

Agilent U8101A Display Tester

Customizable and Fewer Steps to Test

Data Sheet



Features

- Customizable cards to suit testing needs
- Batch testing of up to five displays simultaneously
- Thumbnail view of test patterns on large color LCD display
- Intuitive GUI and hotkeys for quicker access to a function, slot or set-up file
- Support STANAG B and C formats (Sync on Green)
- Save and recall of up to 16 test configurations
- USB interface for easy uploading and downloading of files to PC
- Optimized to test by today's common HDMI and DVI standards
- Programmable TMDS output signal for flexible DVI and HDMI testing

Agilent U8101A display tester enables testing across a broad range of analog as well as digital CRT and FPD displays, including high-resolution HDTVs. What's more: you can do this more efficiently with the choice to re-configure U8101A's test cards and navigate quickly via front panel hotkeys.

Pay for only what you need, not what you don't

The U8101A lets you choose from its range of cards: TV, VGA, DVI and HDMI. By customizing, you need only one device to test up to five displays simultaneously, hence more value for money. This makes for ideal batch testing in manufacturing, regardless of the mix of displays or test patterns.

Time waits for no man, and the U8101A understands that

From its large color display to intuitive interface and hotkeys, the U8101A is designed with ease of use in mind. Imagine a simpler and quicker pattern-selection process when you can scroll through a list of patterns in thumbnail view. With convenient hotkeys on the front panel, access to frequently used patterns, test sequences and functions becomes a breeze, leading ultimately to shorter test times.



Agilent Technologies

The features you need

Customizable cards, simultaneous batch testing



Figure 1. The U8101A's re-configurable cards enable production testing of multiple displays at the same time.

Larger color LCD display, intuitive GUI

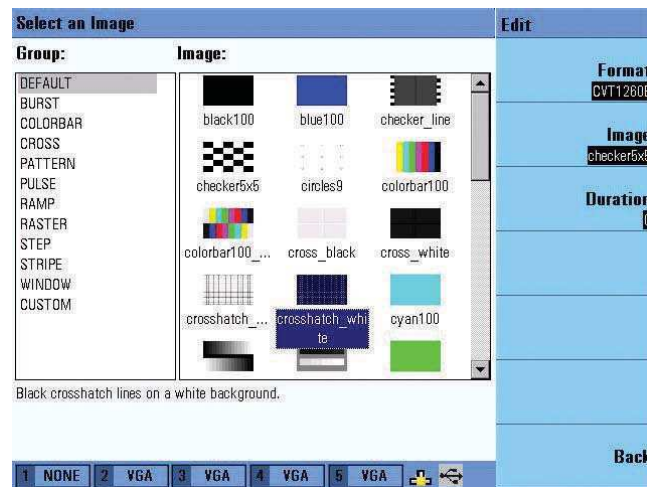


Figure 2. Large color display with intuitive GUI eases tasks such as pattern selection via thumbnail viewing.

Easy upload/download via USB



Figure 3. Availability of common PC interface offers an easy avenue to transfer customized patterns/images, EDID, firmware upgrade and Help files to and from USB flash drive.

The features you need (continued)

Convenient access with hotkeys



Figure 4. Hotkeys provide quick access to frequently used functions, including save/recall of up to 16 test configurations.

Optimized to test today's common HDMI and DVI standards



Figure 5. The U8101A supports common DVI 1.0 and HDMI 1.2 standards, including programmable TMDS output signal.

Take a closer look

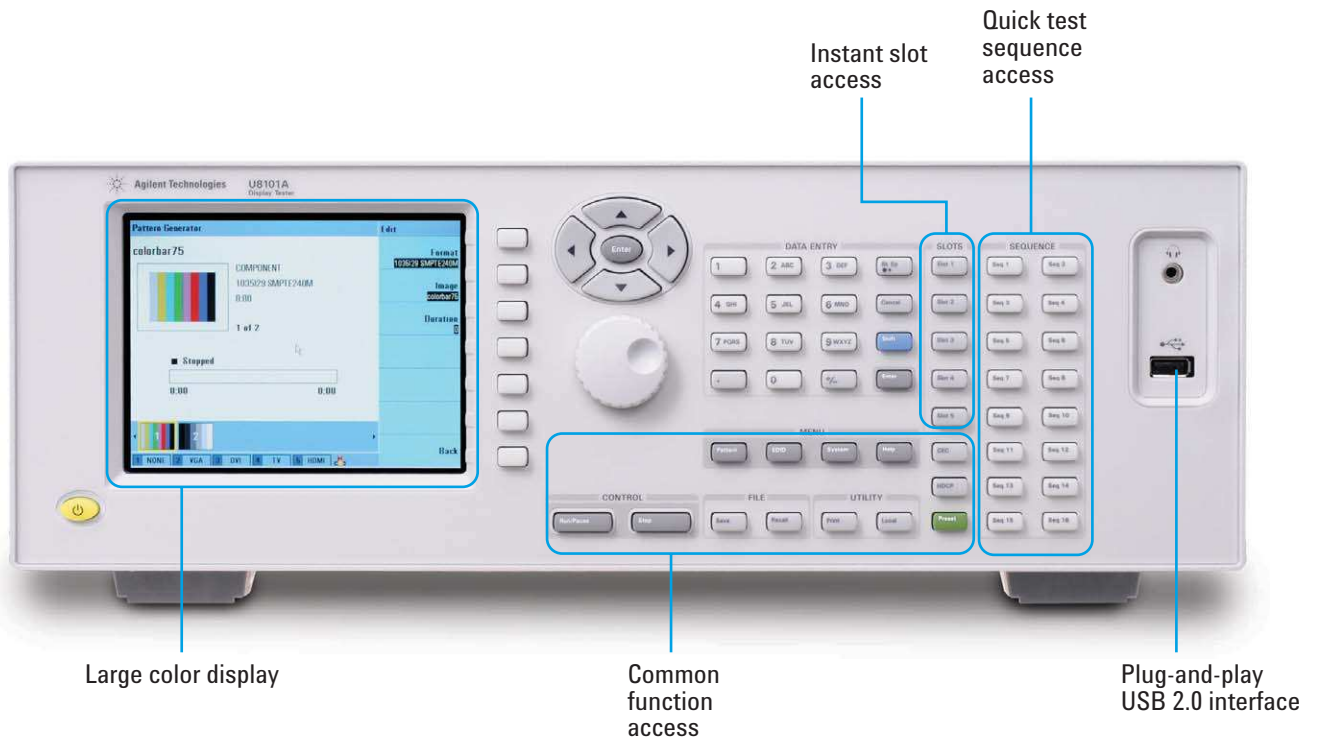


Figure 6. U8101A front panel

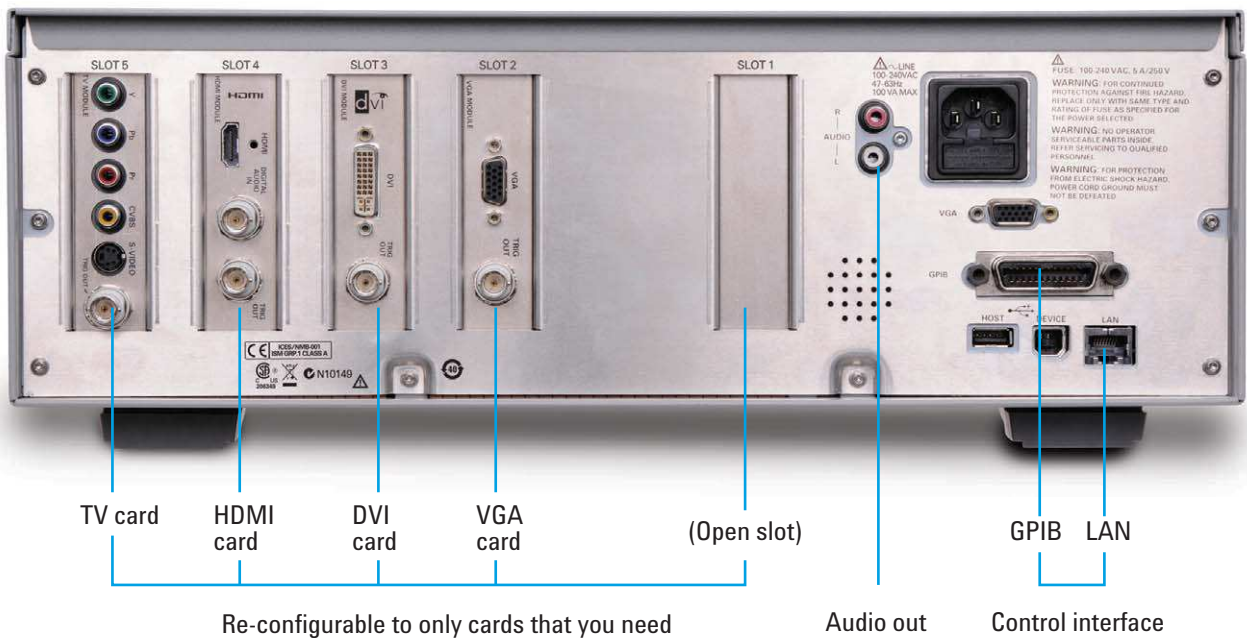


Figure 7. U8101A rear panel

Performance characteristics

TV: Analog Composite

Connector	CVBS (RCA) S-Video (4-pin mini-DIN)
Display format	NTSC, PAL SDTV, EDTV (S-Video only)
Full-scale amplitude	1000 mV \pm 50 mV
Pixel clock	
Pixel rate	24.55 MHz to 29.50 MHz
Step	\pm 10% range at 1% step
Accuracy	50 ppm
Horizontal timing	
Frequency	15.625 kHz to 15.75 kHz
Total pixels	2640 (max)
Blank pixels	0 (min)
Vertical timing	
Frequency	25 Hz to 30 Hz
Total lines	1125 (max)
Blank lines	1 (min)
Scan mode	Progressive and interlaced

TV: Analog Component

Connector	YPbPr (RCA)
Display format	NTSC, PAL, SDTV, EDTV, HDTV, STANAG B & C (Sync on Green)
Full-scale amplitude	Adjustable simultaneously for all three components: 1000 mV \pm 30 mV for Y 350 mV \pm 15 mV for Pb and Pr
Pixel clock	
Pixel rate	24.55 MHz to 74.25 MHz
Step	\pm 10% range at 1% step
Accuracy	50 ppm
Horizontal timing	
Frequency	15.625 kHz to 45 kHz
Total pixels	2640 (max)
Blank pixels	0 (min)
Vertical timing	
Frequency	23 Hz to 60 Hz
Total lines	1125 (max)
Blank lines	1 (min)
Scan mode	Progressive and interlaced

Performance characteristics (continued)

PC: Analog Component

Connector	D-sub 15 (VGA)
Display format	VESA DMT/CVT
Full-scale amplitude	700 mV \pm 35 mV
E-EDID	Read/Write (ver 1.4)
Pixel clock	
Pixel rate	10 MHz to 205 MHz
Step	1% of pixel clock
Accuracy	3 ppm
Horizontal timing	
Total pixels	8192 (max)
Blank pixels	0 (min)
Step	1
Vertical timing	
Total lines	2048 (max)
Blank lines	1 to (Total-1) (min)
Step	1
Scan mode	Progressive and interlaced

DVI

Version	DVI 1.0
Connector	DVI-D (single link)
Display format	VESA DMT/CVT
Encoding	4:4:4 RGB
Bits/component	8
E-EDID	Read/Write (ver 1.4)
HDCP	HDCP 1.0
TMDS output	
Amplitude	76 mVp-p to 1810 mVp-p
Step	6 mV
Pixel clock	
Pixel rate	25 MHz to 165 MHz
Step	1% of pixel clock
Accuracy	3 ppm

Performance characteristics (continued)

Horizontal timing

Total pixels	4095 (max)
Blank pixels	128 (min)
Step	1

Vertical timing

Total lines	2047 (max)
Blank lines	1 (min)
Step	1
Scan mode	Progressive and interlaced

HDMI

Version	HDMI 1.2
Connector	HDMI Type A (single link)

Video

Display format	SDTV, EDTV, HDTV, VESA DMT/CVT
Encoding	4:4:4 RGB, 4:4:4 YCbCr, 4:2:2 YCbCr
Bits/component	8
E-EDID	Read/Write (ver 1.4)
HDCP	HDCP 1.0

TMDS output

Amplitude	76 mVp-p to 1810 mVp-p
Step	6 mV

Pixel clock

Pixel rate	25 MHz to 165 MHz
Step	1% of pixel clock
Accuracy	3 ppm

Horizontal timing

Frequency	126 kHz (max)
Total pixels	4095 (max)
Blank pixels	138 (min)
Step	1

Vertical timing

Frequency	240 Hz (max); supports CEA-861-D standard
Total lines	2047 (max)
Blank lines	1 (min)
Step	1
Scan mode	Progressive and interlaced

External audio input

Connector	S/PDIF (BNC)
Amplitude	As received
Sampling rate	32 kHz to 192 kHz
Input impedance	75 Ω

Performance characteristics (continued)

Audio Out

Channel	2 (L/R)
Connector	RCA
Waveform	Per WinCE sound file
Frequency range	20 Hz to 20 kHz
Output amplitude	0 Vp-p to 2 Vp-p

External Trigger Out

Availability	TV, VGA, DVI and HDMI cards
Connector	BNC
Trigger type	Frame sync, Line sync, Composite sync
Trigger point	Position at any pixel
Trigger delay	In multiples of pixel width
Trigger pulse width	1 pixel-clock cycle
Polarity	Positive-edge and negative-edge
Output level	> 2 V, 5 V TTL compatible

Performance characteristics (continued)

General Specifications

Display	5.7-inch color LCD
Pattern file types	BMP, TIFF
Power supply	100 V to 240 V \pm 10% (47 Hz to 63 Hz)
Power usage	< 100 VA
Surge power	3 kV, 6 A (per IEC61000-4-5)
Ambient temperature	Operating 0 °C to 40 °C; non-operating –40 °C to +70 °C
Humidity	Operating 20% to 80% RH non-condensing; non-operating 5% to 90% RH non-condensing
Operating altitude	Up to 3000 m (10,000 ft)
Internal memory	4 GB flash memory
External memory interface	USB 2.0
Control interface	GPIB, LAN
Programming language	SCPI
Storage interface	USB 2.0
Dimensions (WxHxD)	426.8 mm x 141.4 mm x 405.0 mm
Weight	7.5 kg (15.5 lbs)
Safety and EMC compliance	IEC 61326-2002/EN 61326:1997+A1:1998+A2:2001+A3:2003 CISPR 11:1990/EN55011:1990 Canada: ICES-001:2004 Australia/New Zealand: AS/NZS CISPR11:2004 IEC 61010-1:2001/EN 61010-1:2001 (2nd Edition) Canada: CAN/CSA-C22.2 No. 61010-1-04 USA: ANSI/UL 61010-1:2004
Calibration interval	1 year
Warranty	Standard 1-year, return-to-Agilent warranty and service plan for the U8101A 3 months warranty for standard-shipped accessories (see page 13)

Performance characteristics (continued)

Supported PC Standards

Format	Standard	Resolution	Scan mode	Frame rate (Hz)	Interface sampling frequency (MHz)	Total pixels (Horizontal)	Total lines (Vertical)	Aspect ratio
DMT0685EG	VESA	640x350	P	85.08	31.50	832	445	64:35
DMT0685D	VESA	640x400	P	85.08	31.50	832	445	16:10
DMT0785TX	VESA	720x400	P	85.04	35.50	936	446	9:5
DMT0660	VESA	640x480	P	59.94	25.18	800	525	4:3
DMT0672	VESA	640x480	P	72.81	31.50	832	520	4:3
DMT0675	VESA	640x480	P	75.00	31.50	840	500	4:3
DMT0685	VESA	640x480	P	85.01	36.00	832	509	4:3
DMT0856	VESA	800x600	P	56.25	36.00	1024	625	4:3
DMT0860	VESA	800x600	P	60.32	40.00	1056	628	4:3
DMT0872	VESA	800x600	P	72.19	50.00	1040	666	4:3
DMT0875	VESA	800x600	P	75.00	49.50	1056	625	4:3
DMT0885	VESA	800x600	P	85.06	59.25	1048	631	4:3
DMT0860AD	VESA	848x480	P	60.00	33.75	1088	517	5:3
DMT1060	VESA	1024x768	P	60.00	65.00	1344	806	4:3
DMT1070	VESA	1024x768	P	70.07	75.00	1328	806	4:3
DMT1075	VESA	1024x768	P	75.03	78.75	1312	800	4:3
DMT1085	VESA	1024x768	P	85.00	94.50	1376	808	4:3
DMT1175	VESA	1152x864	P	75.00	108.00	1600	900	4:3
CVT1260E-R	VESA	1280x768	P	60.00	68.25	1440	790	5:3
CVT1260E	VESA	1280x768	P	59.87	79.50	1664	798	5:3
CVT1275E	VESA	1280x768	P	74.89	102.25	1696	805	5:3
CVT1285E	VESA	1280x768	P	84.84	117.50	1712	809	5:3
DMT1260	VESA	1280x960	P	60.00	108.00	1800	1000	4:3
DMT1285	VESA	1280x960	P	85.00	148.50	1728	1011	4:3
DMT1260G	VESA	1280x1024	P	60.02	108.00	1688	1066	4:3
DMT1275G	VESA	1280x1024	P	75.03	135.00	1688	1066	4:3
DMT1285G	VESA	1280x1024	P	85.02	157.50	1728	1072	4:3
DMT1360AB	VESA	1360x768	P	60.02	85.50	1792	795	5:3
CVT1460-R	VESA	1400x1050	P	59.95	101.00	1560	1080	4:3
CVT1475	VESA	1400x1050	P	74.87	156.00	1896	1099	4:3
CVT1485	VESA	1400x1050	P	84.96	179.50	1912	1105	4:3
CVT1460D-R	VESA	1440x900	P	59.90	88.75	1600	926	8:5
CVT1460D	VESA	1440x900	P	59.89	106.50	1904	934	8:5
CVT1485D	VESA	1440x900	P	84.84	157.00	1952	948	8:5
DMT1660	VESA	1600x1200	P	60.00	162.00	2160	1250	4:3
DMT1665	VESA	1600x1200	P	65.00	175.50	2160	1250	4:3
DMT1670	VESA	1600x1200	P	70.00	189.00	2160	1250	4:3
DMT1675	VESA	1600x1200	P	75.00	202.50	2160	1250	4:3
CVT1660D-R	VESA	1680x1050	P	59.88	119.00	1840	1080	8:5
CVT1660D	VESA	1680x1050	P	59.95	146.25	2240	1089	8:5
CVT1675D	VESA	1680x1050	P	74.89	187.00	2272	1099	8:5
CVT1960D-R	VESA	1920x1200	P	59.95	154.00	2080	1235	8:5

Performance characteristics (continued)

Supported Digital TV Standards

Format	Standard	Resolution	Scan mode	Frame rate (Hz)	Interface sampling frequency (MHz)	Total pixels (Horizontal)	Total lines (Vertical)	Aspect ratio
HDTV								
1080I25	SMPTE 274M	1920x1080	I	25.00	74.25	2640	1125	16:9
1080I29	SMPTE 274M	1920x1080	I	29.97	74.18	2200	1125	16:9
1080I30	SMPTE 274M	1920x1080	I	30.00	74.25	2200	1125	16:9
1080P23	SMPTE 274M	1920x1080	P	23.90	74.18	2750	1125	16:9
1080P24	SMPTE 274M	1920x1080	P	24.00	74.25	2750	1125	16:9
1080P25	SMPTE 274M	1920x1080	P	25.00	74.25	2640	1125	16:9
1080P29	SMPTE 274M	1920x1080	P	29.97	74.18	2200	1125	16:9
1080P30	SMPTE 274M	1920x1080	P	30.00	74.25	2200	1125	16:9
1080P50	SMPTE 274M	1920x1080	P	50.00	148.50	2640	1125	16:9
1080P59	SMPTE 274M	1920x1080	P	59.94	148.35	2200	1125	16:9
1080P60	SMPTE 274M	1920x1080	P	60.00	148.50	2200	1125	16:9
1035I29	SMPTE 240M	1920x1035	I	29.97	74.18	2200	148	16:9
1035I30	SMPTE 240M	1920x1035	I	30.00	74.25	2200	148	16:9
720P23	SMPTE 296M	1280x720	P	23.98	74.18	4125	750	16:9
720P24	SMPTE 296M	1280x720	P	24.00	74.25	4125	750	16:9
720P25	SMPTE 296M	1280x720	P	25.00	74.25	3960	750	16:9
720P29	SMPTE 296M	1280x720	P	29.97	74.18	3300	750	16:9
720P30	SMPTE 296M	1280x720	P	30.00	74.25	3300	750	16:9
720P50	SMPTE 296M	1280x720	P	50.00	74.25	1980	750	16:9
720P59	SMPTE 296M	1280x720	P	59.94	74.18	1650	750	16:9
720P60	SMPTE 296M	1280x720	P	60.00	74.25	1650	750	16:9
EDTV								
576P50	ITU 1358	720x576	P	50.00	27.00	864	625	4:3
483P59	SMPTE 293M	720x483	P	59.94	27.00	858	525	4:3
483P60	SMPTE 293M	720x483	P	60.00	27.03	858	525	4:3
SDTV								
480I29S	ITU 601	640x480	I	29.97	12.27	780	525	4:3
480I30S	ITU 601	640x480	I	30.00	12.29	780	525	4:3
480I29	ITU 601	720x480	I	29.97	13.50	858	525	4:3
480I30	ITU 601	720x480	I	30.00	13.51	858	525	4:3
576I25	ITU 601	720x576	I	25.00	13.50	864	625	4:3
576I25S	ITU 601	768x576	I	25.00	14.75	944	625	4:3

Performance characteristics (continued)

Supported Analog TV Standards

Format	Standard	Resolution	Scan mode	Frame rate (Hz)	Interface sampling frequency (MHz)	Total pixels (Horizontal)	Total lines (Vertical)	Subcarrier frequency (MHz)	Aspect ratio
NTSC									
NTSC-4	SMPTE 170M	720x480	I	29.97	13.51	858	525	4.43	4:3
NTSC-N	SMPTE 170M	720x576	I	25.00	13.50	864	625	3.58	4:3
NTSC-M	SMPTE 170M	720x480	I	29.97	13.50	858	525	3.58	4:3
NTSC-J	SMPTE 170M	720x480	I	29.97	13.50	858	525	3.58	4:3
NTSC-S	SMPTE 170M	640x480	I	29.97	12.27	780	525	3.20	4:3
PAL									
PAL-60	ITU 470	720x480	I	30.00	13.51	858	525	4.433	4:3
PAL-B	ITU 470	720x576	I	25.00	13.50	864	625	4.430	4:3
PAL-D	ITU 470	720x576	I	25.00	13.50	864	625	4.430	4:3
PAL-G	ITU 470	720x576	I	25.00	13.50	864	625	4.430	4:3
PAL-H	ITU 470	720x576	I	25.00	13.50	864	625	4.430	4:3
PAL-I	ITU 470	720x576	I	25.00	13.50	864	625	4.430	4:3
PAL-M	ITU 470	720x480	I	29.97	13.51	858	525	3.573	4:3
PAL-N	ITU 470	720x576	I	25.00	13.50	864	625	4.433	4:3
PAL-S	ITU 470	768x576	I	25.00	14.75	944	625	4.800	4:3

Format	Standard	Resolution	Scan mode	Frame rate (Hz)	Interface sampling frequency (MHz)	Line Frequency (kHz)	Total lines (Vertical)	Aspect ratio
STANAG (Sync on Green)								
STANAG B	STANAG B	720x575	I	25.00	13.50	15.625	625	4:3
STANAG C	STANAG C	720x485	I	30.00	13.51	15.750	525	4:3

Supported Test Patterns

Display Format	Burst	Color Bar			Cross	Patterns			Ramp			Step				Window		
		Colorbar100_rp219	colorbar100	colorbar75		halfclock	circles	Pulse	Ramp_modulated_hor	Others	Raster	greyscale16	greyscale8	step5	Others	Stripe	checker_line	wide_window100
HDTV	•	•			•		•	•		•	•		•	•	•	•	•	•
EDTV	•		•	•	•		•	•	•	•	•		•	•	•	•	•	•
SDTV	•		•	•	•		•	•	•	•	•		•	•	•	•	•	•
NTSC	•		•	•	•		•	•	•	•	•		•	•	•	•	•	•
PAL	•				•		•	•	•	•	•		•	•	•	•	•	•
VESA (VGA, SVGA, WVGA, XGA, XGA+, WXGA, SXGA, SXGA+, WSXGA, WSXGA+, UGA, WUXGA)	•		•		•	•	•	•	•	•	•	•	•	•	•	•	•	
STANAG B & C	•		•	•	•		•	•	•	•	•		•	•	•	•	•	•

Ordering information

Model number	Description
U8101A-801	Display test configuration consisting of Main box, TV card, HDMI 1.2 card, DVI card and VGA card
U8101A-802	PC display test configuration consisting of Main box, VGA card and DVI card
U8101A-803	Analog TV display test configuration consisting of Main box and TV card

* For other card configurations, contact your local Agilent office or sales representative.

Standard-shipped accessories

- LAN and USB cables
- Power Cord
- 2x Male RCA to 2x Male RCA (2 m)
- Product Reference CD-ROM (contains U8101A Quick Start Guide and User Guide)
- Quick Start Guide
- Certificate of Calibration

Optional accessories	Description
U9101A-101	Male S-video to Male S-video cable; 2 m; black
U9101A-102	Composite (CVBS) cable: 1x Male RCA to 1x Male RCA cable; 2 m; yellow
U9101A-103	Component (YPbPr) cable: 3x Male RCA to 3x Male RCA cable; 2 m; green, blue and red
U9101A-104	Male DVI to Male DVI cable; 2 m; black
U9101A-105	Male DVI to Male HDMI cable; 2 m; black
U9101A-106	Male HDMI to Male HDMI cable; 2 m; black
U9101A-107	Male VGA to Male VGA cable; 2 m; black
U9101A-108	S/PDIF cable: Male BNC to Male RCA cable; 2 m; black
U9101A-109	Audio cable: 2x Male RCA to 2x Male RCA cable; 2 m; red and white
U9101A-110	Male BNC to Male BNC cable; 75 Ω ; 2 m; black
U9101A-908	Rackmount kit + panel filler

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