

**Product Name:** ZX200A-21 HDMI 1.4a 2.0 2.1 TPA-P TDR electrical compliance test fixture

**Product Description:**

HDMI TPA-P TDR electrical compliance test fixture supporting Type **A** (STD) HDMI Plug connector. The HDMI electrical compliance test fixture is designed for signal jitter, eye diagram and full HDMI compliance **1.4a and 2.0 HDMI compliance electrical** test measurements covering 4K 1080p 720p 520p 480p at 50Hz 60Hz 100Hz and 120Hz operating at 2.97GHz ( 1.4a compliance ) **5.94GHz ( 2.0 compliance )** bandwidth. ZX200A-21 HDMI electrical compliance test fixture is designed for 16GHz bandwidth meeting requirement of extended video format 4K 60Hz 100Hz 120Hz and upcoming HDMI 2.1 specification supporting 8K signal bandwidth. Signal measurement - clock jitter, skew, eye diagram rise/fall time and electrical compliance test fixture test measurements.

- Insertion loss: 6GHz :  $\leq -3\text{dB}$  8GHz :  $\leq -4\text{dB}$
- Multi-layer PCB design
- Designed for 16GHz bandwidth
- Access to DDC ( SCL, SDA ), +5V and GND signals
- Includes cable assemblies interfacing with scope / test equipment.
- Supports upcoming HDMI 2.1 specification supporting 8K signal bandwidth

**S-Parameter, Insertion loss:  
See Page 2**



ZX200A-21 is offered supporting HDMI Type A Plug connector.

ZX200A-21 is offered with 8" (20cm) long semi-flexible cable assemblies with SMA Plug or Jack connectors interfacing directly to scope probe or other cable assemblies. Cable replacement or longer 16" (40cm) cable assemblies can be purchased, see **"Package Includes"**. ZX200A-21 is characterized using the supplied 8" (20cm) long cable assemblies. Tektronix DPO71604C scope using P7313SMA differential probes requires -P ( SMA Plug cable assembly). Keysight ( Agilent ) DSA164A Infiniium scope using N2800A probes + differential probe leads N54444A N5399C software. Keysight, Tektronix and Lecroy test equipments are supported. An additional attenuation ( such as : ZX200LR3L-P/J ) filter is required for Lecroy test equipment.

Onboard access to DDC signals , +5V , and GND signal interface via onboard connector. Available ZX202HD DDC emulator interfacing with ZX200A-2.0 ( or similar 3<sup>rd</sup> party HDMI test fixture ). ZX202HD emulated any HDMI resolution sink device, therefore facilitating test and measurement process.

Available, ZX200L508-HD, Termination board per requirement of HDMI 2.0 2.1 standard.

**Package includes:**

Item	Part number	Quantity	Description
1	ZX200A-21	1	HDMI type A TPA-P electrical compliance test fixture
2	ZX00010308-HD	1	Complete set of HDMI 8" (20cm) long coax cable assemblies, SMA Jack or SMA Plug – Please see ordering information.
	or ZX00020308-HD	1	
3	ZXJS1173-05	0	Wire assembly – HDMI to ZX202HD interface cable assemble
4	ZXJS1173-HD	1	Wire assembly for HDMI EDID interface cable assembly, Note 1
5	ZX00WA12K	1	Wire assembly with 1.2K $\Omega$ resistor, Note 2
6	ZX00SMAH-P/J	1	Wire assembly SMA to 2 pin header, Note 3
7	ZX200LR3L-P/J	0	Optional Filter for Lecroy test equipment, HF-HDMI-3.3V
8	ZX200L508-HD	0	USB based HDMI Termination board
9	ZX000x0316-HD	0	Complete 10 HDMI 16" (40cm)" long coax cable assemblies.
10	ZX202HD	0	HDMI EDID emulation module
11	ZX00WT-09NM	0	SMA Wrench Torque 5/16" (8mm)

**Notes:** 1- Supplied extension wire assembly enabling to interface with 3<sup>rd</sup> party modules.  
2, 3 - See Emulate HOTPLUG Detection on Page 2

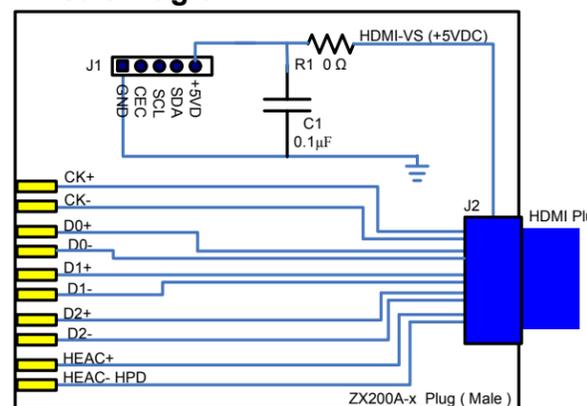
**Application:** Full HDMI 1.4a 2.0 2.1 plug electrical compliance test fixture - full HDMI electrical test including clock jitter, eye diagram , single ended & differential ended signaling electrical measurement

**Supported resolutions:** Full HDMI 1.4a 2.0 is supported, including:  
8K and 4K at 60Hz 100Hz 120Hz operating at 5.94GHz to 10GHz.  
Supports upcoming HDMI 2.1 8K resolution 10GHz bandwidth.

**Mates with :** HDMI type A Socket ( receptacle ) connector.  
SMA connectors mates with standard SMA connector  
Wire assembly mating:

- 1- With ZX202HD ( EDID Emulator )
- or 2- Any 0.025" (0.63mm) SQ pin socket mating with post header length 0.23" ( 5.83mm )

**Circuit Diagram**



**Ordering INFO:**  
Part Number  
ZX200A-X options  
J : SMA Jack ( Standard )  
P : SMA Plug connector

**Note**  
ALL ZEBAX products are RoHS compliant and Lead Free unless otherwise indicated.

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SANTA CRUZ, CA U.S.A (831) 222-0717  
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SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT	ASSEMBLY DRAWING ITEM: ZX200A-21
DESCRIPTION: HDMI 1.4a 2.0 2.1 TPA-P-TDR type A plug electrical compliance test fixture 10GHz	
CHECKED: M. MARINA	DRAWN: SLAVIK
REVISION: 1.0 SHEET 1 OF 2	

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**Product Name:** ZX200A-21 HDMI 1.4a 2.0 2.1 TPA-P TDR electrical compliance test fixture , Cont's

**Test procedure:** ZXAN-HDMI-2.0-Test-Procedure application note provides HDMI electrical test procedure.

**Test Record:** Below are links to the existing test record for the ZX200A-21 TPA-P TDR Modules

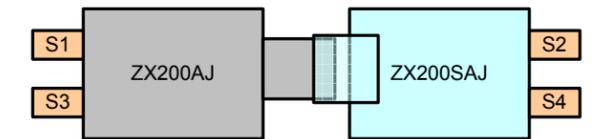
[ZX200A-J-2.1 differential test](#)

[ZX200A-J-2.1 Single Ended test](#)

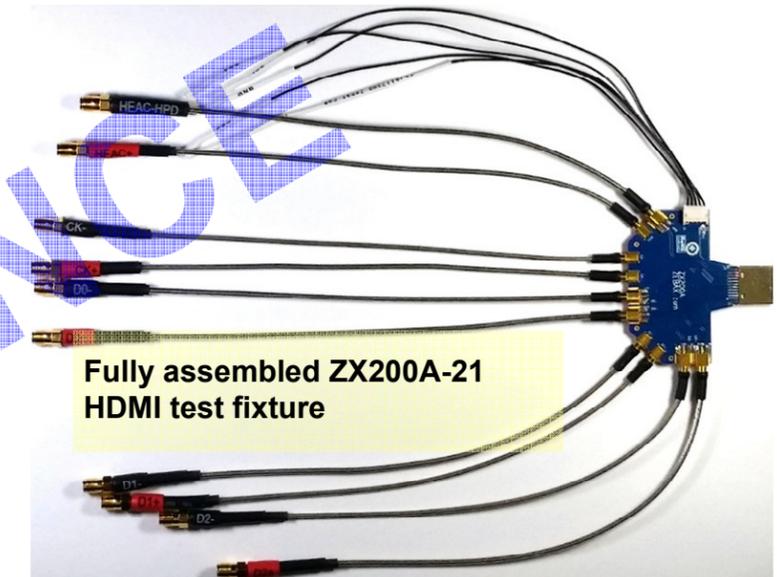
**Insertion loss:** ZX200A-21 with low insertion loss measuring  $\leq -3\text{dB}$  at 6GHz  $\leq -4\text{dB}$  at 8GHz

**S-Parameter files:** The S-Parameter was obtained using mated ZX200A-21 and ZX200SA-21 HDMI test fixtures. Please download the S-Parameter files, .s2p files for CK, D0, D1, and D2 networks from here :

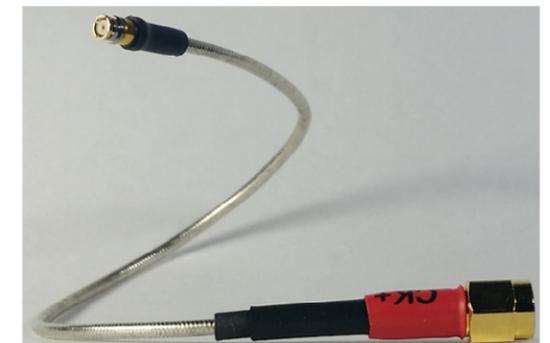
[ZX200A-SA-21-S-Parameter](#)



**Test network :** ZX200A-x Plug and Receptacle via the supplied SMA cable assembly  
 S12 : CK+ / D0+ / D1+ / or D2+  
 S11 : CK+- / D0+- / D1+- / D2+-



**SMA Cable Assembly** is semi-flexible coax cable with maximum bends of 35mm. Please do not over exert beyond the cable's tolerance.



**Note**  
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**Pinouts:** HDMI Plug, J1 ( EDID ) signal assignments listed below

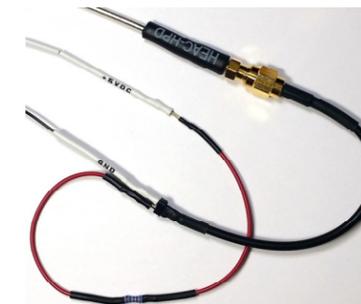
Pin	HDMI Connector type		
	Type A	Type C (mini)	Type D (micro )
1	TXD2P	GND	HOTPLUG/ HEAC-
2	GND	TXD2P	RSV / HEAC+
3	TXD2N	TXD2N	TXD2P
4	TXD1P	GND	GND
5	GND	TXD1P	TXD2N
6	TXD1N	TXD1N	TXD1P
7	TXD0P	GND	GND
8	GND	TXD0P	TXD1N
9	TXD0N	TXD0N	TXD0P
10	TXCP	GND	GND
11	GND	TXCP	TXD0N
12	TXCN	TXCN	TXCP
13	CEC	GND	GND
14	RSV / HEAC+	CEC	TXCN
15	DDC_SCL	DDC_SCL	CEC
16	DDC_SDA	DDC_SDA	GND
17	GND	RSV / HEAC+	DDC_SCL
18	+5V	+5V	DDC_SDA
19	HOTPLUG / HEAC-	HOTPLUG / HEAC-	+5V

J1	
Pin	Function
1	+5VDC
2	DDC_SDA
3	DDC_SCL
4	CEC
5	GND

**Emulating HotPlug detection**

To emulate HOTPLUG detection, use the supplied cable assemblies as listed below:

- 1) Connect ZX00SMAH-P/J to HEAC-HPD
- 2) Connect GND wire of ZXJS1173-HD to GND pin header of ZX00SMAH-P/J
- 3) Install the ZX00WA12K wire assembly between +5VDC of ZXJS1173-HD and pin header of ZX00SMAH-P/J



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