

**Product Name:** ZX210mDPC-x Display Port, DP 1.4 HBR3 , breakout adapter – test module TPA-P TDR mini plug

**Product Description:**

Display Port , DP, 1.4 HBR3 breakout adapter – test module - Test Access Point Plug ( TPA-P TDR ) supporting mini DP plug connector for applications requiring electrical breakout adapter for measurements & signal analysis for signal jitter, eye diagram and tests, covering 1.62GHz, 2.7GHz, 5.4GHz and 8.1GHz signal bandwidth. ZX210mDPC-x DP breakout adapter – test module, supports full High Bit Rate, HBR (2.7GHz) , HBR2 (5.4GHz), HBR3 ( 8.1GHz) as well as the Reduced Bit Rate/Low Bit Rate (1.62GHz ) signal bandwidth.

- ZX210mDPC-x supports Display Port's mini plug connector, mating with receptacle.
- Multi-Layer PCB design, with improved signal integrity and crosstalk
- Insertion loss: 6GHz :  $\leq -3\text{dB}$  8GHz :  $\leq -4.5\text{dB}$
- Designed for 16GHz bandwidth.
- Includes 20 pc of 8" (20cm) long semi-flexible cable assemblies with SMA Plug or Jack connectors.
- Access to All 20 HDMI signals.
- Onboard SMD 0402 footprint, enabling apply of Load, ESD diode, scope probe or more.
- Access to internal GND planes as well as TOP/Bottom GND fills via GND Test Points
- Display port breakout adapter – test module , supports electrical test and measurement for:
  - HBR : High Bit Rate ( 2.7Gbps / lane )
  - HBR2 : High Bit Rate 2 ( 5.4Gbps / lane )
  - HBR3 : High Bit Rate 3 ( 8.1Gbps / lane )

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

- For proper signal measurements, please connect GND test point to system GND. The GND test points are connected to internal GND planes as well as TOP/Bottom GND fills.
- The DP connector's case may be connected to the module's GND planes by installing 0  $\Omega$  in R1, R2 locations. As default the connector's case is not connected to the module's GND planes.

ZX210mDPC-x includes 8" (20cm) long semi-flexible cable assemblies with SMA Plug or Jack connectors interfacing directly to scope probe or other cable assemblies.

The ZX210mDPC-x DP Test Fixture is characterized using the supplied 8" (20cm) long cable assemblies to test equipment. Tektronix DPO71604C scope using P7313SMA differential probes. Keysight DSA164A Infiniium scope using N2800A probes + differential probe leads N54444A.

**Application:** mini Display Port, DP, 1.4 HBR3 electrical test, Clock Jitter, eye diagram, single ended & differential ended signaling electrical measurement & analysis.

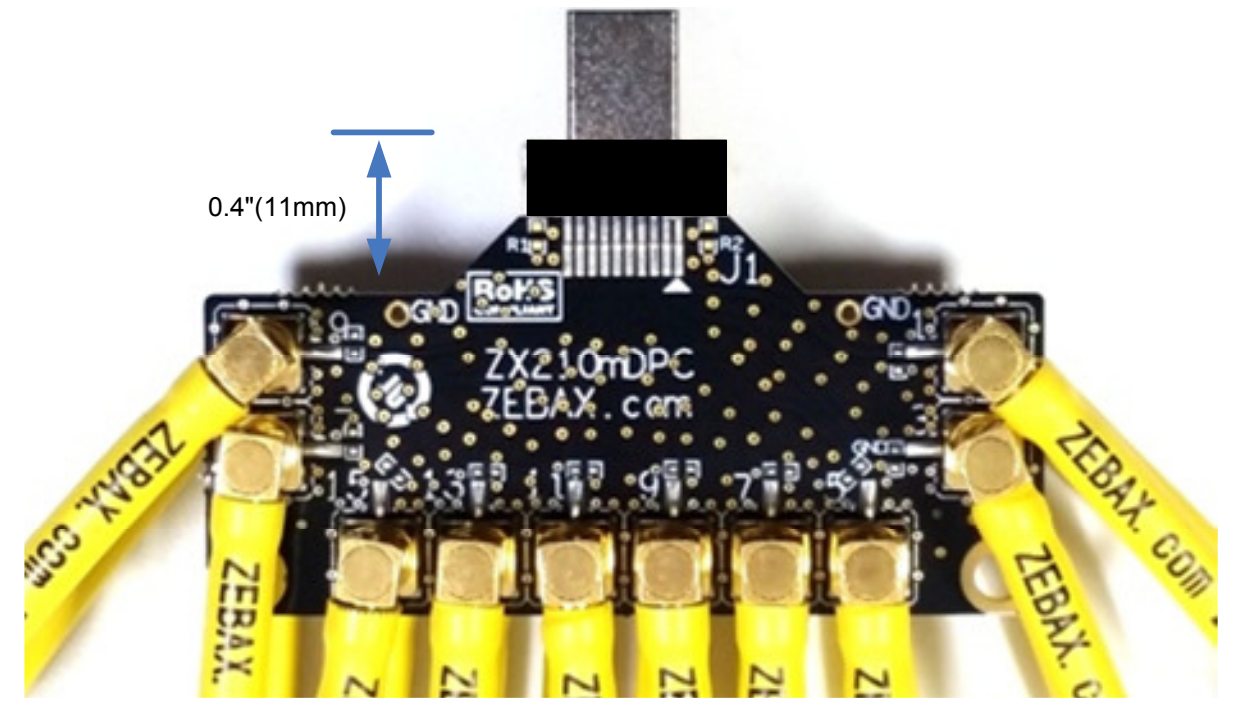
**Supported resolutions:** HBR3, 8K UHD TV ( 7680x4320 ) @ 60 Hz 4:2:0 subsampling.

**Mates with :** mini Display Port, DP, Standard socket ( receptacle ) connector. SMA connectors mates with standard SMA cable assembly , please see ordering information

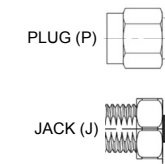
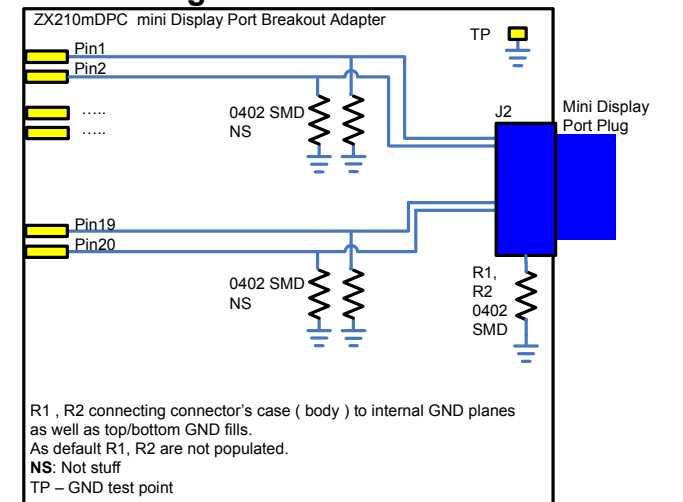
**Test procedure:** [ZXAN-DP-1.4-Test-Procedure](#) application note provides Display Port, DP, test procedure.

**Package includes:**

Item	Part number	Quantity	Description
1	ZX210mDPC-x	1	mini Display Port, DP , HBR3 breakout adapter – test module Plug
2	ZX00010308R	1	Complete set of DP 8" (20cm) long coax cable assemblies, SMA Jack.
	or ZX00020308R	1	SMA Plug – Please see ordering information.
3	ZX200L508-HD	0	USB based Termination board
4	ZX00WT9NM	0	SMA Wrench Torque 5/16" (8mm) 9 NM ( 8lb-in )



**Circuit Diagram**



**Ordering INFO:**  
 Part Number ZX210mDPC-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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SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT	ASSEMBLY DRAWING ITEM: ZX210mDPC-x	
DESCRIPTION: Display Port DP Breakout Adapter TPA-P TDR mini plug		
CHECKED: M. MARINA	DRAWN: SLAVIK	REVISION: 1.0 SHEET: 1 OF 2

**Product Name:** ZX210mDPC-x Display Port, DP 1.4 HBR3 , breakout adapter – test module TPA-P TDR mini plug Cont's

**Test Record:** Test record for the ZX210mDPC-J TPA-P TDR mini Display Port breakout adapter – test module

[ZXTR-ZX210mDPC-J](#)

**Insertion loss:** Very low insertion loss typical -4.9 dB at 8.1GHz

Insertion loss table

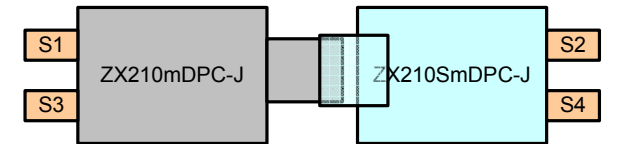
Signal Pairs	Mated Insertion Loss , IL , for Display Port test Fixture pairs								
	1.0GHz	1.485GHz	2.0GHz	2.97GHz	3.0GHz	3.33GHz	5.97GHz	6.0GHz	8.0GHz
PIN1 .. PIN 20	-2.53	-3.47	-2.27	-3.14	-3.38	-3.79	-7.30	-7.42	-9.80

All values are dB

The listed values are for mated test fixture configuration, S12 s-parameters

**S-Parameter files:** The S-Parameter was obtained using mated ZX210mDPC-J and ZX210SmDPC-J Display Port breakout adapter – test module as shown above. Please download the S-Parameter files, .s2p files for all the 20 signals :

[ZX210mDPC-ZX210SmDPC-s-parameter](#)

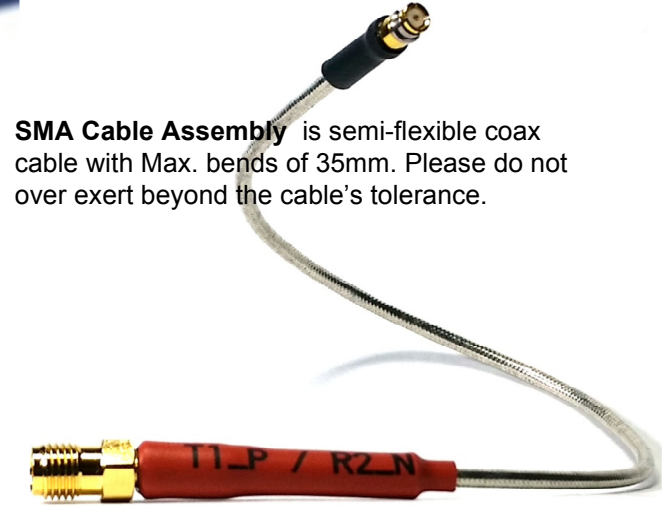


**Test network :** ZX210mDPC ( Plug ) & ZX210SmDPC ( Receptacle ) via the supplied SMA cable assembly via connector pins 1 through 20  
S12 : Pin 1 .. Pin 20



Fully assembled ZX210mDPC-J

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



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Display Port Connector type (Plug)					Display Port Connector type( mini Plug - mDP)				
Pin	Labeled Coax	Connector Front		Connector Standard (Plug)	Pin	Labeled Coax	Connector		Connector type (mini Plug - mDP)
		Top	Bottom				Top	Bottom	
1	T3_N / R0_P	1		ML3N_ML0P	1		1		GND
2			2	GND	2	J1.2 HPD	2		HPD
3	T3_P / R0_N	3		ML3P_ML0N	3	T0_P / R3_N	3		MLOP_ML3N
4	T2_N / R1_P		4	ML2N_ML1P	4	J1.3 CFG1		4	CONFIG1
5		5		GND	5	T0_N / R3_P	5		ML0N_ML3P
6	T2_P / R1_N		6	ML2P_ML1N	6	J1.4 CFG2		6	CONFIG2
7	T1_N / R2_P	7		ML1N_ML2P	7		7		GND
8			8	GND	8		8		GND
9	T1_P / R2_N	9		ML1P_ML2N	9	T1_P / R2_N	9		ML1P_ML2N
10	T0_N / R3_P		10	ML0N_ML3P	10	T3_P / R0_N		10	ML3P_ML0N
11		11		GND	11	T1_N / R2_P	11		ML1N_ML2P
12	T0_P / R3_N		12	MLOP_ML3N	12	T3_N / R0_P		12	ML3N_ML0P
13	J1.3 CFG1	13		CONFIG1	13		13		GND
14	J1.4 CFG2		14	CONFIG2	14		14		GND
15	AUX+	15		AUX+	15	T2_P / T1_N	15		ML2P_ML1N
16			16	GND	16	AUX+		16	AUX+
17	AUX-	17		AUX-	17	T2_N / T1_P	17		ML2_ML1+
18	J1.2 HPD		18	HPD	18	AUX-		18	AUX-
19		19		GND	19		19		GND
20	J1.1 VS		20	DP_PWR (3.3V)	20	J1.1 VS		20	DP_PWR

MLxN / MLyP: MLxN when Upstream(UFP)  
MLyP when Downstream(DFP)  
ZX210D, ZX210mD are UFP, Upstream Facing Port  
ZX210SD, ZX210SmD are DFP, DownStream Facing Port.  
HPD: Hot Plug Detect

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