



**PRISM**  
**Media Analysis Platform**  
**Specifications and Performance Verification**  
**Technical Reference**



077-1291-02





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Media Analysis Platform  
Specifications and Performance Verification  
Technical Reference**

**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.

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**077-1291-02**

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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, additional information is provided at the end of this section. (See page vi, *Service 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.

Comply with local and national safety 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.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

When incorporating this equipment into a system, the safety of that system is the responsibility of the assembler of the system.

**To avoid fire or personal injury**

**Use proper power cord.** Use only the power cord specified for this product and certified for the country of use.

Do not use the provided power cord for other products.

**Ground the product.** 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, make sure that the product is properly grounded.

**Power disconnect.** 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.

**Observe all terminal ratings.** To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

**Do not operate without covers.** Do not operate this product with covers or panels removed, or with the case open. Hazardous voltage exposure is possible.

**Avoid exposed circuitry.** Do not touch exposed connections and components when power is present.

**Do not operate with suspected failures.** If you suspect that there is damage to this product, have it inspected by qualified service personnel.

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.

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.

Examine the exterior of the product before you use it. Look for cracks or missing pieces.

Use only specified replacement parts.

**Do not operate in wet/damp conditions.** Be aware that condensation may occur if a unit is moved from a cold to a warm environment.

**Do not operate in an explosive atmosphere.**

**Keep product surfaces clean and dry.** Remove the input signals before you clean the product.

**Provide proper ventilation.** Refer to the installation instructions in the manual for details on installing the product so it has proper ventilation.

Slots and openings are provided for ventilation and should never be covered or otherwise obstructed. Do not push objects into any of the openings.

**Provide a safe working environment.** Always place the product in a location convenient for viewing the display and indicators.

Avoid improper or prolonged use of keyboards, pointers, and button pads.

Be sure your work area meets applicable ergonomic standards. Consult with an ergonomics professional to avoid stress injuries.

Use care when lifting and carrying the product.

Use only the Tektronix rackmount hardware specified for this product.

## 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.

**To avoid electric shock.** Do not touch exposed connections.

**Do not service alone.** Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

**Disconnect power.** 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 this 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.*

## Symbols and 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.



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



Standby



# Preface

This manual provides the specifications and performance verification procedures for the PRISM Media Analysis Platform. This manual is divided into two sections:

- *Specifications* provides physical and electrical characteristics
- *Performance verification* provides procedures to verify the warranted characteristics of the PRISM monitor

## Product description

The PRISM Media Analysis Platform provides flexible options and field-installable upgrades to monitor a diverse variety of IP statistics as well as video and audio content. The comprehensive feature set, along with an intuitive and simplified graphical presentation of IP statistics, including video quality and diagnostic information, enables engineers to ensure the delivery of superior QoS levels in an increasingly complex broadcast environment involving compressed / uncompressed video transmission through SDI/IP signal paths. PRISM is an ideal solution for monitoring SDI/IP hybrid environments including master control rooms, production studios, OB vans, and signal contribution/distribution centers.



Figure i: PRISM Media Analysis Platform shown with the optional portable cabinet

## Product documentation

The following table lists the user documents available for the PRISM monitor:

**Table i: Product documentation**

Document	Tektronix part number	Description	Availability	
			Print	Web
Installation and Safety Instructions	071-3500-xx	Describes how to install the instrument and provides basic safety and operating information	√	√
User Manual	077-1290-xx	Provides detailed operating information		√
Specifications and Performance Verification	077-1291-xx	Lists the product specifications and provides procedures for verifying product performance		√
Software Licenses Reference	077-1292-xx	Lists the software licenses that apply to the product		√
Release Notes	077-1293-xx	Describes the new features, improvements, and limitations of the instrument firmware		√
Declassification and Security Instructions	077-1294-xx	Describes how to clear or sanitize the data storage (memory) devices in the product for customers with data security concerns		√
Rackmount Kit Instructions	071-3501-xx	Describes how to install the instrument in a 19" equipment rack using the optional MPI-RACK-MM or MPI-RACK-MW dual rack cabinet	√	√
Field Upgrade Kit Instructions	075-1095-xx	Describes how to install post-purchase field upgrades in the instrument	√	√



# Specifications

The following tables list the specifications for the Tektronix PRISM Media Analysis Platform. Items listed in the Performance Requirement column are generally quantitative and can be tested by the *Performance Verification* procedure in Section 2 of this manual. Items listed in the Reference Information column are useful operating parameters that have typical values; information in this column is not guaranteed.

The specifications listed in the Electrical Specifications portion of these tables apply over an ambient temperature range of +0 °C to +40 °C. The rated accuracies are valid when the instrument is calibrated in an ambient temperature range of +20 °C to +30 °C.

## Electrical specifications

**Table 1: SDI input waveform vertical characteristics**

Characteristic		Performance requirement	Reference information
Vertical Measurement Accuracy		$\pm 0.5\%$ of 700 mV full scale mode	Using graticule or cursor. Measure in YPbPr mode.
Frequency Response (HD)	Luminance Channel (Y)	50 kHz to 30 MHz, $\pm 0.5\%$	50 kHz to 60 MHz for 1080P 60/59.94/50 formats (148.5 MHz interface sampling frequency).
	Chrominance Channels (Pb, Pr)	50 kHz to 15 MHz, $\pm 0.5\%$	50 kHz to 30 MHz for 1080P 60/59.94/50 formats (148.5 MHz interface sampling frequency).
Step Response (HD), Typical			Sine-squared bars
	Preshoot		$\leq 0.5\%$ peak (2T30 bar) (2T60 bar for 148.5 MHz 1080p formats.)
	Overshoot		$\leq 0.5\%$ peak (2T30 bar) (2T60 bar for 148.5 MHz 1080p formats.)
	Ringing		$\leq 0.8\%$ peak-peak (2T30 bar) (2T60 pulse for 148.5 MHz 1080p formats.) Most of the error seen on the display comes from the inherent ringing in the digital data. The response of the monitor is close to the theoretical limit of a perfect $\sin x/x$ reconstruction filter.

Table 1: SDI input waveform vertical characteristics (cont.)

Characteristic		Performance requirement	Reference information
Pulse Response (HD), Typical	Baseline		Blackman pulse
	Ringings		$\leq 0.7\%$ peak-peak (2T30) (2T60 pulse for 148.5 MHz 1080p formats.) Pulse-to-bar ratio 0.995:1 to 1.005:1 on appropriate Sine Squared or Blackman 2T pulse. A sine-squared pulse near Nyquist is not band-limited and so inherently has ringing much larger than the waveform monitor filter. A three term Blackman pulse with the same HAD has much less inherent ringing, so it is a better choice for most testing. See <i>Digital to Analog Conversion, Data and Filter Requirements</i> , SMPTE Journal Mar 1995, Vol. 104, Fibush, Baker, Penny.
Tilt	Field Rate	0.1%	
	Line Rate	0.1%	
Off Screen Recovery		0.1% variation in baseline of a 5 MHz modulated pulse when positioned anywhere on screen at any gain setting.	

Table 2: Waveform sweep (horizontal) deflection

Characteristic		Performance requirement	Reference information
Sweep	Accuracy	$\pm 0.5\%$ , all rates	Fully digital system
	Linearity	0.2% of time displayed on screen	Fully digital system

Table 3: Picture mode

Characteristic	Performance requirement	Reference information
Format (HD)		Allows viewing picture in all formats. In Low Frame Rate formats, frames are repeated as needed to achieve XGA frame rate; similar to 3:2 pull-down on some frame rates.
Synchronization		Picture mode always uses internal timing; it is not affected by external sync.
Aspect Ratio		Allows choice of 16:10, 16:9 or 4:3 for SD to support widescreen.

Table 4: Serial digital video inputs

Characteristic	Performance requirement	Reference information
Format		1.5 Gb/s: compatible with SMPTE 292M/BTA-S004A. 3 Gb/s: compatible with SMPTE 424/M and SMPTE 425M.
Input Type		75 $\Omega$ BNC, internally terminated. 4 inputs, only one active at a time
Cable Loss Accommodation	With 1/SQRT(f) characteristic at ½ of serial rate.	
	1.5 Gb/s, 3 Gb/s, 12 Gb/s	0 to 28 dB attenuation Equivalent to approximately: ■ 171 m of Belden 1694A at 1.485 Gb/s ■ 117 m of Belden 1694A at 2.97 Gb/s ■ 52 m of Belden 1694A at 11.88 Gb/s
Launch Amplitude Accommodation, Typical	For Full Specification Up to 20 dB Cable Loss	800 mV $\pm$ 10% 800 mV $\pm$ 30%
Jitter Tolerance (HD), Typical	0.35 UI <sub>p-p</sub> above Fx. Increases proportional to 1/f below Fx. Fx depends on bit rate as follows: ■ 1.5 Gb/s: 1.5 MHz ■ 3 Gb/s: 3 MHz ■ 12 Gb/s: 12 MHz	
Return Loss, Typical		> 15 dB to 1.5 GHz > 10 dB to 3 GHz > 6 dB to 12 GHz
Isolation Between Inputs	> 45 dB to 1 GHz	
SDI Input Bitrate Range		> $\pm$ 50 ppm

**Table 5: Serial video output (AUX Out)**

Characteristic	Performance requirement	Reference information
Format		3 Gb/s or 1.5 Gb/s same as selected input.
Content		Equals selected input.
Output Level, Typical		800 mV $\pm$ 10% into 75 $\Omega$ load
Rise and Fall Time (HD), Typical		135 ps maximum, 20% to 80%.
Return Loss, Typical		> 15 dB to 1.5 GHz. > 10 dB to 3.0 GHz. > 6 dB to 12 GHz.

**Table 6: External reference**

Characteristic	Performance requirement	Reference information
Input Type	75 $\Omega$ ; compensated.	For future use.
Output Type	75 $\Omega$ ; nominal.	
1 PPS Output		The REF OUT connector outputs a 1 PPS (Pulse Per Second) signal when the instrument is locked to a PTP reference.
Signal Amplitude		–0.8 V to 3 V open circuit –0.4 V to 1.5 V terminated into 75 $\Omega$

**Table 7: Audio bar displays**

Characteristic	Performance requirement	Reference information
Channel mode		Any 16 channels configured into 8 pairs.
Audio Source		Monitoring digital audio embedded in serial digital video either from SDI or IP sources.
Level Meter Resolution		0.056 dB steps at 30 dB scale, from full scale to –20 dB FS.
Metering Ballistic Types		PPM Type 2.
Peak Program Meter (PPM) Ballistic Response		PPM Type II (IEC Type II, the same as IEEE std. 152-1991). Attack time and return time, 2.8 seconds to fall 20 dB.
True Peak Ballistic Response		PPM Type II decay characteristics, no attack delay, factory default ballistic.
Peak Hold		True peak indicator remains at the most recent peak for a user selectable time of 1 to 10 seconds.

Table 7: Audio bar displays (cont.)

Characteristic	Performance requirement	Reference information
Clip Indication Delay Count		Consecutive FS samples for Clip Indication, user selectable Off or 1 to 100. Factory default is set to 1. A setting of 0 is equivalent to "Off".
Mute Indication Delay Count		Consecutive "0" samples for Mute Indication, user selectable Off or 1 to 100. Factory default is set to 10. A setting of 0 is equivalent to "Off".
Clip/Mute Error Readout Hold Time		1 to 30 seconds, user selectable. Factory Default set to 2.
Silence Indication Threshold		Audio level below which the signal will be considered "silent". Used to trigger on-screen indication and alarms.
Silence Indication Delay		Off or 1 to 60 seconds, user selectable. Indication and alarm will not be asserted until signal stays below the silence threshold for this number of consecutive seconds. Factory default is set to 10. A setting of 0 is equivalent to "Off".
Over Indication Threshold		Audio level above which the signal will be considered "over". Used to trigger on-screen indication and alarms.
Over Indication Delay		Off or 1 to 30 seconds, user selectable. Indication and alarm will not be asserted until signal stays above the Over Indication Threshold for this number of consecutive seconds. Factory default is set to 2. A setting of 0 is equivalent to "Off".

Table 8: Embedded audio extraction


Characteristic	Performance requirement	Reference information
Embedded Audio Formatting (HD)		24-bit Embedded audio is not supported (no AUX bits are extracted), only 20 most significant bits will be extracted. Supports SMPTE 272M Operation Level B only (48 kHz audio sampling rate synchronized with video). Extract 20 or 24 bit audio formatting according to SMPTE299M.
Channel Numbering		Channel numbers per SMPTE 272M (1 through 16) will be correctly shown on all displays.
Audio Rates		Supports 48 kHz audio sample rate.
Number of Channels Monitored for Presence		16 channels are monitored for presence.
Maximum Number of Channels Monitored for Activity		Can only monitor channels set up for display.
Audio levels		Bars display signals up to 0 dBFS.

Table 9: LCD display (MPI only)

Characteristic	Performance requirement	Reference information
Display Area	Horizontal	19.8 cm
	Vertical	11.2 cm
Resolution		1920 (H) x 1080 (V) pixels
Color Palette		8 bits per component.
Pixel Defects	≤ 6 bad pixels	

**Table 10: External display output (EXT DISPLAY)**

Characteristic	Performance requirement	Reference information
Content		Identical to front-panel LCD display.
Display Format		1920 (H) x 1080 (V) pixels at 60 Hz (HD)
Digital Output Format		Display Port. DVI-D (single link) (MPX only)
Analog Output Format		RGB
Analog Connector		Standard (blue insert) HD-15 DSUB connector
Hot Plug Detection		Supported.
DDC Function		Supported.
Color Palette		8 bits per component.

The Control IP port (Ethernet LAN) on the rear panel is identified by the  symbol stamped into the chassis above the port.

**Table 11: Control IP port (Ethernet LAN connector)**

Characteristic	Performance requirement	Reference information
IP Address Mode		Supports manual and DHCP.
Rates	1000 Base-T, 100 Base-Tx, and 10 Base-T	
SNMP		For instrument control and feedback of status. Complies with SNMP version 2.
Connector Type		RJ-45 LAN connector supporting 10/100 Base-T.

**Table 12: USB**

Characteristic	Performance requirement	Reference information
Type		Host
Speed		Complies with USB 1.1 and USB 2.0 Full and Low-Speed specification.

**Table 13: Power source**

Characteristic	Performance requirement	Reference information
Electrical Rating		MPI: 48 VDC @ 200 W max MPX: 100–240VAC @ 200 W max
Supply Connection		Detachable cord set
Power Consumption, Typical		100 W
Surge, Typical		40 A peak for <5 msec
Fuse Rating		4 A hold, 8 A trip, self-resetting

**Table 14: Miscellaneous**

Characteristic	Performance requirement	Reference information
Real-time Clock Battery Life		>10 year

## Physical specifications

**Table 15: MPI physical characteristics**

Characteristic	Standard
Dimensions	Height (at bezel)
	13.34 cm (5.250 in.)
	Width (at bezel)
Weight	21.91 cm (8.625 in.)
	Depth
	30.48 cm (12.000 in.)
Net	3.4 kg (7.45 lbs.)
	Shipping
	7.6 kg (16.75 lbs.); approximate, excluding options and accessories

**Table 16: MPX physical characteristics**

Characteristic	Standard
Dimensions	Height (at bezel)
	4.45 cm (1.75 in.)
	Width (at bezel)
Weight	48.26 cm (19.00 in.)
	Depth
	45.72 cm (18.000 in.)
Net	3.9 kg (8.7 lbs.)
	Shipping
	10.2kg (22.5 lbs.); approximate, excluding options and accessories



Table 17: Environmental performance

Category		Standards or description
Temperature	Operating	0 °C to +40 °C
	Non Operating	–20 °C to +60 °C
Humidity	Operating	20% to 80% relative humidity (% RH) at up to +40 °C, non-condensing.
	Non Operating	5% to 90% RH (relative humidity) at up to +40 °C, derating linearly to 45% at +60 °C, non-condensing.
Altitude	Operating	Up to 9,842 feet (3,000 meters).
	Non Operating	Up to 40,000 feet (12,192 meters).
Cooling		The variable fans provide forced air circulation. Do not block ventilation openings.
	Bare instrument (no optional sleeves)	To ensure proper airflow, there must be at least 2 inches of clearance on both sides of the instrument, at least 2 inches of clearance from the rear of the instrument, and at least a 0.5 inch of clearance from the top of the instrument.
	Portable cabinet	Use only the Tektronix portable cabinet (MPI-PTBL) to ensure proper airflow with this instrument. When using the portable cabinet, the same minimum clearances as the Bare Instrument apply (see above).
	Rack cabinet	Use only the Tektronix rackmount adapter (MPI-RACK-MM, MPI-RACK-MW or MPX RACK) for this instrument. To ensure proper airflow when installing the Dual Rack Adapter in a closed rack with solid walls, there must be at least 2 inches of clearance from both sides of the rack adapter frame to the rack side walls, at least 3 inches of clearance from the rear of the rack adapter frame to the rack's back wall, and at least a 0.5 inch of clearance from the top of the rack adapter to another rack adapter or installed instrument. The rack intake air to the side vents must not exceed 40 °C.

## Supported formats

Table 18: Supported IP formats

Format	Description	Required product option
SMPTE 2022-6		MP-IP-STD
SMPTE 2022-7		MP-IP-STD
PTP	IEEE1588, SMPTE2059-2	MP-IP-STD

Table 19: Supported SDI formats

Link	Format	Sample structure	Bits	Frame/field rates	Required product option
SD-SDI	525i	4:2:2 YCbCr	10b	50/59.94/60i	Base instrument
	625i	4:2:2 YCbCr	10b	50/59.94/60p	Base instrument
HD-SDI	1920×1080	4:2:2 YCbCr	10b	50/59.94/60i	Base instrument
	1280×720	4:2:2 YCbCr	10b	50/59.94/60p	Base instrument
3G-SDI Level A	1920×1080	4:2:2 YCbCr	10b	50/59.94/60p	Base instrument
3G-SDI Level B	1920×1080	4:2:2 YCbCr	10b	50/59.94/60p	Base instrument

Table 20: Supported video formats in SMPTE 2022-6 streams

Link	Format	Sample structure	Bits	Frame/field rates	Required product option
SD-SDI	525i	4:2:2 YCbCr	10b	59.94	MP-IP-STD
	625i	4:2:2 YCbCr	10b	50	MP-IP-STD
HD-SDI	1920×1080	4:2:2 YCbCr	10b	50/59.94/60i	MP-IP-STD
	1280×720	4:2:2 YCbCr	10b	50/59.94/60p	MP-IP-STD
3G-SDI Level A	1920×1080	4:2:2 YCbCr	10b	50/59.94/60p	MP-IP-STD
3G-SDI Level B	1920×1080	4:2:2 YCbCr	10b	50/59.94/60p	MP-IP-STD

Table 21: Supported video formats in ASPEN video

Link	Format	Sample structure	Bits	Frame/field rates	Required product option
ASPEN <sup>1</sup>	1920x1080	4:2:2 YCbCr	10b	50/59.94/60i 50/59.94/60p	MP-IP-STD

<sup>1</sup> No AUX SDI output is available for ASPEN video.

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# Performance verification

This section contains a collection of manual procedures for verifying that the PRISM monitor and installed options performs as warranted

This chapter is divided into two sections: *Functional test procedures* and *Video performance test procedures*. The test procedures in this chapter provide for an extensive confirmation of performance and functionality.

## **Warm-up period**

Before performing any of the procedures and tests in this manual, the waveform monitor must have been operating for a warm-up period of at least 20 minutes and be installed in a location meeting the required environmental conditions. (See Table 17 on page 9.)

## Test records

Use the following tables to record the measured performance or Pass/Fail status for each step of the specified test procedure. In cases where a measurement is made in different units than specified in the manual, the actual measured values that correspond to the specification limits are shown in parentheses.

### Test record – functional tests

**Table 22: PRISM monitor functional test record**

Instrument Serial Number:	Certificate Number:		
Temperature:	RH %:		
Date of Calibration:	Technician:		
<b>Functional test (incoming inspection)</b>	<b>Incoming</b>	<b>Outgoing</b>	<b>Comments</b>
LCD Pixel and Defects			
Fan Test			
USB Port Test			
SDI Serial Output (AUX Out)			
SDI Input to SFP+ Loop Output Operation			
BNC Input 1 to SFP+ Output 1			
BNC Input 2 to SFP+ Output 2			
BNC Input 3 to SFP+ Output 3			
BNC Input 4 to SFP+ Output 4			
Headphone Functionality			
Ethernet SFP+ IP Video Operation			
10GbE SFP+ 1			
10GbE SFP+ 2			
Ethernet Functionality			

## Test record – video and general performance tests

The following test record applies to all instruments.

**Table 23: PRISM monitor video and general performance test record**

Instrument Serial Number:		Certificate Number:		
Temperature:		RH %:		
Date of Calibration:		Technician:		
<b>Performance test</b>	<b>Minimum</b>	<b>Incoming</b>	<b>Outgoing</b>	<b>Maximum</b>
SDI Input Equalization Range				
SDI In 1 (1.5 Gb/s)	28 dB			
SDI In 2 (1.5 Gb/s)	28 dB			
SDI In 3 (1.5 Gb/s)	28 dB			
SDI In 4 (1.5 Gb/s)	28 dB			
SDI In 1 (3 Gb/s)	28 dB			
SDI In 2 (3 Gb/s)	28 dB			
SDI In 3 (3 Gb/s)	28 dB			
SDI In 4 (3 Gb/s)	28 dB			
SDI Serial Output Amplitude (AUX Out)				
SDI Out (1.5 Gb/s)	NA			NA
SDI Out (3 Gb/s)	NA			NA

## Functional tests

This section contains functional/operational checks appropriate to an incoming inspection.

The instrument must have been operating for a warm-up period of at least 20 minutes. (See Table 17 on page 9.)

## Required equipment

The following equipment is required to perform the incoming inspection procedure.

**Table 24: Required equipment – functional tests**

Test equipment	Requirements	Example
Video test signal generator	1080p 59.94 3Gb/s HD signals (required for option 3G) <ul style="list-style-type: none"> <li>■ 100% color bars</li> <li>■ 4 CH embedded audio (Group 1)</li> </ul>	Tektronix TG8000 with HD3G7 module or equivalent (TG700, SPG8000 or SPG8000A)
	1080i 59.94 1.5 Gb/s HD signals <ul style="list-style-type: none"> <li>■ 100% color bars</li> <li>■ 10-bit shallow ramp</li> <li>■ 100% sweep 1-15 MHz</li> <li>■ 8 CH embedded audio (Groups 1&amp;2)</li> <li>■ Audio channels 1-8, set frequency to 1 kHz and amplitude to -20 dBFS</li> </ul>	Tektronix TG8000 with SDI7 or HDVG7 modules or equivalent (TG700, SPG8000 or SPG8000A)
HD-BNC to BNC adapter or cable	75 $\Omega$	
75 $\Omega$ coaxial cables (2 required)	RG-6 type coaxial cable with male BNC connectors, 1 to 2 meters long, suitable for use to 1500 MHz.	Belden 8281 or 1694A. Tektronix part numbers 012-0159-00 or 012-0159-01.
Precision 75 $\Omega$ terminator	75 $\Omega$ $\pm$ 0.025% to 6 MHz, male BNC connector	Tektronix part number 011-0102-03 or Canare BCP-TA
SFP+ dual output SDI module		
SFP+ 10GbE module	Customer owned source of 2022-6 IP video must be available	Alternatively, use an Embrionix EB22HDRT-LM-0513-02 SDI to 2022-6 encoder
Waveform Monitor	1.5 / 3 Gb/s input with CRC checking	Tektronix WFM8300 or equivalent (WFM7200, WFM5200, WFM2200A, WFM2300)
Voltmeter	0 V to 5 V range, 2% or better accuracy.	Fluke model 87
Computer and Ethernet Cable	Computer with web browser and Ethernet port; appropriate length Ethernet cable (8 conductor RJ-45 terminations, either straight through or crossover).	Used for Ethernet test.
Mouse with USB interface	Any standard USB computer mouse	

## Functional test procedures

Use the following procedures to check the basic functionality of the PRISM monitor and installed options. In general, you should test in the order presented, since later tests might depend on items checked in the earlier tests.

### Instrument power-on

1. For the MPI, connect the DC Output of the external power supply to the rear panel DC input on the instrument.
2. Connect one end of the AC line cord to either the power supply of the MPI or the back panel AC input of the MPX.
3. Connect the other end of the AC line cord to a 100 to 240 VAC source.
4. Press the **Power** button to turn the instrument on.
5. After about 45 seconds, the instrument should be fully booted.

### Restore the factory presets

1. Touch the **Settings** icon to open the Settings menu.
2. Touch **Presets**, and then touch **Recall Factory Preset**.
3. Touch **OK** in the confirmation dialog to confirm the recall.
4. Touch the **X** or **Home** icon to close the Settings menu.

### LCD pixel defects test (MPI only)

1. Set the TG8000 video test signal generator to output a 3 Gb/s 3G Level A, 1080p 59.94, YCbCr 10 bit, Flat White test signal:
  - a. Press the **MODULE** button until SDI7 OR HDVG7 appears.
  - b. Press the **FORMAT** button until 1080 59.94p appears, and then press **ENTER**.
  - c. Press **BACK** (TG8000) or **CANCEL** (TG700).
  - d. Repeatedly press the **FLAT FIELD** button until **100% Flat Field (White)** appears, then press **ENTER**.
2. Connect the SDI signal output from the TG8000 generator to the **SDI IN 1** input of the PRISM monitor.
3. On the PRISM monitor, double tap the **Picture** application in tile 3 to display the application full screen.
4. Count any pixels stuck low (not white).
5. While the screen is all white, inspect for visible defects that exceed the limits. (See Table 25.)

---

**NOTE.** Inspection should be done from 18" away from the display, under normal room lighting. Loose dust on the front of the screen does not constitute a defect.

---

6. Set the TG8000 video test signal generator to output a 3 Gb/s 3G Level A, 1080p 59.94, YCbCr 10 bit, Flat Black test signal:
  - a. Repeatedly press the **FLAT FIELD** button until **0% Flat Field (Black)** appears.
  - b. Press **ENTER** to confirm the selection.
7. Count any pixels stuck high (not black).
8. Check that the total number of pixels counted in steps 4 and 7 is less than six.
9. Record **Pass** or **Fail** in the test record for **LCD Pixel and Defects**.
10. On the PRISM monitor, double tap the **Picture** tile to return to the 4-tile display.

Table 25: LCD visual defects

Defect type <sup>1</sup>	Allowable defect	
Circular Defect <sup>2</sup>	>0.020"	None
	0.015" to 0.020"	Maximum of two allowed within a 2l circle
Black Defect (opaque)	>0.005"	None
Linear Defect (Scratches)	>0.004" width	None
	0.003" to 0.004" wide	Max length 0.500"
	0.0021" to 0.0030" wide	Max length 1.000"
	0.0010" to 0.0020" wide	Max length 1.500"
Stains, discolorations, streaks, scuffs	Allowed if they fade when backlit	

<sup>1</sup> Defects should be visible from 18" under normal lighting. If you have to hold it closer or use special lighting to see the defect, it is not a rejectable defect.


<sup>2</sup> For irregular defects, use (LengthxWidth)/2.

- Fan test**
1. You should be able to hear the fans and feel air coming out the back of the instrument. At low temperatures the fans will turn slowly and be very quiet.
  2. Record **Pass** or **Fail** in the test record for **Fan Test**.

- USB port test**
1. On the PRISM monitor, plug a USB mouse into any one of the available USB ports and verify that the mouse controls the cursor on the display.
  2. Repeat for each USB port.
  3. Record **Pass** or **Fail** in the test record for **USB Port Test**.



### SDI input / Loop output operation test

1. Set the TG8000 video test generator to output a 3 Gb/s 3G Level A, 1080p 59.94, YCbCr 10 bit, 100% Color Bars, Group 1 embedded audio on SDI test signal:
  - a. Press the **MODULE** button until SDI7 or HDVG7 appears.
  - b. Press the **FORMAT** button until 1080 59.94p appears and then press **ENTER**.
  - c. Press **BACK** (TG8000) or **CANCEL** (TG700).
  - d. Press the up/down arrows until Audio (Embedded) appears. If Group 1 is not indicated then press the right/left arrows until Group 1 appears. Press **ENTER**.
  - e. Use the right/left arrows until Status: Enable appears, then press **ENTER**.
  - f. Repeatedly press the **COLOR BAR** button until 100% Color Bars appears.
2. Connect the color bar signal from the TG8000 generator to the **SDI IN 1** input on the PRISM monitor.
3. Connect the **SDI OUT** on the PRISM monitor to the SDI input of a waveform monitor that has CRC check capability.
4. On the PRISM monitor, a 4-tile display consisting of the Waveform, Video Session, Picture, and Audio applications should appear. Check that:
  - a. The Waveform application shows a stable YPbPr parade, with all three components present and each being 700 mVp-p.
  - b. The Video Session application indicates  for CRC STATUS.
  - c. The Picture application shows a full field color bar waveform.
  - d. The Audio application shows level bars for Channels 1-4 (nominally at -20 dBFS).
  - e. The Status Bar **INPUT** readout indicates the correct signal format coming from the TG8000 generator.
5. On the waveform monitor, check that a color bar signal is being received and that no EDH/CRC errors are present.
6. Record **Pass** or **Fail** in the test record for **SDI Serial Output (AUX Out)**.
7. On the PRISM monitor, move the cable from SDI OUT to the **SDI SFP+ 1** connector using an HDBNC adapter or cable.
8. Repeat steps 4 and 5 above.
9. Record **Pass** or **Fail** in the test record for **BNC Input 1 to SFP+ Output 1**.

10. On the PRISM monitor:
  - a. Move the cable from SDI IN 1 to **SDI IN 2**.
  - b. Move the cable from SDI SFP+ 1 to **SDI SFP+ 2**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 2** to view the SDI IN 2 input.
  - e. Touch anywhere outside the Input menu to close the menu.
11. Repeat steps 4 and 5 above.
12. Record **Pass** or **Fail** in the test record for **BNC Input 2 to SFP+ Output 2**.
13. On the PRISM monitor:
  - a. Move the cable from SDI IN 2 to **SDI IN 3**.
  - b. Move the cable from SDI SFP+ 2 to **SDI SFP+ 3**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 3** to view the SDI IN 3 input.
  - e. Touch anywhere outside the Input menu to close the menu.
14. Repeat steps 4 and 5 above.
15. Record **Pass** or **Fail** in the test record for **BNC Input 3 to SFP+ Output 3**.
16. On the PRISM monitor:
  - a. Move the cable from SDI IN 3 to **SDI IN 4**.
  - b. Move the cable from SDI SFP+ 3 to **SDI SFP+ 4**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 4** to view the SDI IN 4 input.
  - e. Touch anywhere outside the Input menu to close the menu.
17. Repeat steps 4 and 5 above.
18. Record **Pass** or **Fail** in the test record for **BNC Input 4 to SFP+ Output 4**.

**Headphone functional test**

1. Set the TG8000 video test generator to output a 3 Gb/s 3G Level A, 1080p 59.94, 100% Color Bars, Group 1 embedded audio on SDI test signal:
  - a. Press the **MODULE** button until SDI7 or HDVG7 appears.
  - b. Press the **FORMAT** button until 1080 59.94p appears, and then press **ENTER**.
  - c. Press **BACK** (TG8000) or **CANCEL** (TG700).
  - d. Press the up/down arrows until **Audio (Embedded)** appears. If Group 1 is not indicated, then press the right/left arrows until Group 1 appears. Press **ENTER**.
  - e. Use the right/left arrows until **Status: Enable** appears, and then press **ENTER**.
  - f. Press the up/down arrows until **Channel 1** is selected, and then press **ENTER**.
  - g. Press the up/down arrow until the Frequency setting is shown, and then select 1000.0 Hz.
  - h. Press the up/down arrow until the **Amplitude** selection is active, and then select -20 dBFS.
2. Connect the color bar signal from the TG8000 generator to the **SDI IN 1** input on the PRISM monitor.
3. Plug in a pair of headphones into either the 3.5 mm line out port on the back of the instrument, the 1/4" headphone jack on the front of the MPX, or the 3.5 mm headphone jack on the MPI rack mount option.

4. Listen for a 1 kHz tone on both channels. If necessary, adjust the volume as follows:
  - a. Touch the **Volume** icon to open the audio controls.
  - b. Touch and move the slider control to adjust the volume.



- c. Touch anywhere on the screen to close the audio controls.
5. Record **Pass** or **Fail** in the test record for **Headphone Functionality**.

### Ethernet SFP+ IP video operation test

1. On the PRISM monitor, install the 10GbE SFP+ module (if a customer owned source of 2022-6 IP video is available) or an SDI-to-2022-6 converter module into the **10GbE SFP+ 1** port.
2. Apply an appropriate video source to the 10GbE SFP+ module.
3. On the PRISM monitor, select to display the IP input:
  - a. Touch the **Settings** icon to open the Settings menu.
  - b. Touch **Inputs** to open the Inputs submenu.
  - c. Touch **SDI-In 1** to open the SDI-In 1 submenu.
  - d. Touch **IP** to configure the SDI-In 1 input for an IP stream.
  - e. For each of the IP input parameters (Source Address, Source Port, Destination Address, Destination Port), touch **Unmasked** to toggle the setting to **Masked** as shown below.

The screenshot shows the 'Settings > Inputs' screen for 'SDI-In 1'. It features a top bar with a back arrow, the title 'Settings > Inputs', and icons for refresh and close. Below the title bar, there are two main sections: 'Name' (SDI-In 1) and a selection area with 'IP' and 'SDI' buttons. Under 'IP', there are two sub-options: 'ST2022-6' (selected) and 'ASPEN'. Below these is a toggle for 'ST2022-7 Seamless Switching' which is currently 'Disabled'. The 'PATH1' section contains four rows of input fields: 'Source Address', 'Source Port', 'Destination Address', and 'Destination Port'. Each row has a corresponding 'Unmasked' toggle switch. At the bottom of the screen are 'Cancel' and 'Save' buttons.

- f. Touch **Save** to confirm the changes.
- g. Touch the **X** or **Home** icon to close the Settings menu.
4. Verify that the displayed format and picture match the applied video signal.
5. Record **Pass** or **Fail** in the test record for **10GbE SFP+ 1**.
6. Repeat steps 1 and 2 for the 10GbE SFP+ 2 port.
7. Verify that the displayed format and picture match the applied video signal.
8. Record **Pass** or **Fail** in the test record for **10GbE SFP+ 2**.

### Ethernet test

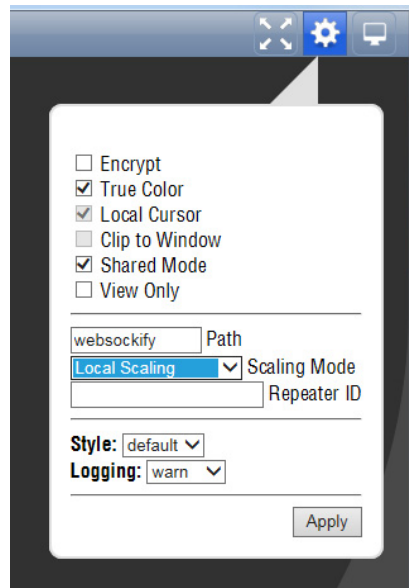
1. Connect the instrument's Ethernet port to a computer that has a web browser installed. You can use a Local Area Network (LAN) to interconnect the instrument and computer, or directly connect the instrument and computer Ethernet ports. A LAN interconnection is recommended as this simplifies setting the IP address.
2. On the PRISM monitor, open the **Settings > Network** page to view the **Control IP Port** address of the instrument to which you are going to connect.
3. Open a Web browser on the computer.
4. Enter the IP address of the PRISM monitor into the Web browser address line as shown below, adding **:6080/vnc.html** to the end of the address. The default IP address of the instrument is 192.168.1.2. Note that leading zeros are deleted in the address line.

`http://192.168.1.2:6080/vnc.html`

5. This opens a login Web page as shown below.



6. In the Control bar, click the **Settings** icon to open the Settings dialog.
7. In the Settings dialog, use the Scaling Mode drop-down list to select **Local Scaling**, and then click **Apply**.

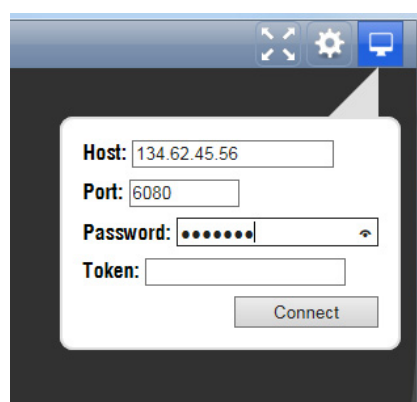


8. In the Control bar, click the **Connect** icon to open the Connect dialog.
9. In the Settings dialog, enter the default password **PRISM** (case sensitive), and then click **Connect**.

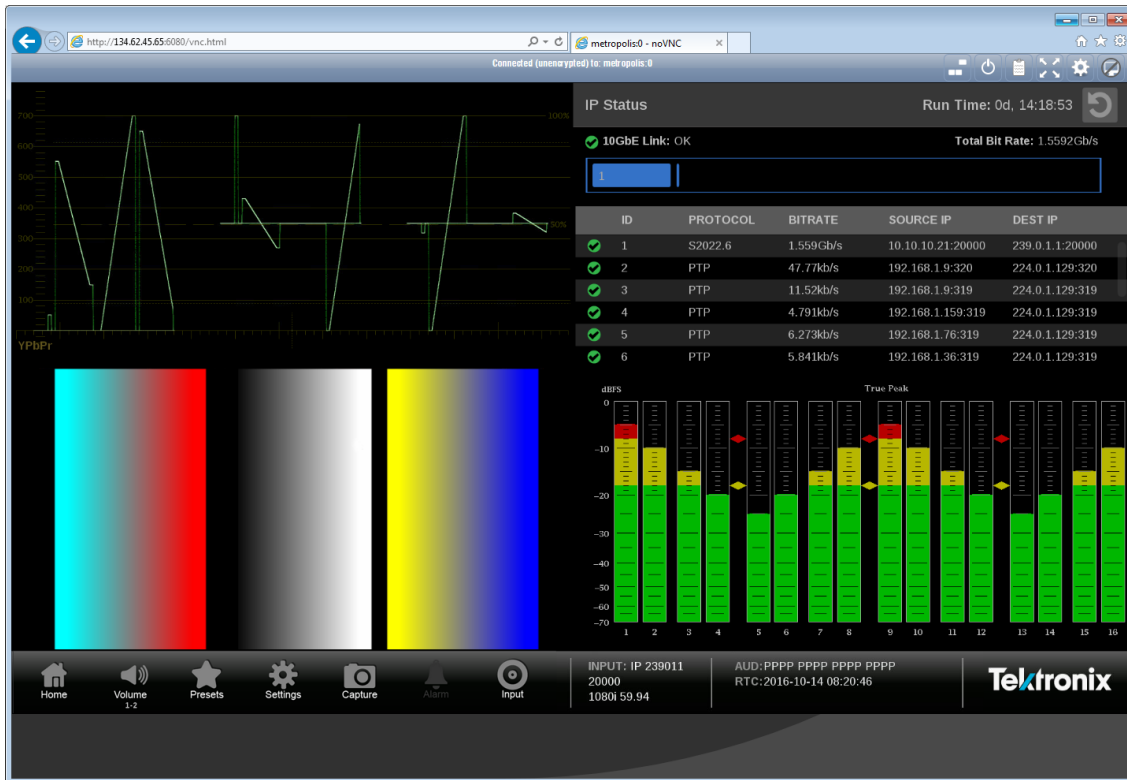
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**NOTE.** You can use the *WEB REMOTE* tab of the *PRISM Settings > Network* menu to change the default password for the remote Web connection.

---



10. The web browser connects to the instrument with the browser display appearing exactly like the instrument display as shown below.
11. Record **Pass** or **Fail** in the test record for **Ethernet Functionality**.





# Video and general performance tests

This performance verification includes procedures that verify standard and option-equipped instruments.

## Required equipment

Table 26: Required test equipment – video and general performance tests

Test equipment	Requirements	Example
Video test signal generator	1080p 59.94 3Gb/s HD signals <ul style="list-style-type: none"> <li>■ 100% color bars</li> <li>■ SDI Matrix Split Field Pathological Signal</li> </ul>	Tektronix TG700 or TG8000 with HD3G7 module
	1080i 59.94 1.5Gb/s HD signals <ul style="list-style-type: none"> <li>■ 100% color bars</li> <li>■ SDI Matrix Split Field Pathological Signal</li> </ul>	Tektronix TG700 or TG8000 with HDVG7 module
HD “Cable Clone” cable simulator	Simulate 0 to 150 meters of Belden 8281 equivalent in 10 meter steps, 300 kHz to 1.5 GHz range.	Faraday FFC010A075, FFC020A075, FFC040A075, and FFC080A075 (available as a boxed set of 4).
3G “Cable Clone” cable simulator	Simulate 0 to 150 meters of Belden 1694A equivalent in 10 meter steps, 0.3 MHz to 3 GHz range.	Faraday FFE010D075, FFE020D075, FFE040D075, and FFE080D075 (available as a boxed set of 4).
75 $\Omega$ coaxial cables (3 required)	RG-6 type coaxial cable with male BNC connectors, 1 to 2 meters long, suitable for use to 1500 MHz.	Belden 8281 or 1694A. Tektronix part numbers 012-0159-00 or 012-0159-01.
Test Oscilloscope	>12 GHz bandwidth with 75 $\Omega$ input, >20 dB input return loss to 12 GHz, $\pm 3.5\%$ or better vertical gain accuracy.	Tektronix DPO72004C with TCA75 Impedance Conversion Adapter.

## General performance tests

The following procedures apply to all instruments except where labeled for specific models. Do all tests except those that exclude your model.

### Instrument power-on and Factory preset recall

1. Connect the DC Output of the external power supply to the rear panel DC input on the instrument. Connect the AC line cord to the power supply and to a 100 to 240 VAC source.
2. Press the **Power** icon to turn the instrument on.
3. After about 45 seconds, the instrument should be fully booted.
4. Recall the Factory preset. (See page 15, *Restore the factory presets.*)
5. Allow at least 20 minutes for the PRISM monitor to warm up before beginning the following procedures.

### SDI input equalization range

This test uses a cable clone to simulate cable. This verifies that the PRISM monitor can receive signals that have passed through long cables.

#### 1.5 Gb/s checks.


1. Connect the TG8000 SDI7 or HDVG7 SIGNAL 1 output to the **SDI IN 1** input.
2. Set the HDVG7 to 1080 59.94i format. Select the “100% Color Bars” signal.
3. On the PRISM monitor, a Color Bar signal should be displayed.
4. Disconnect the SDI7 or HDVG7 from the SDI IN 1 input.
5. Connect the cable from the SDI7 or HDVG7 to the 80 m HD Cable Clone Input (FFC model, Belden 8281, 300 kHz to 1.5 GHz).
6. Using a 75  $\Omega$  female-to-female BNC adapter and a second cable, connect the Cable Clone Output to the SDI IN 1 input.

---

**NOTE.** *The 75  $\Omega$  BNC adapter should be included with the cable clone set.*

---

7. Select the SDI Matrix signal from the TG8000 SDI7 or HDVG7 by repeatedly pressing the SDI button until **SDI Matrix** is displayed and then press **ENTER**.
8. You should see a stable picture and waveform on the PRISM monitor display. The Y Chan and C Chan CRC Error Status on the Video Session screen should both read **OK**.
9. Connect additional sections of the HD Cable Clone into the signal path to find the longest length of “cable” that does not generate any CRC errors in a 10-second period.

10. The HD Cable Clone set described in the Required Equipment List simulates up to 150 m of Belden 8281 when all four sections are connected. If your PRISM monitor does not appear to show CRC errors at this simulated cable length, reset the CRC Err Secs readout to zero by touching the  icon in the Video Session application display.
11. After 60 seconds, check the CRC Err Secs readouts. A “0” reading for both CRCs indicates that the Cable Accommodation range is  $\geq 150$  m of Belden 8281.

---

**NOTE.** *If additional HD Cable Clone sections are available, the test may be continued to find the point where CRC errors occur.*

---

12. Add the HD Cable Clone section lengths to get the total length in meters of Belden 8281 cable. Divide by 4 to calculate attenuation in dB at 750 MHz.
13. Record the calculated value in the test record for **SDI In 1 (1.5 Gb/s)**. Acceptable performance is 28 dB or greater.
14. On the PRISM monitor:
  - a. Remove the HD Cable Clone sections from the signal input.
  - b. Move the cable from SDI IN 1 to **SDI IN 2**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 2** to view the SDI IN 2 input.
  - e. Touch anywhere outside the Input menu to close the menu.
15. Repeat steps 2 through 12 to test the SDI In 2 input.
16. Record the calculated value in the test record for **SDI In 2 (1.5 Gb/s)**. Acceptable performance is 28 dB or greater.
17. On the PRISM monitor:
  - a. Remove the HD Cable Clone sections from the signal input.
  - b. Move the cable from SDI IN 2 to **SDI IN 3**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 3** to view the SDI IN 3 input.
  - e. Touch anywhere outside the Input menu to close the menu.
18. Repeat steps 2 through 12 to test the SDI In 3 input.
19. Record the calculated value in the test record for **SDI In 3 (1.5 Gb/s)**. Acceptable performance is 28 dB or greater.

20. On the PRISM monitor:
  - a. Remove the HD Cable Clone sections from the signal input.
  - b. Move the cable from SDI IN 3 to **SDI IN 4**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 4** to view the SDI IN 4 input.
  - e. Touch anywhere outside the Input menu to close the menu.
21. Repeat steps 2 through 12 to test the SDI In 4 input.
22. Record the calculated value in the test record for **SDI In 4 (1.5 Gb/s)**. Acceptable performance is 28 dB or greater.

### 3 Gb/s checks.

1. On the PRISM monitor:
  - a. Remove the HD Cable Clone sections from the signal input.
  - b. Move the cable from SDI IN 4 to **SDI IN 1**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 1** to view the SDI IN 1 input.
  - e. Touch anywhere outside the Input menu to close the menu.
2. Connect the TG8000 SDI7 or HD3G7 SIGNAL 1 output to the **SDI IN 1** input.
3. Set the SDI7 or HD3G7 to 1080 59.94p format. Select the “100% Color Bars” signal.
4. On the PRISM monitor, a Color Bar signal should be displayed.
5. Disconnect the SDI7 or HD3G7 from the SDI IN 1 input.
6. Connect the cable from the SDI7 or HD3G7 to the 80 m 3G Cable Clone Input (FFE model, Belden 1694A, 0.3 MHz to 3 GHz).
7. Using a 75  $\Omega$  female-to-female BNC adapter and a second cable, connect the 3G Cable Clone Output to the **SDI IN 1** input.

---

**NOTE.** *The 75  $\Omega$  BNC adapter should be included with the cable clone set.*

---

8. Select the SDI Matrix signal from the TG8000 SDI7 or HD3G7 by repeatedly pressing the SDI button until **SDI Matrix** is displayed and then press **ENTER**.
9. You should see a stable picture and waveform on the PRISM monitor display. The Y Chan and C Chan CRC Error Status on the Video Session screen should both read OK.

10. Connect additional sections of the 3G Cable Clone into the signal path to find the longest length of “cable” that does not generate any CRC errors in a 10-second period.
11. The 3G Cable Clone set described in the Required Equipment List simulates up to 150 m of Belden 1694A when all four sections are connected. If your instrument does not appear to show CRC errors at this simulated cable length, reset the CRC Err Secs readout to zero (refresh the active display by pressing a different display icon and then returning to the current display).
12. After 60 seconds, check the CRC Err Secs readouts. A “0” reading for both CRCs indicates that the Cable Accommodation range is  $\geq 150$  m of Belden 1694A.

---

**NOTE.** *If additional HD Cable Clone sections are available, the test may be continued to find the point where CRC errors occur.*

---

13. Add the 3G Cable Clone section lengths to get the total length in meters of Belden 1694A cable. Divide by 4 to calculate attenuation in dB at 1500 MHz.
14. Record the calculated value in the test record for **SDI In 1 (3 Gb/s)**. Acceptable performance is 28 dB or greater.
15. On the PRISM monitor:
  - a. Remove the 3G Cable Clone sections from the signal input.
  - b. Move the cable from SDI IN 1 to **SDI IN 2**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 2** to view the SDI IN 2 input.
  - e. Touch anywhere outside the Input menu to close the menu.
16. Repeat steps 3 through 13 to test the SDI In 2 input.
17. Record the calculated value in the test record for **SDI In 2 (3 Gb/s)**. Acceptable performance is 28 dB or greater.
18. On the PRISM monitor:
  - a. Remove the 3G Cable Clone sections from the signal input.
  - b. Move the cable from SDI IN 2 to **SDI IN 3**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 3** to view the SDI IN 3 input.
  - e. Touch anywhere outside the Input menu to close the menu.

19. Repeat steps 3 through 13 to test the SDI In 3 input.
20. Record the calculated value in the test record for **SDI In 3 (3 Gb/s)**.  
Acceptable performance is 28 dB or greater.
21. On the PRISM monitor:
  - a. Remove the 3G Cable Clone sections from the signal input.
  - b. Move the cable from SDI IN 3 to **SDI IN 4**.
  - c. Touch the **Input** icon to open the Input menu.
  - d. Touch **SDI-In 4** to view the SDI IN 4 input.
  - e. Touch anywhere outside the Input menu to close the menu.
22. Repeat steps 3 through 13 to test the SDI In 4 input.
23. Record the calculated value in the test record for **SDI In 4 (3 Gb/s)**.  
Acceptable performance is 28 dB or greater.

**SDI serial output amplitude  
(AUX Out)**

This test measures the SDI Output signal amplitudes.

All instruments have an SDI OUT signal output on the rear panel. The signal output is equivalent to the selected input.

**Serial output check (all models).**

1. Set the PRISM monitor back to the Factory Preset. (See page 15, *Restore the factory presets.*)
2. Connect the TG8000 SDI7 SIGNAL 1 output to the **SDI IN 1** input on the PRISM monitor.
3. Set the SDI7 to provide a 1.5 Gb/s 100% color bar signal.
4. On the PRISM monitor, you should see a stable color bar picture and waveform display.
5. Install the TCA75 adapter in the test oscilloscope CH 1 input.

---

**NOTE.** *After connecting the adapter to the oscilloscope, run the Probe Calibration Routine to ensure accurate measurements.*

---

6. Connect the PRISM monitor SDI OUT to the oscilloscope CH 1 input.
7. Set the test oscilloscope as follows:

Parameter	Setting
CH 1 Vertical	Scale: 200 mV/div Position: 0.0 div Offset: 0.0 div Coupling: DC Bandwidth: 50.0 GHz
Horizontal:	Mode: Automatic Scale: 2 ns/div Delay mode: Off
FastAcq:	On/DPX
Trigger: A Event	Trigger Type: Glitch Source: CH 1 Level: 0.0 V Width: 6.7 ns Glitch Width: Greater Than Polarity: Either Trigger if Glitch: Occurs
Trigger: A>B Seq	A only

8. Activate the test oscilloscope “H Bars” cursors. Set Cursor 1 to the middle of the bottom trace and Cursor 2 to the middle of the upper trace. Use the 7 ns wide region that does not contain transitions to align the cursors. Outside of the 7 ns region, check that the eye is open between transitions. See the following figure.

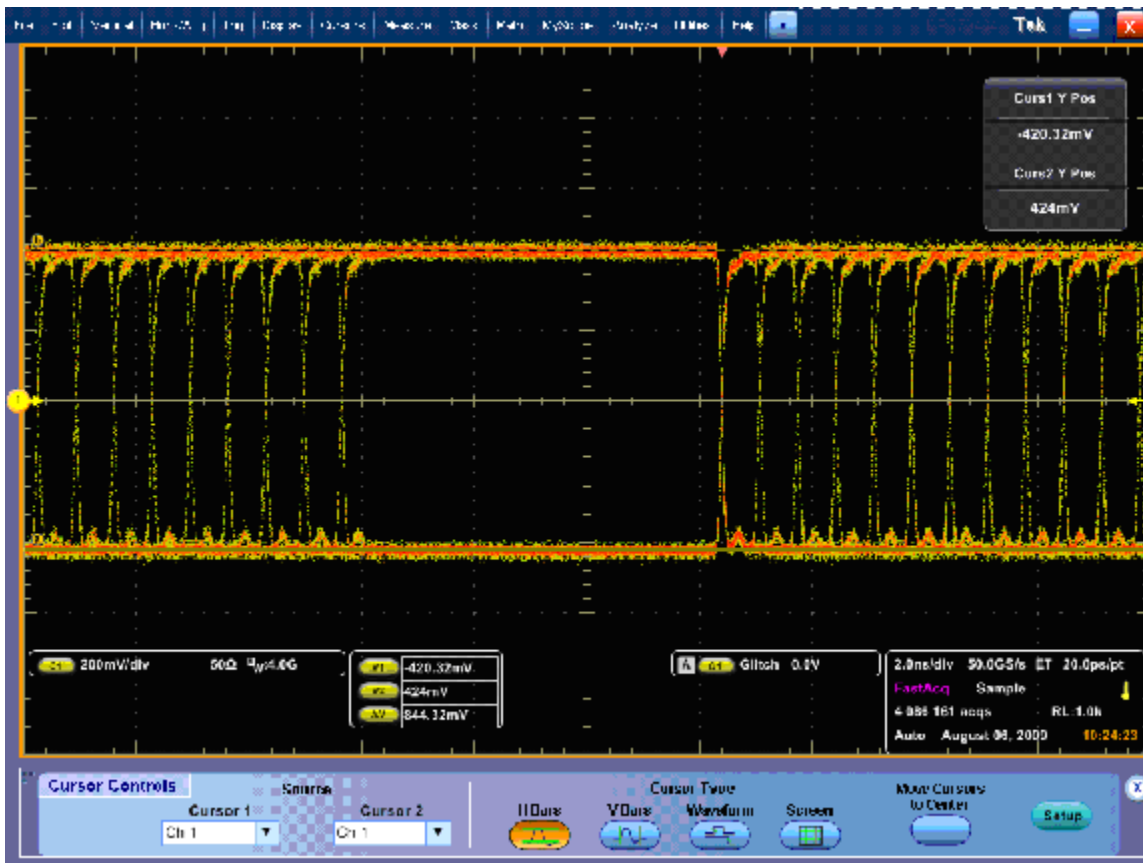


Figure 1: Serial output at 1.5 Gb/s, using Glitch Trigger mode

9. Record the measured amplitude ( $\Delta V$ ) in the test record for **SDI Out (1.5 Gb/s)**.



10. Set the SDI7 to provide a 3 Gb/s 100% color bar signal.
11. Check the signal amplitude, using the 7 ns wide region without transitions. The amplitude should be very similar to that observed in step 8. Outside of the 7 ns region, check that the eye is open between transitions. See the following figure.

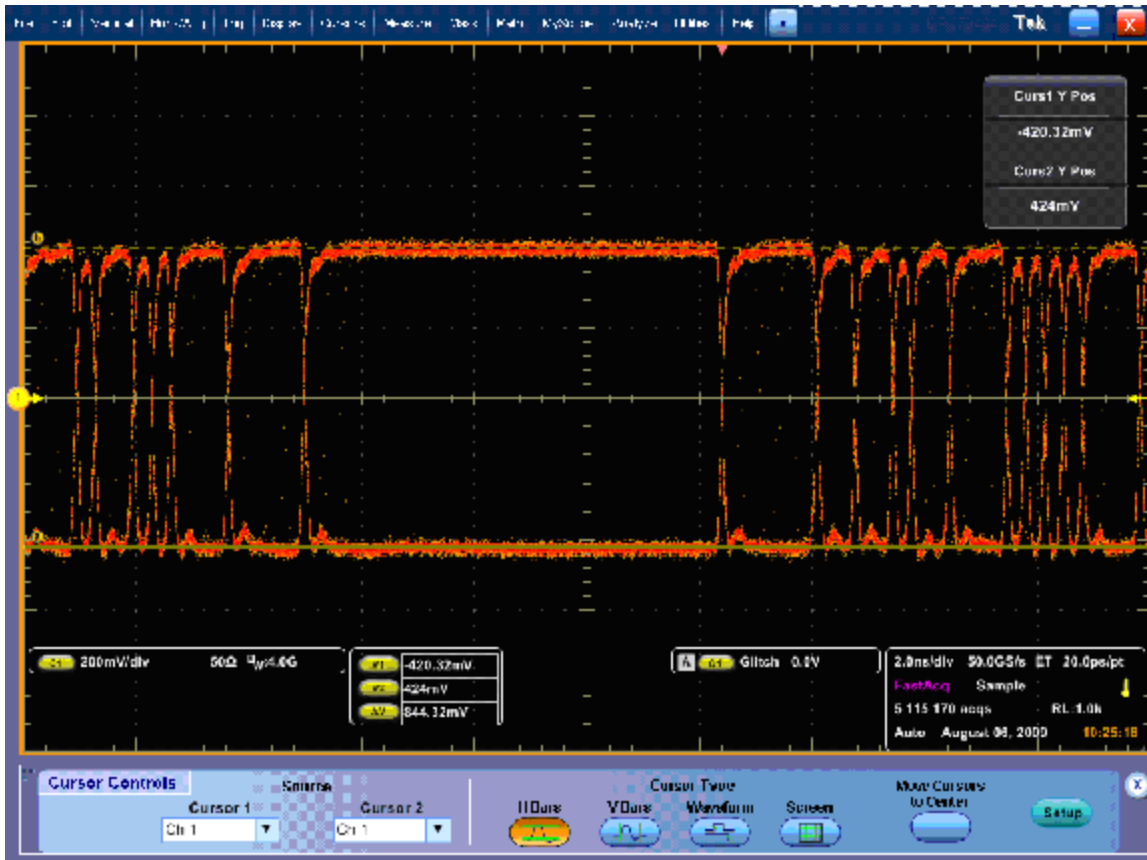


Figure 2: Serial output at 3 Gb/s, using Glitch Trigger mode

12. Record the measured amplitude ( $\Delta V$ ) in the test record for **SDI Out (3 Gb/s)**.