

ET-HDMI-TPA-S

11.25 GHz Low Noise HDMI v1.3 Test Adapter Test Set

Features

- 11.25 GHz of test adapter bandwidth exceeds the v1.3 specification single-link bandwidth requirements of 340 MHz (10.2 Gbs)
- Insertion loss less than -3 dB at 11.25 GHz
- Return loss less than -15 dB at 6.75 GHz
- Trace differential impedance 100 +/- 5 ohms (50 +/- 2.5 ohms single ended)
- Calibration traces to zero out test fixture attributes
- Characterization of impedance, reflections, jitter, insertion & return loss, crosstalk, eye patterns, S-parameters, and S4P parameters
- TPA-P and TPA-R plug and receptacle for evaluation of all aspects of HDMI systems and cables

Standards & Compatibility

- HDMI CTS v1.3 certified with backwards support of prior versions
- Supports 1080p 24, 30, 36, and 48-bit (RGB or YCbCr) color depths including next-generation "xVYCC" color space at 1.8 times as many colors as existing HDTV v1.2 signals

General Description

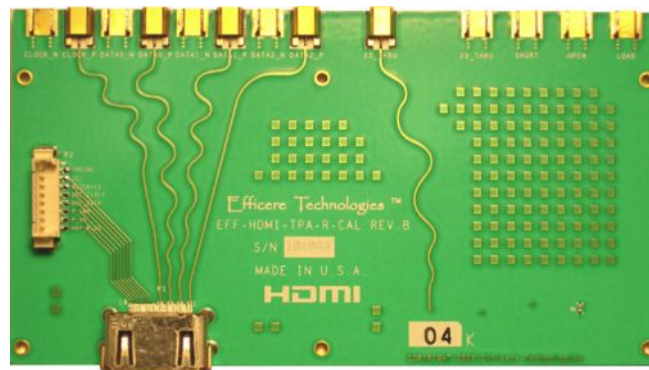
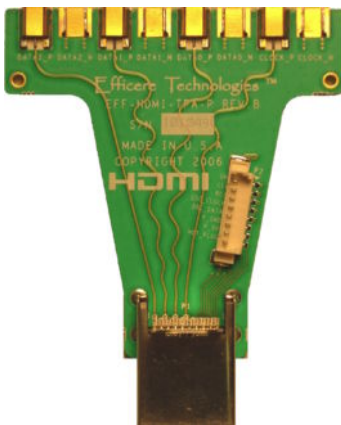
The HDMI-TPA-S test adapter set provides a very high bandwidth, low noise evaluation vehicle that enables high-performance characterization of both plug and receptacle HDMI™ devices with bandwidth greatly exceeding the 340 MHz (10.2 Gbps) of the latest v1.3 HDMI specification supporting 1080p at 30, 36 or 48-bit color.

The plug and receptacle test adapter boards included in this set feature ultra-low insertion and return loss with near-perfect signal integrity to assure that electrical results reflect the device under test, not the fixture.

Efficere's advanced and patented signal integrity design and manufacturing techniques include proprietary electrically Invisible Via™ structures to eliminate the signal disruptions common on most other test adapters.

Efficere Technologies specializes in the design of high-speed products with superior signal integrity that enable our customers to design and characterize their next generation products.

HDMI TPA-P Plug Board, TPA-RC Receptacle/Calibration Board and TPA-E EDID Board



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Product specifications and descriptions in Preliminary data sheets are subject to change at any time without notice.

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ET-HDMI-TPA-S

Specifications (preliminary information)

	Condition*	Test Fixture 2x thru trace	Test Fixture with HDMI connector**
Insertion Loss	-3 dB	11.25 GHz	
Return Loss	-15 dB	6.75 GHz	
VSWR	10 GHz	1.2:1	
Rise Time	10/90	< 35 pS	
Jitter	RMS	< 3 pS	

* All electrical measurements taken with 2" GPPO to SMA transition cable

** HDMI plug and receptacle connectors are supplied by JAE

Test Methodology:

- TDR is Agilent 86100 DCA-J with 54754 sampling head
- VNA is Agilent E8364B 50 GHz 4-port with PLTS software
- RG142 (12") to SMA of 2" cable interfacing to GPPO on test adapter
- Step rise time at end of cable

Note: HDMI plug and receptacle, and the SMA and GPPO connectors are not rated for repetitive make/break connections. Use of this fixture for volume manufacturing should utilize an appropriately rated intermediate contact fixture.

HDMI Connector Pin Assignments

PIN	Signal Assignment
1	TMDS Data 2+
3	TMDS Data 2-
5	TMDS Data 1 Shield
7	TMDS Data 0+
9	TMDS Data 0-
11	TMDS Clock Shield
13	CEC
15	SCL
17	DCC/CEC Ground
19	Hot Plug Detect

PIN	Signal Assignment
2	TMDS Data 2 Shield
4	TMDS Data 1+
6	TMDS Data 1-
8	TMDS Data 0 Shield
10	TMDS Clock +
12	TMDS Clock -
14	Reserved (N.C.)
16	SDA
18	+5v power

Components of ET-HDMI-TPA-S Test Set

ET-HDMI-TPA-S Test Adapter Set includes the following

- 1 ET-HDMI-TPA-P Plug board
- 1 ET-HDMI-TPA-R Receptacle board
- 1 ET-HDMI-TPA-RC Receptacle/Calibration board
- 1 ET-HDMI-TPA-E EDID board with EEPROM
- 29 GPPO to female SMA cables 2 inches long

Optional 6" or 24" GPPO to SMA cables

Resources & References

HDMI <http://www.HDMI.org>

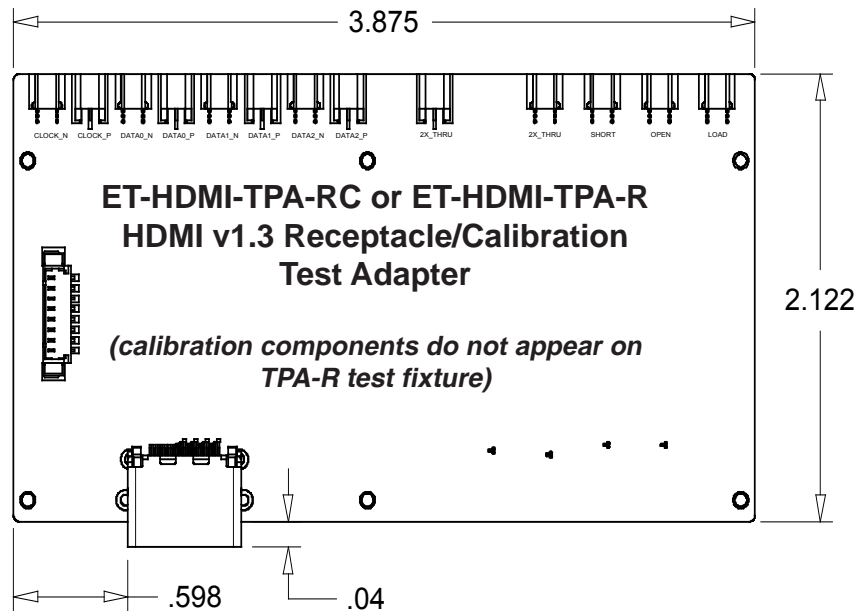
JAE Electronics, Inc. (supplier of HDMI receptacles and plugs) <http://www.jae-connector.com>

Other Efficere Products

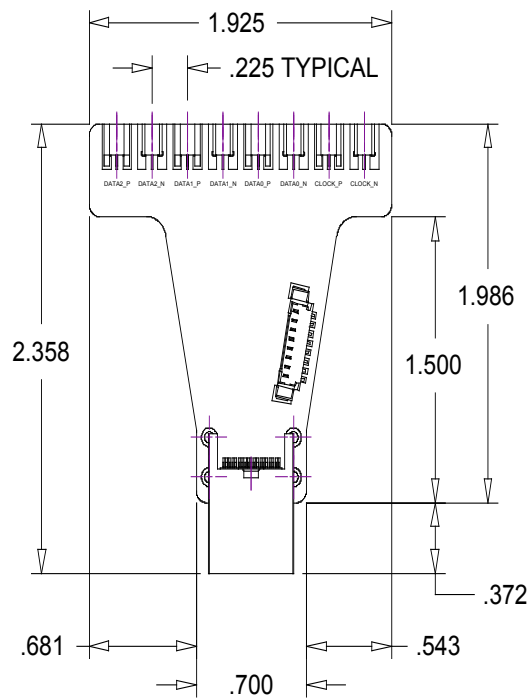
Ask us about our other interconnect test products for SATA, SAS, InfiniBand, SFP/+/, DDR2, FB-DIMM, PCI-Express, HSSDC/DC-2, etc..

ET-HDMI-TPA-S

Physical Dimensions



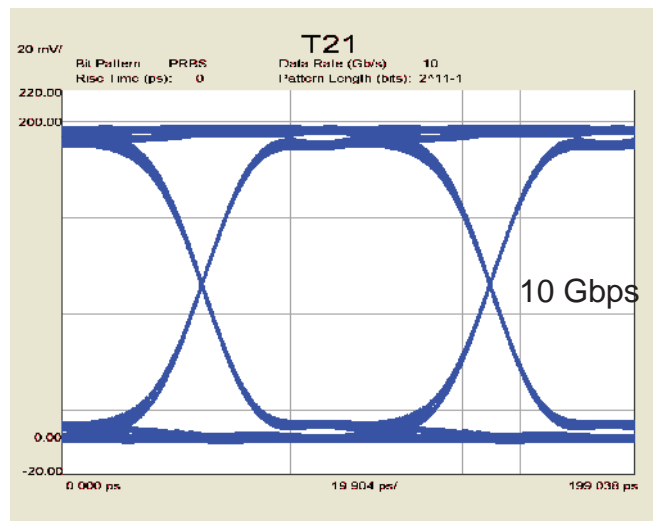
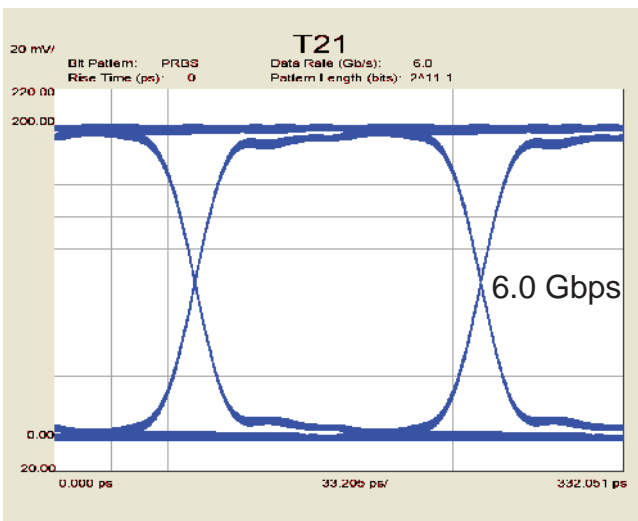
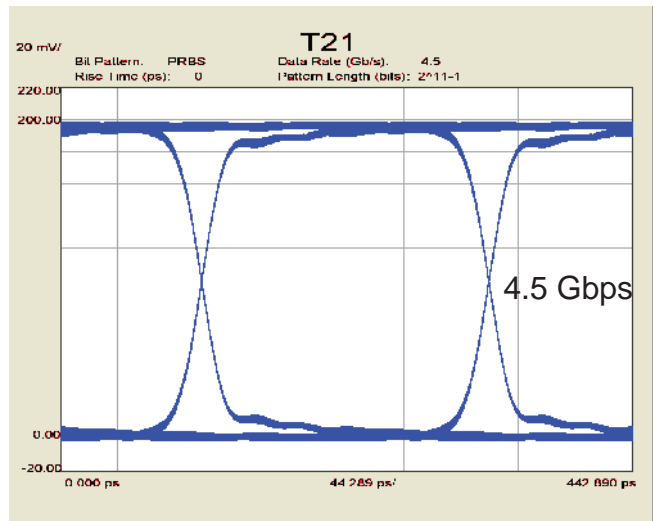
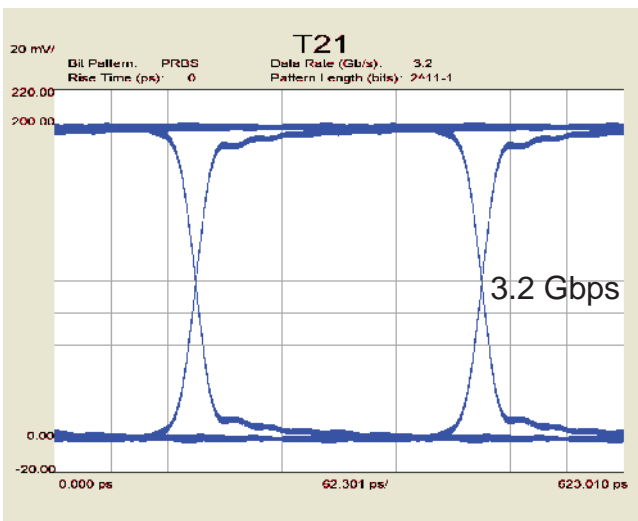
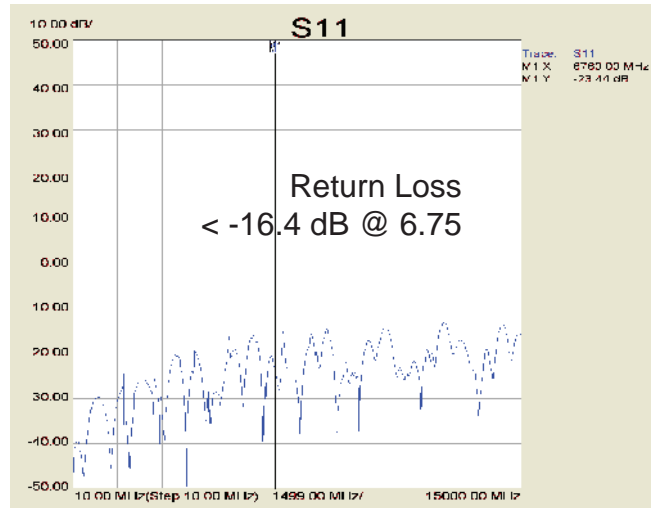
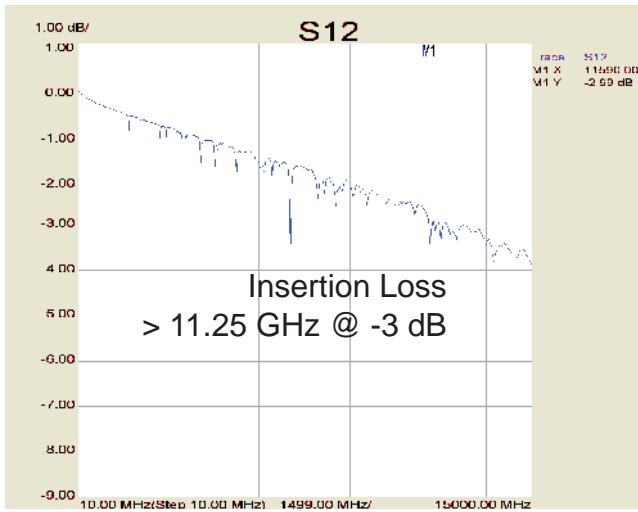
**ET-HDMI-TPA-P
HDMI v1.3 Plug Test Adapter**



All dimensions indicated are in inches and are shown approximately actual size.

ET-HDMI-TPA-S

Typical Results - 2" SMA-GPPO cable on 2x calibration trace



* 2x calibration path includes the two GPPO-SMA cables, four Invisible Via™ structures, circuit board traces equivalent to that on two TPA boards, and pads for two HDMI connectors. It does not include the HDMI connector and there is no compensation.