
10 mV	50 mV <sub>pp</sub> at 1 kHz	24.25 mV		25.750 mV
100 mV	0.5 V <sub>pp</sub> at 1 kHz	242.500 mV		257.500 mV
200 mV	1 V <sub>pp</sub> at 1 kHz	485.000 mV		515.000 mV
1 V	5 V <sub>pp</sub> at 1 kHz	2.425 V		2.575 V
<b>Channel 6</b>				
Vertical Scale	Input Signal	Low limit	Test result	High limit
5 mV	20 mV <sub>pp</sub> at 1 kHz	9.700 mV		10.300 mV
10 mV	50 mV <sub>pp</sub> at 1 kHz	24.25 mV		25.750 mV

Table continued...

DVM voltage accuracy (AC)				
100 mV	0.5 V <sub>pp</sub> at 1 kHz	242.500 mV		257.500 mV
200 mV	1 V <sub>pp</sub> at 1 kHz	485.000 mV		515.000 mV
1 V	5 V <sub>pp</sub> at 1 kHz	2.425 V		2.575 V

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
All models				
Channel 1				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
All models				
Channel 2				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO64B				
Channel 3				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO64B				
Channel 4				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO66B				
Channel 3				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz

Table continued...

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO66B				
Channel 3				
Frequency	Low limit	Test result	High limit	Unit
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO66B				
Channel 4				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO66B				
Channel 5				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz

Table continued...



Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO66B				
Channel 5				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO66B				
Channel 6				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO68B				
Channel 3				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO68B				
Channel 4				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO68B				
Channel 5				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO68B				
Channel 6				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz

Table continued...

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO68B				
Channel 6				
Frequency	Low limit	Test result	High limit	Unit
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz
4000	3999.998		4000.002	MHz
8000	7999.996		8000.004	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO68B				
Channel 7				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz

Trigger frequency accuracy and trigger frequency counter maximum input frequency				
MSO68B				
Channel 8				
Frequency	Low limit	Test result	High limit	Unit
100	99.99995		1000.0005	Hz
1000	999.9995		10000.005	Hz
10	9.999995		10.000005	kHz
100	99.99995		100.00005	kHz
1000	999.9995		1000.0005	kHz
10	9.999995		10.000005	MHz
100	99.99995		100.00005	MHz
1000	999.9995		1000.0005	MHz
2000	1999.999		2000.001	MHz

AFG sine and ramp frequency accuracy			
Performance checks			
Waveform type	Minimum	Test result	Maximum
Sine, 1 MHz	0.999950 MHz		1.000050 MHz
Ramp, 500 KHz	499.975 kHz		500.025 kHz

AFG square and pulse frequency accuracy			
Performance checks			
Waveform type	Minimum	Test result	Maximum
Square, 1 MHz	0.999950 MHz		1.000050 MHz
Pulse, 1 MHz	0.999950 MHz		1.000050 MHz

AFG signal amplitude accuracy			
Performance checks			
Amplitude	Minimum	Test result	Maximum
30.0 mV <sub>PP</sub>	28.55 mV <sub>PP</sub>		31.45 mV <sub>PP</sub>
300.0 mV <sub>PP</sub>	294.5 mV <sub>PP</sub>		305.5 mV <sub>PP</sub>
800.0 mV <sub>PP</sub>	787.0 mV <sub>PP</sub>		813.0 mV <sub>PP</sub>
1.500 V <sub>PP</sub>	1.4765 V <sub>PP</sub>		1.5235 V <sub>PP</sub>
2.000 V <sub>PP</sub>	1.9690 V <sub>PP</sub>		2.0310 V <sub>PP</sub>
2.500 V <sub>PP</sub>	2.4615 V <sub>PP</sub>		2.5385 V <sub>PP</sub>

AFG DC offset accuracy			
Performance checks			
Offset	Minimum	Test result	Maximum
1.25 V	1.23025 Vdc		1.26975 Vdc
0 V	- 0.001 Vdc		+ 0.001 Vdc
-1.25 V	- 1.26975 Vdc		- 1.23025 Vdc

## Performance tests

This section contains a collection of manual procedures for checking that the instrument performs as warranted. They check all the characteristics that are designated as checked in *Specifications*. (The characteristics that are checked appear with a ✓ in *Specifications*).

## Prerequisites

The tests in this section comprise an extensive, valid confirmation of performance and functionality when the following requirements are met:

- The instrument must be in its normal operating configuration (no covers removed).
- You must have performed and passed the procedures under *Self Test*. (See [Self test](#) on page 237.)
- A signal-path compensation must have been done within the recommended calibration interval and at a temperature within  $\pm 5$  °C ( $\pm 9$  °F) of the present operating temperature. (If the temperature was within the limits just stated at the time you did the prerequisite *Self Test*, consider this prerequisite met). A signal-path compensation must have been done at an ambient humidity within 25% of the current ambient humidity and after having been at that humidity for at least 4 hours.
- The instrument must have been last adjusted at an ambient temperature between +18 °C and +28 °C (+64 °F and +82 °F), must have been operating for a warm-up period of at least 20 minutes, and must be operating at an ambient temperature as listed in the specifications. The warm-up requirement is usually met in the course of meeting the *Self Test* prerequisites listed above.
- The instrument must be powered from a source maintaining voltage and frequency within the limits described in the *Specifications* section.
- The instrument must be in an environment with temperature, altitude, humidity, and vibration within the operating limits described in the *Specifications* section.

## Self test

This procedure verifies that the instrument passes the internal diagnostics and performs signal path compensation. No test equipment or hookups are required.

Equipment required	Prerequisites
None	Power on the instrument and allow a 20 minute warm-up period before performing this procedure.

1. *Run the System Diagnostics (may take a few minutes):*
  - a. Disconnect all probes and/or cables from the oscilloscope inputs.
  - b. Tap **Utility > Self Test**. This displays the **Self Test** configuration menu.
  - c. Tap the **Run Self Test** button.
  - d. The internal diagnostics perform an exhaustive verification of proper instrument function. This verification may take several minutes. When the verification is finished, the status of each self test is shown in the menu.
  - e. Verify that the status of all tests is pass.
  - f. Tap anywhere outside the menu to exit the menu.
2. *Run the signal-path compensation routine (may take 5 to 15 minutes per channel):*
  - a. Tap **Utility > Calibration**. This displays the **Calibration** configuration menu.
  - b. Tap the **Run SPC** button to start the routine.
  - c. Signal-path compensation may take 5 to 15 minutes to run per channel.
  - d. Verify that the **SPC Status** is **Passed**.
3. *Return to regular service:* Tap anywhere outside the menu to exit the **Calibration** menu.

The self test procedures are completed. If any of the above tests failed, run the tests again. If there are still failures, contact Tektronix Customer Support.



**Note:** You cannot run the remaining performance tests until the self tests pass and the SPC has successfully run.

## Check input impedance

This test checks the input impedance on all channels.

1. Connect the output of the oscilloscope calibrator (for example, Fluke 9500) to the oscilloscope channel 1 input, as shown in the following illustration.



**Warning:** Be sure to set the generator to Off or 0 volts before connecting, disconnecting, and/or moving the test hookup during the performance of this procedure. The generator is capable of providing dangerous voltages.



**Note:** Impedance measuring equipment that produces a voltage across the channel that exceeds the measurement range of the instrument may report erroneous impedance results. A measurement voltage exceeds the measurement range of the instrument when the resulting trace is not visible on the graticule.

2. Set the calibrator to measure 1 M $\Omega$  impedance.
3. Tap **File > Default Setup**.
4. *Test 1 M $\Omega$  input impedance as follows:*
  - a. Tap the channel 1 button on the Settings bar.
  - b. Double tap the **Ch 1** badge to open its menu.
  - c. Set **Termination** to **1 M $\Omega$** .
  - d. Set the **Vertical Scale** to the value to test in the test record (first value is **10 mV/div**).
5. Use the calibrator to measure the input impedance of the oscilloscope and enter the value in the test record.
6. Repeat steps 4.d on page 238 and 5 on page 238 for all vertical scale settings in the test record for the channel.
7. *Test 50  $\Omega$  input impedance as follows:*
  - a. Set the calibrator impedance to measure 50  $\Omega$  impedance.
  - b. Double-tap the **Ch 1** badge and set **Termination** to **50  $\Omega$** .
  - c. Repeat steps 4.d on page 238 through 6 on page 238 for all vertical scale settings in the test record for the channel.
8. *Repeat the procedures for all remaining channels as follows:*
  - a. Turn the calibrator output Off.
  - b. Move the calibrator connection to the next channel to test.
  - c. Double-tap the channel badge of the channel that you have finished testing and set **Display** to **Off**.
  - d. Tap the channel button on the Settings bar of the next channel to test.
  - e. Starting from step 2 on page 238, repeat the procedures until all channels have been tested.

## Check DC gain accuracy

This test checks the DC gain accuracy.

1. Connect the oscilloscope to a calibrated DC voltage source. If you are using the Fluke 9500 calibrator, connect the calibrator head to the oscilloscope channel to test.



**Warning:** Set the generator output to Off or 0 volts before connecting, disconnecting, and/or moving the test hookup during the performance of this procedure. The generator is capable of providing dangerous voltages.

2. Tap **File > Default Setup**.
3. Double-tap the **Acquisition** badge and set **Acquisition Mode** to **Average**.
4. Set the **Number of Waveforms** to **16**.
5. Tap outside the menu to close the menu.
6. Double-tap the **Trigger** badge and set the trigger **Source** to **AC line**.
7. Tap outside the menu to close it.
8. Add the **Mean** measurement to the Results bar:
  - a. Tap the **Add New... Measure** button to open the **Add Measurements** menu.
  - b. Set the **Source** to **Ch 1**.
  - c. In the **Amplitude Measurements** panel, double-tap the **Mean** button to add the Mean measurement badge to the Results bar.
9. Tap outside the menu to close it.
10. Double-tap the **Mean** results badge.
11. Tap **Show Statistics in Badge**.
12. Tap **FILTER/LIMIT RESULTS** to open the panel.
13. Tap **Limit Measurement Population** to toggle it to **On**.
14. Tap outside the menu to close it.
15. Tap the channel button of the channel to test, to add the channel badge to the Settings bar.
16. Double tap the channel to test badge to open its menu and set the channel settings:
  - a. Set **Vertical Scale** to **1 mV/div**.
  - b. Set **Termination** to **50 Ω**.
  - c. Tap **Bandwidth Limit** and set to **20 MHz**.
  - d. Tap outside the menu to close it.
17. Record the negative-measured and positive-measured mean readings in the *Gain expected worksheet* as follows:
  - a. On the calibrator, set the DC Voltage Source to the  $V_{\text{negative}}$  value as listed in the 1 mV row of the worksheet.
  - b. Double-tap the **Acquisition** badge and tap **Clear** to reset the measurement statistics.
  - c. Enter the **Mean** reading in the worksheet as  $V_{\text{negative-measured}}$ .
  - d. On the calibrator, set the DC Voltage Source to  $V_{\text{positive}}$  value as listed in the 1 mV row of the worksheet.
  - e. Double-tap the **Acquisition** badge (if not open) and tap **Clear**.
  - f. Enter the **Mean** reading in the worksheet as  $V_{\text{positive-measured}}$ .

**Table 1: Gain expected worksheet**

Oscilloscope Vertical Scale Setting	$V_{\text{diffExpected}}$	$V_{\text{negative}}$	$V_{\text{positive}}$	$V_{\text{negative-measured}}$	$V_{\text{positive-measured}}$	$V_{\text{diff}}$	Test Result (Gain Accuracy)
1 mV/div	7 mV	-3.5 mV	+3.5 mV				
Table continued...							

Oscilloscope Vertical Scale Setting	$V_{diffExpected}$	$V_{negative}$	$V_{positive}$	$V_{negative-measured}$	$V_{positive-measured}$	$V_{diff}$	Test Result (Gain Accuracy)
2 mV/div	18 mV	-9 mV	+9 mV				
5 mV/div	45 mV	-22.5 mV	+22.5 mV				
10 mV/div	90 mV	-45 mV	+45 mV				
20 mV/div	180 mV	-90 mV	+90 mV				
50 mV/div	450 mV	-225 mV	+225 mV				
100 mV/div	900 mV	-450 mV	+450 mV				
200 mV/div	1800 mV	-900 mV	+900 mV				
500 mV/div	4900 mV	-2450 mV	+2450 mV				
1.0 V/div	9000 mV	-4500 mV	+4500 mV				
20 mV/div at 250 MHz	180 mV	-90 mV	+90 mV				
20 mV/div at Full bandwidth	180 mV	-90 mV	+90 mV				

18. Calculate Gain Accuracy as follows:

a. Calculate  $V_{diff}$  as follows:

$$V_{diff} = |V_{negative-measured} - V_{positive-measured}|$$

b. Enter  $V_{diff}$  in the worksheet.

c. Calculate *Gain Accuracy* as follows:

$$Gain\ Accuracy = ((V_{diff} - V_{diffExpected}) / V_{diffExpected}) \times 100\%$$

d. Enter the *Gain Accuracy* value in the worksheet and in the test record.

19. Repeat steps 16 on page 239 through 18 on page 240 for all vertical scale settings in the work sheet and the test record.

20. Repeat tests at 1 M $\Omega$  impedance as follows:

a. Set the calibrator to 0 volts and 1 M $\Omega$  output impedance.

b. Double-tap the badge of the channel being tested.

c. Set the **Termination** to 1 M $\Omega$

d. Repeat steps 16 on page 239 through 19 on page 240 for all vertical scale settings in the test record.

21. Repeat the procedure for all remaining channels:

a. Set the calibrator to 0 volts and 50  $\Omega$  output impedance.

b. Move the calibrator output to the next channel input to be tested.

c. Double-tap the channel badge of the channel that you have finished testing and set **Display** to **Off**.

d. Double-tap the **Mean** measurement badge.

e. Tap the **Configure** panel.

f. Tap the **Source 1** field and select the next channel to test.

g. Starting from step 16 on page 239, set the values from the test record for the channel under test, and repeat the above steps until all channels have been tested.


22. Touch outside a menu to close the menu.



## Check DC offset accuracy

This test checks the offset accuracy at 50  $\Omega$  and 1 M $\Omega$  input impedances.

1. Connect the oscilloscope to a calibrated DC voltage source. If you are using the Fluke 9500B calibrator as the DC voltage source, connect the calibrator head to the oscilloscope channel 1.
 



**Warning:** Set the generator output to Off or 0 volts before connecting, disconnecting, or moving the test hookup during the performance of this procedure. The generator is capable of providing dangerous voltages.
2. Tap **File > Default Setup**.
3. Double-tap the **Acquisition** badge and set **Acquisition Mode** to **Average**.
4. Set the **Number of Waveforms** to **16**.
5. Tap outside the menu to close the menu.
6. Double-tap the **Trigger** badge and set the trigger **Source** to **AC line**.
7. Add the **Mean** measurement to the Results bar:
  - a. Tap the **Add New... Measure** button to open the **Add Measurements** menu.
  - b. Set the **Source** to **Ch 1**.
  - c. In the **Amplitude Measurements** panel, double-tap the **Mean** button to add the Mean measurement badge to the Results bar.
8. Tap outside the menu to close it.
9. Double-tap the **Mean** results badge.
10. Tap **Show Statistics in Badge**.
11. Tap **FILTER/LIMIT RESULTS** to open the panel.
12. Tap **Limit Measurement Population** to toggle it to **On**.
13. Tap outside the menu to close it.
14. Tap the channel button on the Settings bar to add the channel under test to the Settings bar.
15. Double-tap the channel under test badge to open its configuration menu and change the vertical settings:
  - a. Set **Vertical Scale** to **1 mV/div**.
  - b. Set **Offset** to **900 mV**.
  - c. Set **Position** to 0 by tapping **Set to 0**.
  - d. Set **Termination** to **50  $\Omega$** .
  - e. Tap **Bandwidth Limit** and set to **20 MHz**.
  - f. Tap outside the menu to close it.
16. Set the calibrator output to **+900 mV**, as shown in the test record, and turn the calibrator output On.
17. Enter the Mean measurement value in the test record.
18. Double-tap the channel under test badge to open its configuration menu and change the **Offset** to **-900 mV**.
19. Set the calibrator output to **-900 mV**, as shown in the test record.
20. Enter the Mean measurement value in the test record.
21. Repeat step 15 on page 241 through 20 on page 241, changing the channel vertical settings and the calibrator output as listed in the test record for the channel under test.
22. Repeat the channel tests at 1 M $\Omega$  impedance as follows:
  - a. Set the calibrator output to Off or 0 volts.
  - b. Change the calibrator impedance to **1 M $\Omega$**  and voltage to **+900 mV**.
  - c. Turn the calibrator output On.
  - d. Repeat steps 15 on page 241 through 20 on page 241, changing the channel **Termination** to **1 M $\Omega$**  and the vertical Offset value and the calibrator output as listed in the 1 M $\Omega$  test record for the channel under test.

23. Repeat the procedure for all remaining channels as follows:
- Double-tap the **Mean** measurement badge.
  - Tap the **Configure** panel.
  - Tap the **Source 1** field and select the next channel to test.
  - Set the calibrator to **0** volts and **50  $\Omega$**  output impedance.
  - Move the calibrator output to the next channel input to test.
  - Double-tap the channel badge of the channel that you have finished testing and set **Display** to **Off**.
  - Tap the channel button on the oscilloscope Settings bar of the next channel to test.
  - Starting from step , repeat the procedure until all channels have been tested.

## Check analog bandwidth

This test checks the bandwidth at 50  $\Omega$  and 1 M $\Omega$  terminations for each channel. The typical bandwidth at 1 M $\Omega$  termination is checked on the products as a functional check.

- Connect the output of the calibrated leveled sine wave generator to the oscilloscope channel 1 input as shown in the following illustration.
 

**Warning:** Set the generator to off or 0 volts before connecting, disconnecting, and/or moving the test hookup during the performance of this procedure. The generator is capable of providing dangerous voltages.
- Tap **File > Default Setup** to reset the instrument and add the channel 1 badge and signal to the display.
- Add the *peak-to-peak* measurement as follows:
  - Tap the **Add New. Measure** button.
  - Set the **Source** to the channel under test.
  - In the **Amplitude Measurements** panel, double-tap the **Peak-to-Peak** measurement button to add the measurement badge to the Results bar.
  - Tap outside the menu to close it.
  - Double-tap the **Peak-to-Peak** results badge.
  - Tap **Show Statistics in Badge**.
  - Tap **FILTER/LIMIT RESULTS** to open the panel.
  - Tap **Limit Measurement Population** to toggle it to **On**.
  - Tap outside the menu to close it.
- Set the channel under test settings:
  - Double-tap the badge of the channel under test to open its configuration menu.
  - Set **Vertical Scale** to **1 mV/div**.
  - Set **Termination** to **50  $\Omega$** .
  - Tap outside the menu to close it.
- Adjust the leveled sine wave signal source to display a waveform of 8 vertical divisions at the selected vertical scale with a set frequency of **10 MHz**. For example, at 5 mV/div, use a  $\geq 40$  mV<sub>p-p</sub> signal; at 2 mV/div, use a  $\geq 16$  mV<sub>p-p</sub> signal.
 

**Note:** At some V/div settings, the generator may not provide 8 vertical divisions of signal. Set the generator output to obtain as many vertical divisions of signal as possible.
- Double-tap the **Horizontal** badge in the Settings bar.
- Set the **Horizontal Scale** to **1 ms/division**.
- Tap outside the menu to close it.
- Record the **Peak-to-Peak** measurement in the **V<sub>in-pp</sub>** entry of the test record.

10. Double-tap the **Horizontal** badge in the Settings bar.
11. Set the **Horizontal Scale** such that there are at least 10 cycles on screen at all frequencies.
12. Adjust the signal source to the maximum bandwidth frequency for the bandwidth and model being tested.
13. *Record the peak-to-peak measurement as follows:*
  - a. Record the **Peak-to-Peak** measurement at the new frequency in the  $V_{bw-pp}$  entry of the test record.
14. Use the values of  $V_{bw-pp}$  and  $V_{in-pp}$  recorded in the test record, and the following equation, to calculate the Gain at bandwidth:
 
$$Gain = V_{bw-pp} / V_{in-pp}.$$

To pass the performance measurement test, Gain should be  $\geq 0.707$ . Enter *Gain* in the test record.
15. Repeat steps 4 on page 242 through 14 on page 243 for all combinations of Vertical Scale settings listed in the test record.
16. *Repeat the tests at 1 M $\Omega$  impedance as follows:*
  - a. Set the calibrator output to Off or 0 volts.
  - b. Change the calibrator impedance to **1 M $\Omega$** .
  - c. Double-tap the badge of the channel under test to open its menu.
  - d. Set the **Termination** to **1 M $\Omega$** .
  - e. Repeat steps 4 on page 242 through 16 on page 243 , but leave the termination set to **1 M $\Omega$**  .
17. *Repeat the test for all remaining channels as follows:*
  - a. Set the calibrator to **0** volts and **50  $\Omega$**  output impedance.
  - b. Move the calibrator output to the next channel input to be tested.
  - c. Double-tap the channel badge of the channel that you have finished testing and set **Display** to **Off**.
  - d. Tap the channel button on the oscilloscope Settings bar of the next channel to test.
  - e. Double-tap the **Peak-to-Peak** measurement badge.
  - f. Tap the **Configure** panel.
  - g. Tap the **Source 1** field and select the next channel to test.
  - h. Starting from step 4 on page 242, repeat the procedure until all channels have been tested.

## Check random noise, sample acquisition mode (10, 8, and 6 GHz options)

This test checks random noise at 50  $\Omega$  for each channel in Sample acquisition mode. You do not need to connect any test equipment to the oscilloscope for this test.

1. Disconnect everything from the oscilloscope inputs.
2. Tap **File > Default Setup**.
3. Add the **AC RMS** measurement:
  - a. Tap the **Add New... Measure** button.
  - b. Set the **Source** to the channel being tested.
  - c. In the **Amplitude Measurements** panel, double-tap the **AC RMS** measurement button to add the measurement badge to the Results bar.
  - d. Tap outside the menu to close it.
  - e. Double-tap the **AC RMS** measurement badge and tap **Show Statistics in Badge** to display statistics in the measurement badge.
  - f. Tap the **Filter / Limit Results** panel.
  - g. Turn on **Limit Measurement Population**.
  - h. Set the limit to **100**.
  - i. Tap outside the menu to close it.
4. Set up the Horizontal mode:

- a. Double-tap the **Horizontal** setting badge.
  - b. Set **Horizontal Mode** to **Manual**.
  - c. Set the **Sample Rate** to **25 GS/s** or **50G/S**.
  - d. Set the **Record Length** to **2 Mpts**.
  - e. Tap outside the menu to close it.
5. Double-tap the Channel badge of the channel being tested.
  6. Set the **Vertical Scale** value to **1 mV**.
  7. *Check 50  $\Omega$  termination as follows:*
    - a. In the Channel badge, set **Termination** to **50  $\Omega$** .
    - b. Tap the **Bandwidth Limit** field and select the highest frequency listed.
    - c. Set the channel vertical Position value to **340 mdivs**.
    - d. Once the measurement count (N) in the measurement badge reaches 100, record the AC RMS Mean value (the  $\mu$  readout).
    - e. Set the channel vertical Position value to **360 mdivs**.
    - f. Once the measurement count (N) in the measurement badge reaches 100, record the AC RMS Mean value (the  $\mu$  readout).
    - g. Average the two values and record the result in the **1 mV/div** row of the **50  $\Omega$**  column of the Test Result record.
  8. Repeat step 7 on page 244 for all frequencies above 4 GHz
  9. *Repeat the 50  $\Omega$  test at all V/div settings for the current channel:*
    - a. In the Channel badge, set the **Vertical Scale** setting to the next value in the test record (2 mV, 5 mV, and so on, up to 1 V/div).
    - b. Repeat steps 7 on page 244 through 8 on page 244.
  10. *Repeat all tests for the remaining input channels:*
    - a. Double-tap the **AC RMS** measurement badge.
    - b. Tap the **Configure** panel.
    - c. Tap the **Source 1** field and select the next channel to test.
    - d. Double-tap the channel badge of the channel that you have finished testing and set **Display** to **Off**.
    - e. Tap the channel button on the oscilloscope Settings bar of the next channel to test.
    - f. Double-tap the channel badge for the channel being tested.
    - g. Starting at step 6 on page 244, repeat these procedures for each input channel.

## Check random noise, High Res mode

This test checks random noise at 1 M  $\Omega$  and 50  $\Omega$  for each channel in High Res acquisition mode. You do not need to connect any test equipment to the oscilloscope for this test.

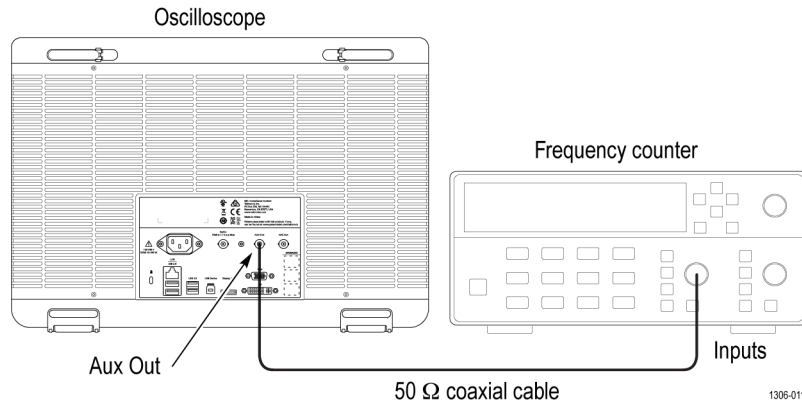
1. Disconnect everything from the oscilloscope inputs.
2. Tap **File > Default Setup**.
3. Double-tap the **Acquisition** badge and set **Acquisition Mode** to **High Res**.
4. Add the **AC RMS** measurement:
  - a. Tap the **Add New... Measure** button to open the **Add Measurements** menu.
  - b. Set the **Source** to the channel being tested.
  - c. In the **Amplitude Measurements** panel, double-tap the **AC RMS** button to add the measurement badge to the Results bar.
  - d. Tap outside the menu to close it.
  - e. Double-tap the **AC RMS** measurement badge and tap **Show Statistics in Badge** to display statistics in the measurement badge.
  - f. Tap the **Filter/Limit Results** panel.
  - g. Turn on **Limit Measurement Population**.
  - h. Set the limit to **100**.
  - i. Tap outside the menu to close it.
5. Set up the Horizontal mode:
  - a. Double-tap the **Horizontal** setting badge.
  - b. Set Horizontal Mode to **Manual**.
  - c. Set the Sample rate to **25G/S, 12.5G/S, or 6.25G/S**.
  - d. Set the Record Length to **2 Mpts**.
  - e. Tap outside the menu to close it.
6. *Check 1 M  $\Omega$  termination as follows:*
  - a. Double-tap the Channel badge of the channel being tested.
  - b. Set the **Vertical Scale** value to **1 mV**.
  - c. Set **Termination** to **1 M  $\Omega$** .
  - d. Tap the **Bandwidth Limit** field and select the highest frequency listed.
  - e. Set the channel **Position** value to **340 mdivs**.
  - f. Once the measurement count (N) in the measurement badge reaches 100, record the AC RMS Mean value (the  $\mu$  readout).
  - g. Set the channel **Position** value to **-340 mdivs**.
  - h. Once the measurement count (N) in the measurement badge reaches 100, record the AC RMS Mean value (the  $\mu$  readout).
  - i. Average the two values and record the result in the **1 mV/div** row of the **1 M  $\Omega$**  column of the random noise, High Res mode Test Result record.
7. Repeat step 6 on page 245 for all frequencies below 500 MHz
8. *Check 50  $\Omega$  termination as follows:*
  - a. In the Channel badge, set **Termination** to **50  $\Omega$** .
  - b. Tap the **Bandwidth Limit** field and select 4 GHz or the highest frequency listed.
  - c. Set the channel **Position** value to **340 mdivs**.
  - d. Once the measurement count (N) in the measurement badge reaches 100, record the AC RMS Mean value (the  $\mu$  readout).
  - e. Set the channel **Position** value to **-340 mdivs**.
  - f. Once the measurement count (N) in the measurement badge reaches 100, record the AC RMS Mean value (the  $\mu$  readout).

- g. Average the two values and record the result in the **1 mV/div** row of the **50  $\Omega$**  column of the random noise, High Res mode Test Result record.
9. Repeat step 8 on page 245 for all frequencies below 4 GHz.
10. Repeat 1 M $\Omega$  and 50  $\Omega$  tests at all V/div settings for the current channel:
  - a. In the Channel badge, set the **Vertical Scale** setting to the next value in the test record (2 mV, 5 mV, and so on, up to 1 V/div).
  - b. Repeat steps 6 on page 245 through 9 on page 246.
11. Repeat all tests for the remaining input channels:
  - a. Double-tap the **AC RMS** measurement badge.
  - b. Tap the **Configure** panel.
  - c. Tap the **Source 1** field and select the next channel to test.
  - d. Double-tap the channel badge of the channel that you have finished testing and set **Display** to **Off**.
  - e. Tap the channel button on the oscilloscope Settings bar of the next channel to test.
  - f. Double-tap the channel badge for the channel being tested.
  - g. Starting at step 6 on page 245, repeat these procedures for each input channel.

## Check long term samples rate and delay time accuracy

This test checks the sample rate and delay time accuracy (time base).

1. Connect a 50  $\Omega$  cable from the Aux Out connector to the frequency counter input as shown in the following figure.



2. Tap **File > Default Setup**.
3. Tap **Utility > I/O**.
4. Tap **AUX OUT** to open its configuration menu.
5. Tap **Reference Clock** to send the clock to the **Aux Out** connector.
6. Check the reading on the frequency counter. Enter the value in the Test record.

## Check digital threshold accuracy

This test checks the threshold accuracy of the logic probe digital channels D0-D7 at 0 V and 25 °C, for all oscilloscope input channels.



**Note:** Threshold Accuracy is a function of the logic probe only. It is a typical specification. The Threshold Accuracy test checks the typical logic probe performance, and may be considered a functional check of the oscilloscope digital input.

1. Connect the TLP058 digital probe to channel 1.
2. Connect the DC voltage source to digital channel **D0**.



**Warning:** Set the generator output to Off or 0 volts before connecting, disconnecting, or moving the test hookup during the performance of this procedure. The generator is capable of providing dangerous voltages.

If you are using the Fluke 9500 calibrator as the DC voltage source, connect the calibrator head to the digital channel D0, using the BNC-to-0.1 inch pin adapter listed in the table. Be sure to connect channel D0 to both the corresponding signal pin and to a ground pin on the adapter.

3. Tap **File > Default Setup**. This resets the instrument and adds the channel 1 badge and signal to the display.
4. *Display the digital channels and set the thresholds as follows:*
  - a. Double-tap the badge of the channel under test on the Settings bar.
  - b. Double-tap the **Threshold** field at the bottom of the menu and set the value to **0 V**.
  - c. Tap **Set All Thresholds**. All thresholds are now set for the 0 V threshold check.
  - d. Tap outside the menu to close it.

5. Double-tap the **Horizontal** badge in the Settings bar.
6. Set the **Horizontal Scale** to **10 ns/div**.
7. Tap outside the menu to close it.
8. Set the calibrator DC voltage output ( $V_s$ ) to **-400 mV**.
9. Wait 1 second. Verify that the logic level is low on **D0**.
10. Increment  $V_s$  by **+10 mV**. Wait 1 second and check the logic level of the channel D0 signal display.

If the signal level is a logic low or is alternating between high and low, continue to increment  $V_s$  by +10 mV, wait 1 second, and check the logic level until the logic state is a steady high.

11. Record this  $V_s$  value as **Vs-** for D0 of the test record.
12. Double-tap the **Trigger** badge and set the **Slope** to **Falling** edge.
13. Set the DC voltage source ( $V_s$ ) to **+400 mV**.
14. Wait 1 second. Verify that the logic level is high.
15. Decrement  $V_s$  by **-10 mV**. Wait 1 second and check the logic level of the channel D0 signal display.

If the signal level is a logic high or is alternating between high and low, continue to decrement  $V_s$  by -10 mV, wait 1 second, and check the logic level until the logic state is a steady low.

16. Record this  $V_s$  value as **Vs+** for D0 of the test record.
17. Find the average using this formula:  $V_{sAvg} = (V_{s-} + V_{s+})/2$ .
18. Record the average as the test result for D0 in the test record. The test result should be between the low and high limits.
19. *Repeat the procedure for all remaining digital channels as follows:*
  - a. Connect the next digital channel to be tested (D1, D2, and so on) to the DC voltage source.
  - b. Repeat steps 8 on page 247 through 19 on page 247, until all digital channels have been tested for this input channel.
20. *Repeat the procedure for all remaining input channels as follows:*
  - a. Move the TLP058 digital probe from channel 1 to channel 2.
  - b. Set the generator output to 0 volts and Off.

- c. Repeat steps starting at 2 on page 247 for the channel being tested (channel 2, channel 3, and so on).

## Check AUX Out output voltage levels

This test checks the output voltage levels from the AUX Out connector.

1. Use a 50  $\Omega$  cable to connect the AUX Out signal from the rear of the instrument to the channel 1 input of the same instrument, as shown in the following illustration.
2. Tap **File > Default Setup**. This resets the instrument and adds the channel 1 badge and signal to the display.
3. Double-tap the badge of the channel 1 badge to open its configuration menu.
4. Set the **Vertical Scale** to **1 V/div**.
5. Tap outside the menu to close it.
6. Double-tap the **Horizontal** badge in the Settings bar.
7. Set the **Horizontal Scale** to **400 ns/div**.
8. Tap outside the menu to close it.
9. *Record the Maximum and Minimum measurements at 1 M $\Omega$  termination as follows:*
  - a. Tap the **Add New... Measure** button.
  - b. In the Amplitude Measurements panel, set the **Source** to **Ch 1**.
  - c. Double-tap the **Maximum** button to add the measurement badge to the Results bar.
  - d. Double-tap the **Minimum** button to add the measurement badge to the Results bar.
  - e. Tap outside the menu to close it.
  - f. Double-tap the **Maximum** results badge.
  - g. Tap **Show Statistics in Badge**.
  - h. Tap **FILTER/LIMIT RESULTS** to open the panel.
  - i. Tap **Limit Measurement Population** to toggle it to **On**.
  - j. Tap outside the menu to close it.
  - k. Double-tap the **Minimum** results badge.
  - l. Tap **Show Statistics in Badge**.
  - m. Tap **FILTER/LIMIT RESULTS** to open the panel.
  - n. Tap **Limit Measurement Population** to toggle it to **On**.
  - o. Tap outside the menu to close it.
  - p. Enter the Maximum and Minimum measurement readings in the 1 M $\Omega$  row of the test record.
10. *Record the Maximum and Minimum measurements at 50  $\Omega$  termination as follows:*
  - a. Double-tap the **Ch 1** badge to open its configuration menu.
  - b. Set **Termination** to **50  $\Omega$** .
  - c. Tap outside the menu to close it.
  - d. Enter the Maximum and Minimum measurement readings in the 50  $\Omega$  row of the test record.



## Check DVM voltage accuracy (DC)

This test checks the DC voltage accuracy of the Digital Volt Meter (DVM) option. The DVM option is available for free when you register the instrument at tek.com.

### Procedure

1. Connect the oscilloscope to a DC voltage source to run this test. If using the Fluke 9500 calibrator as the DC voltage source, connect the calibrator head to the oscilloscope channel to test.




**Warning:** Set the generator output to Off or 0 volts before connecting, disconnecting, or moving the test hookup during the performance of this procedure. The generator is capable of providing dangerous voltages.

2. Set the calibrator impedance to **1 MΩ**.
3. Tap **File > Default Setup**. This resets the instrument and adds the channel 1 badge and signal to the display.
4. Set the channel settings:
  - a) Double tap the badge of the channel under test to open its menu.
  - b) Check that **Position** is set to **0 divs**. If not, set the position to 0 divisions.
  - c) Confirm that **Termination** is set to **1 MΩ**.
  - d) Set the **Bandwidth Limit** to **20 MHz**.
5. Set the calibrator impedance to **1 MΩ**.
6. Double-tap the **Horizontal** badge and set **Horizontal Scale** to **1 ms/div**.
7. Tap outside the menu to close it.
8. Double-tap the **Acquisition** badge and set the **Acquisition Mode** to **Average**.
9. Verify or set the **Number of Waveforms** to **16**.
10. Tap outside the menu to close it.
11. Double-tap the **Trigger** badge and set the **Source** to **AC Line**.
12. Tap outside the menu to close it.
13. Tap the **DVM** button to add the DVM badge to the Results bar.
14. In the **DVM** menu, set **Source** to the channel to be tested.
15. Set **Mode** to **DC**.
16. Tap outside the menu to close it.
17. Set the calibrator to the input voltage shown in the test record (for example,  $-5\text{ V}$  for a  $1\text{ V/div}$  setting).
18. In the channel under test menu, set the **Offset** value to that shown in the test record (for example,  $-5\text{ V}$  for  $-5\text{ V}$  input and  $1\text{ V/div}$  setting).
19. Set the **Vertical Scale** field to match the value in the test record (for example,  $1\text{ V/div}$ ).
20. Enter the measured value on the DVM badge into the DVM Voltage Accuracy Tests record.
21. Repeat the procedure (steps 17 on page 249, 18 on page 249, 19 on page 249 and 20 on page 249) for each volts/division setting shown in the test record.
22. Repeat all steps, starting with step 4 on page 249, for each oscilloscope channel to check. To set the next channel to test:
  - a) Double tap the badge of the channel under test to open its menu.
  - b) Set **Display** to **Off**.
  - c) Tap the channel button in the Settings bar of the next channel to test to add that channel badge and signal to the display.

## Check DVM voltage accuracy (AC)

This test checks the AC voltage accuracy of the Digital Volt Meter (DVM) option. The DVM option is available for free when you register the instrument at tek.com.

### Procedure

1. Connect the output of the leveled square wave generator (for example, Fluke 9500) to the oscilloscope channel 1 input.  
 **Warning:** Set the generator output to Off or 0 volts before connecting, disconnecting, or moving the test hookup during the performance of this procedure. The generator is capable of providing dangerous voltages.
2. Set the generator to **50  $\Omega$**  output impedance (50  $\Omega$  source impedance).
3. Set the generator to produce a square wave of the amplitude and frequency listed in the test record (for example, 20 mV<sub>pp</sub> at 1 kHz).
4. Tap **File > Default Setup** to reset the instrument and add the channel 1 badge and signal to the display.
5. Tap the **DVM** button to add the DVM badge to the Results bar.
6. Set the DVM **Mode** to **AC RMS**.
7. In the DVM menu, set **Source** to the channel to be tested.
8. Double-tap the channel badge of the channel being tested to open its configuration menu.
9. Set **Termination** to **50  $\Omega$** .
10. Use the **Vertical Scale** controls to set the signal height so that the signal covers between 4 and 8 vertical divisions on the screen.
11. Enter the DVM measured value in the test record.
12. Repeat steps [10](#) on page 250 and [11](#) on page 250 for each voltage and frequency combination shown in the record.
13. Repeat all steps to test all remaining oscilloscope channels. To set the next channel to test:
  - a) Double tap the badge of the channel under test to open its menu.
  - b) Set **Display** to **Off**.
  - c) Tap the channel button in the Settings bar of the next channel to test to add that channel badge and signal to the display.

## Check trigger frequency accuracy and maximum input frequency

This test checks trigger frequency counter accuracy. The trigger frequency counter is part of the free DVM and trigger frequency option that is available when you register the instrument at tek.com.

### Procedure

1. Tap **File > Default Setup** to reset the instrument and add the channel 1 badge and signal to the display.
2. Connect the **10 MHz Reference out** from the time mark generator to the **Ref In** connector on the back of the oscilloscope.
3. Connect the output of the time mark generator to the oscilloscope channel input being tested using a 50  $\Omega$  cable. Set the time mark generator to a 50  $\Omega$  source and a fast rising edge waveform ( $\geq 3$  mV/ns).
4. Set the time mark generator frequency to the first value shown in the test record, starting at **100 Hz**.
5. Set the mark amplitude to **1 V<sub>pp</sub>**, which makes a 2 divisions high waveform.
6. Double-tap the channel badge being tested (starting with channel 1) and set **Termination** to **50  $\Omega$** .
7. Set the channel **Vertical Scale** to **500 mV/div**.
8. Tap outside the menu to close it.
9. Double-tap the **Acquisition** badge and set the **Timebase Reference Source** to **External Reference**.
10. Tap outside the menu to close it.
11. Double-tap the **Horizontal** badge and use the **Horizontal Scale** controls to display at least 2 cycles of the waveform.
12. Tap outside the menu to close it.
13. Double-tap the **Trigger** badge to open its menu.
  - a) Set the **Source** field to the input channel being tested.
  - b) Tap the **Set to 50%** button to obtain a stable display.
  - c) Tap the **Mode & Holdoff** panel to open the **Mode & Holdoff** configuration menu.
  - d) In the **Mode & Hold Off** menu, set the **Trigger Frequency Counter** to **On**. The trigger frequency readout is at the bottom of the Trigger badge.
  - e) Tap outside the menu to close it.
14. Double-tap the channel badge being tested (starting with channel 1) and use the **Position** controls to vertically center the time mark in the waveform graticule.
15. Enter the value of the trigger frequency (**F** readout in the **Trigger** badge) in the test record for that frequency.
16. Repeat this procedure for each frequency setting shown in the record. Make sure to adjust the Horizontal scale after each calibrator frequency change to show at least two cycles of the waveform on the screen.
17. Repeat all these steps to test each oscilloscope channel.

## Arbitrary function generator

### Check AFG sine and ramp frequency accuracy

This test verifies the frequency accuracy of the arbitrary function generator. All output frequencies are derived from a single internally generated frequency. Only one frequency point of channel 1 is required to be checked.

1. Connect a 50  $\Omega$  cable from the **AFG Out** connector to the frequency counter input as shown in the following figure.

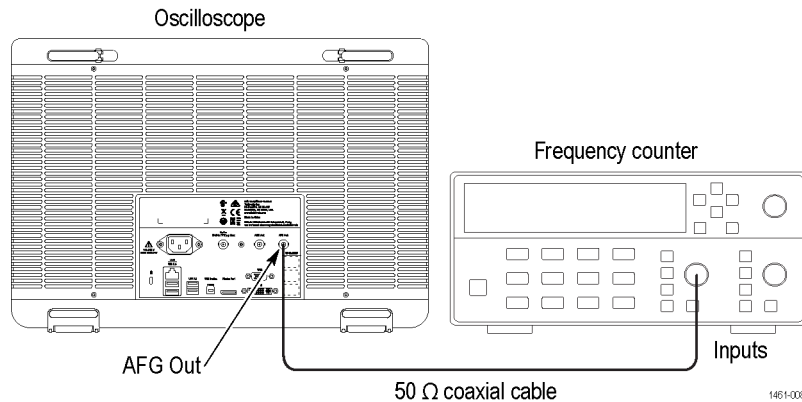


Figure 1: Frequency/period test

2. Tap **File > Default Setup** to set the instrument to the factory default settings.
3. Tap the **AFG** button to open the **AFG** menu.
4. Set the arbitrary function generator output as follows:

Select menu	Setting
Output	On
Waveform Type	Sine
Frequency	1.000000 MHz
Amplitude	1.00 V <sub>PP</sub>

5. Turn on the frequency counter:
  - a. Double-tap the **Trigger** badge to open its menu.
  - b. Set the **Source** field to the input channel being tested.
  - c. Tap the **Set to 50%** button to obtain a stable display.
  - d. Tap the **Mode & Holdoff** panel to open the Mode & Holdoff configuration menu
  - e. In the Mode & Hold Off menu, set the **Trigger Frequency Counter** to **On**. The trigger frequency readout is at the bottom of the Trigger badge.
  - f. Tap outside the menu to close it.
6. Check that the reading of the frequency counter is between **0.999950 MHz** and **1.000050 MHz**. Enter the value in the Test record.
7. Set the arbitrary function generator output as follows:

Select menu	Setting
Waveform Type	Ramp
Frequency	500 kHz

8. Check that reading of the frequency counter is between **499.975 kHz** and **500.025 kHz**. Enter the value in the Test record.

## Check AFG square and pulse frequency accuracy

This test verifies the frequency accuracy of the arbitrary function generator. All output frequencies are derived from a single internally generated frequency. Only one frequency point of channel 1 is required to be checked.

1. Connect the arbitrary function generator to the frequency counter as shown in the following figure.

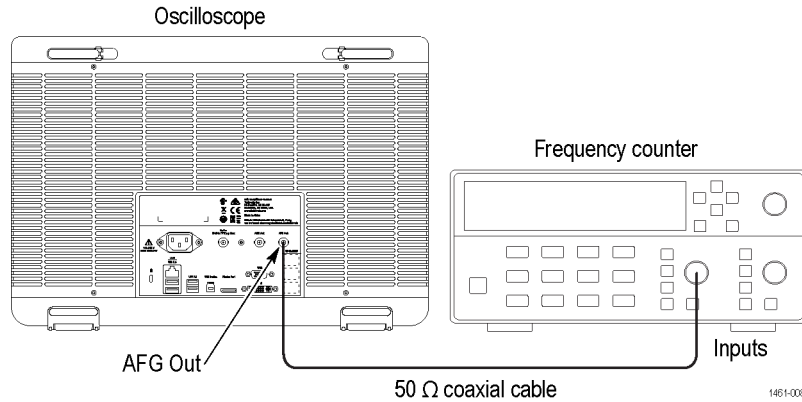


Figure 2: Frequency/period test

2. Tap **File > Default Setup** to set the instrument to the factory default settings.
3. Tap the **AFG** button to open the AFG menu.
4. Set the arbitrary function generator as follows:

Select menu	Setting
Waveform Type	Square
Frequency	1.000000 MHz
Amplitude	1.00 V <sub>PP</sub>
Output	On

5. Turn on the frequency counter:
  - a. Double-tap the **Trigger** badge to open its menu.
  - b. Set the **Source** field to the input channel being tested.
  - c. Tap the **Set to 50%** button to obtain a stable display.
  - d. Tap the **Mode & Holdoff** panel to open the Mode & Holdoff configuration menu
  - e. In the Mode & Hold Off menu, set the **Trigger Frequency Counter** to **On**. The trigger frequency readout is at the bottom of the Trigger badge.
  - f. Tap outside the menu to close it.
6. Check that the frequency counter readout is between **0.999950 MHz** and **1.00005 MHz**. Enter the value in the Test record.
7. Set up the arbitrary function generator as follows:

Select menu	Setting
Waveform Type	Pulse

8. Check that reading of the frequency counter is between **0.999950 MHz** and **1.000050 MHz**. Enter the value in the Test record.

## Check AFG signal amplitude accuracy

This test verifies the amplitude accuracy of the arbitrary function generator. All output amplitudes are derived from a combination of attenuators and 3 dB variable gain. Some amplitude points are checked. This test uses a 50 Ω terminator. It is necessary to know the accuracy of the 50 Ω terminator in advance of this amplitude test. This accuracy is used as a calibration factor.

1. Connect the 50 Ω terminator to the DMM as shown in the following figure and measure the resistance value.

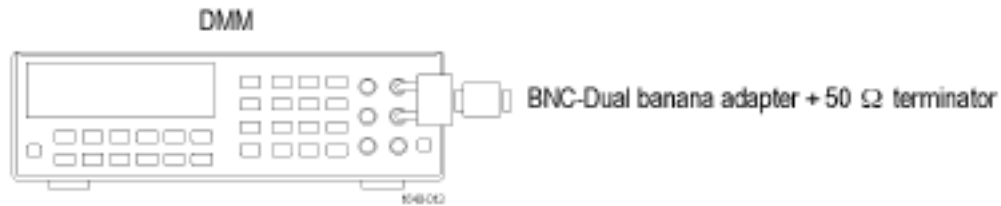


Figure 3: 50 Ω terminator accuracy

2. Calculate the 50 Ω calibration factor (CF) from the reading value and record as follows:

**Table 2: CF (Calibration Factor) =  $1.414 \times ((50 / \text{Measurement } \Omega) + 1)$**

Measurement (reading of the DMM)	Calculated CF

Examples:

For a measurement of 50.50 Ω, CF =  $1.414 ( 50 / 50.50 + 1) = 2.814$ .

For a measurement of 49.62 Ω, CF =  $1.414 ( 50 / 49.62 + 1) = 2.839$ .

3. Connect the arbitrary function generator output to the DMM as shown in the following figure. Be sure to connect the 50 Ω terminator to the **AFG Out** connector.

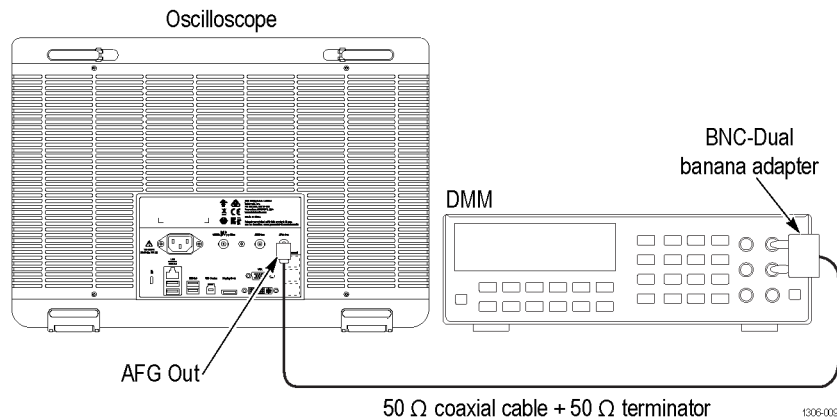


Figure 4: Amplitude test

4. Tap the **AFG** button and set up the arbitrary function generator output as follows:

Select menu	Setting
Waveform Type	Sine
Frequency	1.000000 kHz
Amplitude	30 mV <sub>PP</sub>
Load Impedance	50 Ω

Table continued...

Select menu	Setting
Output	On

- Measure the **AC RMS** voltage readout on the DMM.
- Multiply the DMM voltage by the calculated CF to get the corrected peak to peak voltage. Enter the resulting value in the Measurement field in the following table.
- Change the AFG output amplitude to the next value in the table.
- Repeat steps 5 on page 255 through 7 on page 255 for each amplitude value. Check that the peak to peak voltages are within the limits in the table below. Enter the values in the test record.

Waveform Type	Frequency	Amplitude	Measurement	Range
Sine	1.000 kHz	30.0 mV <sub>PP</sub>		28.55 mV <sub>PP</sub> - 31.45 mV <sub>PP</sub>
Sine	1.000 kHz	300.0 mV <sub>PP</sub>		294.5 mV <sub>PP</sub> - 305.5 mV <sub>PP</sub>
Sine	1.000 kHz	800.0 mV <sub>PP</sub>		787.0 mV <sub>PP</sub> - 813.0 mV <sub>PP</sub>
Sine	1.000 kHz	1.500 V <sub>PP</sub>		1.4765 V <sub>PP</sub> - 1.5235 V <sub>PP</sub>
Sine	1.000 kHz	2.000 V <sub>PP</sub>		1.969 V <sub>PP</sub> - 2.031 V <sub>PP</sub>
Sine	1.000 kHz	2.500 V <sub>PP</sub>		2.4615 V <sub>PP</sub> - 2.5385 V <sub>PP</sub>

## Check AFG DC offset accuracy

This test verifies the DC offset accuracy of the arbitrary function generator. This test uses a 50 Ω terminator. It is necessary to know the accuracy of the 50 Ω terminator in advance of this test. This accuracy is used as a calibration factor.

- Connect the 50 Ω terminator to the DMM as shown in the following figure and measure the resistance value.

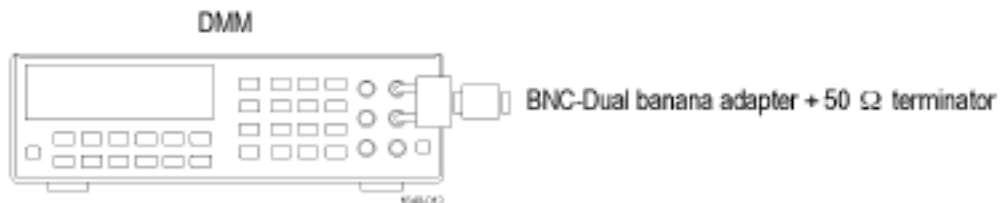


Figure 5: 50 Ω terminator accuracy

- Calculate the 50 Ω calibration factor (CF) from the reading value and record as follows:

**Table 3: CF (Calibration Factor) =  $0.5 \times ((50 / \text{Measurement } \Omega) + 1)$**

Measurement (reading of the DMM)	Calculated CF

Examples:

For a measurement of 50.50 Ω, CF =  $0.5 ( 50 / 50.50 + 1 ) = \mathbf{0.9951}$ .

For a measurement of 49.62 Ω, CF =  $0.5 ( 50 / 49.62 + 1 ) = \mathbf{1.0038}$ .

3. Connect the arbitrary function generator output to the DMM as shown in the following figure. Be sure to connect the 50  $\Omega$  terminator to the arbitrary function generator **AFG Output** connector.

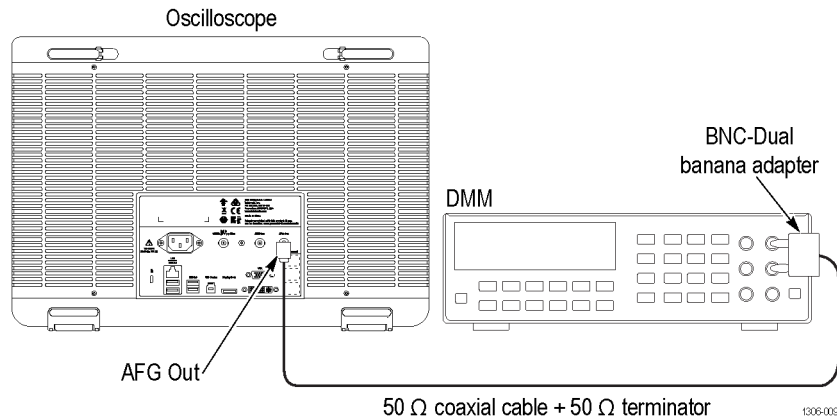


Figure 6: DC offset tests

4. Tap the **AFG** button and set up the arbitrary function generator as follows:

Select menu	Setting
Waveform Type	DC
Offset	+ 1.25 V
Output	On

5. Measure the voltage readout on the DMM.  
 6. Multiply the DMM voltage by the calculated CF to get the corrected offset voltage. Enter the resulting value in the Measurement field in the following table.

Function	Offset	Measurement	Range
DC	+ 1.25 Vdc	Vdc	1.23025 Vdc to 1.26975 Vdc
DC	0.000 Vdc	Vdc	- 0.001 Vdc to + 0.001 Vdc
DC	- 1.25 Vdc	Vdc	-1.26975 Vdc to -1.23025 Vdc

7. Change the AFG output amplitude to the next value in the table, measure the voltage readout on the DMM, multiply the DMM readout by the calculated CF to get the corrected offset voltage, and enter the resulting value in the Measurement field in the table.  
 8. Verify that the corrected offset measurements are within the range.



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