DisplayPort Compliance Interconnect Channel

User Manual

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Introduction

This user's guide documents the DisplayPort Compliance Interconnect Channel Module (DP-CIC-C). The CIC, shown in Figure 1, allows for cable testing against the VESA DisplayPort™ PHY Compliance Test Specification V1.2.

The CIC Module allows easy access, via male SMA connections to apply Wilder Technologies Full-Size DisplayPort Plug Test Adapters (DP-TPA-P) or Mini DisplayPort Plug Test Adapters (mDP-TPA-P). Some general information on the Full-Size and Mini DisplayPort test adapters is included in this manual, but for detailed information on these plug test adapters refer to their specific user manual, located on the same media disc as this manual or available on-line at www.wilder-tech.com .

Three variations of low-speed jumper cable assemblies are provide with the DP-CIC-C module. These assemblies are used to pass through the low speed signals required for full compliance cable support. These variations allow for configurations using 4 or 6 position low-speed connectors. The three cable assemblies provided will accommodate all possible interconnect variants.

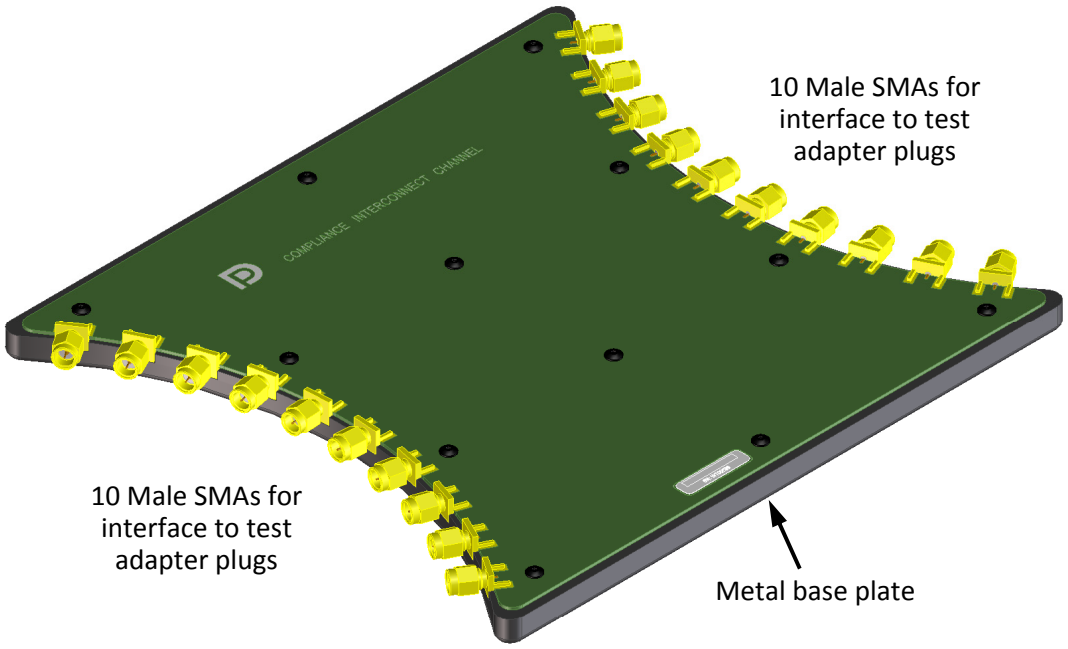

Figure 1.The DisplayPort Compliance Interconnect Channel Module

Product Inspection

Upon receiving the DP-CIC-C from Wilder Technologies, perform the following product inspection: (Note: depending on configuration ordered you may or may not have been provided plug test adapters)

- Inspect the outer shipping container, foam-lined box, and product for damage. Retain the outer cardboard shipping container until the contents of the shipment have been inspected for completeness and the product has been checked mechanically and electrically. Use the foam-lined box for secure storage of the Wilder Technologies DisplayPort CIC module when not in use.

- Locate the shipping list and verify that all items ordered were received.

- In the unlikely event that the product is defective or incomplete, the “Limited Warranty” section discusses how to contact Wilder Technologies for technical assistance and/or how to package the product for return.

The DisplayPort Compliance Interconnect Channel and Test Adapter Care and Handling Precautions

The DisplayPort DP-TPA-P and mDP-TPA-P require careful handling to avoid damage. Improper handling techniques, or using too small a cable bend radius, can damage the coaxial cable connections within the adapter housing or the cables themselves. This can occur at any point along the cable. To achieve optimum performance and to prolong the test adapter's life, observe the following handling precautions:

- **CAUTION 1: Avoid Torque Forces** (Twisting)
  While individual coaxial cables within the test adapter have some rotational freedom, twisting the test adapter as a unit, with one end held stationary, in excess of +/- 90° may damage or severely degrade performance. Adherence to Caution 5 (below) helps to avoid exceeding twist limits.

- **CAUTION 2: Avoid Sharp Cable Bends**
  Never bend coaxial cables into a radius of 26 mm (1 -inch) or less. Never bend cables greater than 90°. Single or multiple cable bends must be kept within this limit. Bending the test adapter cables less than a 26mm (1-Inch) radius will permanently damage or severely degrade test adapter performance.

- **CAUTION 3: Avoid Cable Tension** (Pull Forces)
  Never apply tension (pull forces) to an individual coaxial cable that is greater than 2.3 kg (5 lbs.). To avoid applying tension, always place accessories and equipment on a surface that allows adjustment to eliminate tension on the test adapter and cables. Use adjustable elevation stands or apparatus to accurately place and support the test adapter plugs.

- **CAUTION 4: Connect the Test Adapter First**
  To prevent twisting, bending, or applying tension to the coaxial cables when connecting a test adapter to the CIC module, always attach the adapter to the device under test (DUT) or cable under test before attaching any SMA connectors. Carefully align the DisplayPort connectors and then gently push the connectors together until fully seated.

  If the test adapter must be turned or twisted to make connection to the CIC Module, avoid using the adapter housing alone to make this occur. Try to distribute the torque forces along the length of the test setup and cabling. If this is not possible, it is recommended to first loosen or disconnect the SMA connections at the adapter, make the connection to the DUT and then re-tighten or attach the test equipment leads.

  NOTE: Only grip the test adapter housing when inserting or extracting the adapter from the DUT. Pulling directly on the test adapter cables or using them to insert the adapter may cause damage.

- **CAUTION 5: Carefully Make SMA Connections**
  To connect the test adapter SMA connectors, follow these steps:

  1. Hold the cable stationary by grasping the cable at the black heat-shrink section near the SMA connector.

  2. Insert the mating SMA barrel and hand-tighten the free-spinning SMA nut onto the connector while avoiding pulling, bending, or twisting the adapter's coaxial cable.

3. The adapter SMA connectors have flats that accept an open-end 1/4-inch or 6.5mm wrench. When attaching the adapter cables to the CIC module, it is recommended that the adapter SMA connectors be mechanically held and the test leads be tightened to the equipment manufacturer's torque recommendations, normally 5 in-lbs, using a 5/16-inch open-end wrench.

If the test set-up requires repositioning, first loosen or disconnect the SMA connections to avoid twisting, bending, or tension.

NOTE: A drop in signal amplitude by half or 6db during the testing of a lane may indicate that a cable has been mechanically pulled free of coaxial cable connections internal to the DP-TPA plug assembly. This could be determined by checking if the cable has any lateral play relative to the TPA. This would only occur when the TPA has exceeded the pull force as specified within the mechanical specification. If the cable cannot be re-seated, the test adapter will need to be sent back to the factory for service.

- **CAUTION 6: Independently Support Instrument Cables or Accessories**
  Excessive weight from instrument cables and/or accessories connected to free hanging test adapters can cause damage or affect the test adapter performance. Be sure to provide appropriate means to support and stabilize all test set-up components.

General Test Adapter, Cable, and Connector

Observing simple precautions can ensure accurate and reliable measurements.

Handling and storage

Before each use of the DP-CIC-C or the test adapter set(s), ensure that all connectors are clean. Handle all cables carefully. When storing the DP-CIC-C remove all adapter cables and place it in its foam-lined box. The test adapters should be placed in their foam-lined instrument case when not in use, if possible. When handling the test adapters, do not set connectors contact end down. Re-install the SMA protective end caps when the DP-CIC-C module and test adapters are not in use.

Visual inspection

Be sure to inspect all cables carefully before making a connection. Inspect all cables for metal particles, scratches, deformed threads, dents, or bent, broken, or misaligned center conductors. Do not use damaged cables.

Cleaning

If necessary, clean the connectors using low-pressure (less than 60 PSI) compressed air or nitrogen with an effective oil-vapor filter and condensation trap. Clean the cable threads, if necessary, using a lint-free swab or cleaning cloth moistened with isopropyl alcohol. Always completely dry a connector before use. Do not use abrasives to clean the connectors. Re-inspect connectors, making sure no particles or residue remains.

Making Connections

Before making any connections, review the “Care and Handling Precautions” section. Follow these guidelines when making connections:

- Align cables carefully
- Make preliminary connection lightly
- To tighten, turn connector nut only
- Do not apply bending force to cable
- Do not over- tighten preliminary connections
- Do not twist or screw-in cables
- Use a torque wrench, and do not tighten past the “break” point of the torque wrench

Electrostatic Discharge Information

Protection against electrostatic discharge (ESD) is essential while connecting, inspecting, or cleaning the DP-CIC-C module or test adapters when attached to a static-sensitive circuit (such as those found in test sets).

Electrostatic discharge can damage or destroy electronic components. Be sure to perform all work on electronic assemblies at a static-safe work station, using two types of ESD protection:

- Conductive table-mat and wrist-strap combination
- Conductive floor-mat and heel-strap combination

When used together, both of these types provide a significant level of ESD protection. Used alone, the table-mat and wrist-strap combination provide adequate ESD protection. To ensure user safety, the static-safe accessories must provide at least 1 MΩ of isolation from ground. Acceptable ESD accessories may be purchased from a local supplier.

WARNING: These techniques for a static-safe work station should not be used when working on circuitry with a voltage potential greater than 500 volts.

User Model

The DisplayPort TPA and Mini DisplayPort TPA shown in Figures 2, 3, and 4 support all testing against the VESA DisplayPort™ Compliance Test Specification PHY 1.2, limited only by the specifications, environmental, care and handling as stated in this document.

The following examples are suggestions for possible testing setups.

Cable Assembly Type C1

DisplayPort Plug – DisplayPort Plug

Use low-speed extension cable (supplied) between TPA's to complete this interface assembly

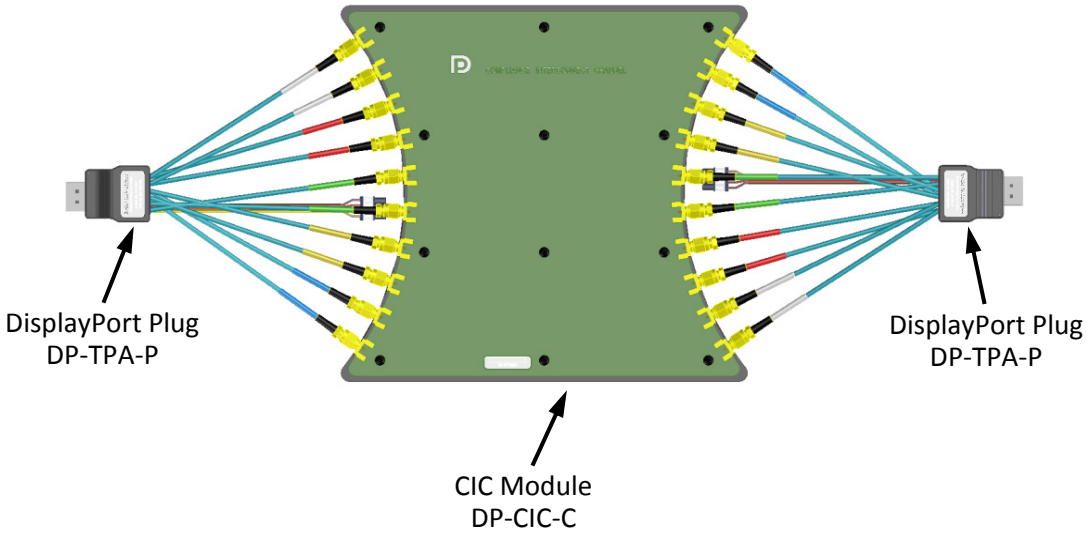

Figure 2.The DisplayPort Compliance Interconnect Channel Module, Type C1

Cable Assembly Type C2

Mini DisplayPort Plug – DisplayPort Plug

Use low speed extension cable (supplied) between TPA's to complete this interface assembly

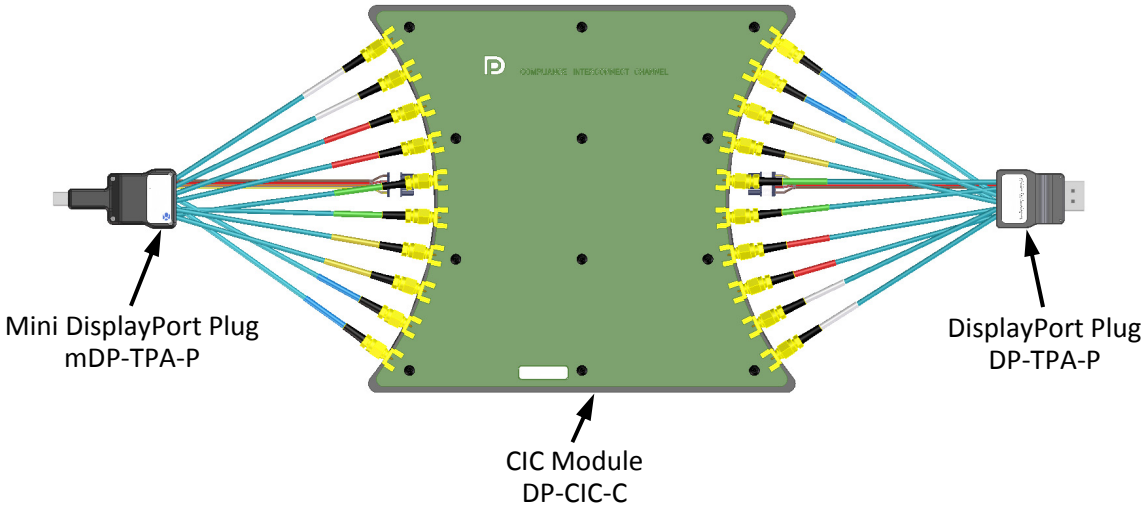

Figure 3.The DisplayPort Compliance Interconnect Channel Module, Type C2

Cable Assembly Type C3

Mini DisplayPort Plug – Mini DisplayPort Plug

Use low speed extension cable (supplied) between TPA's to complete this interface assembly

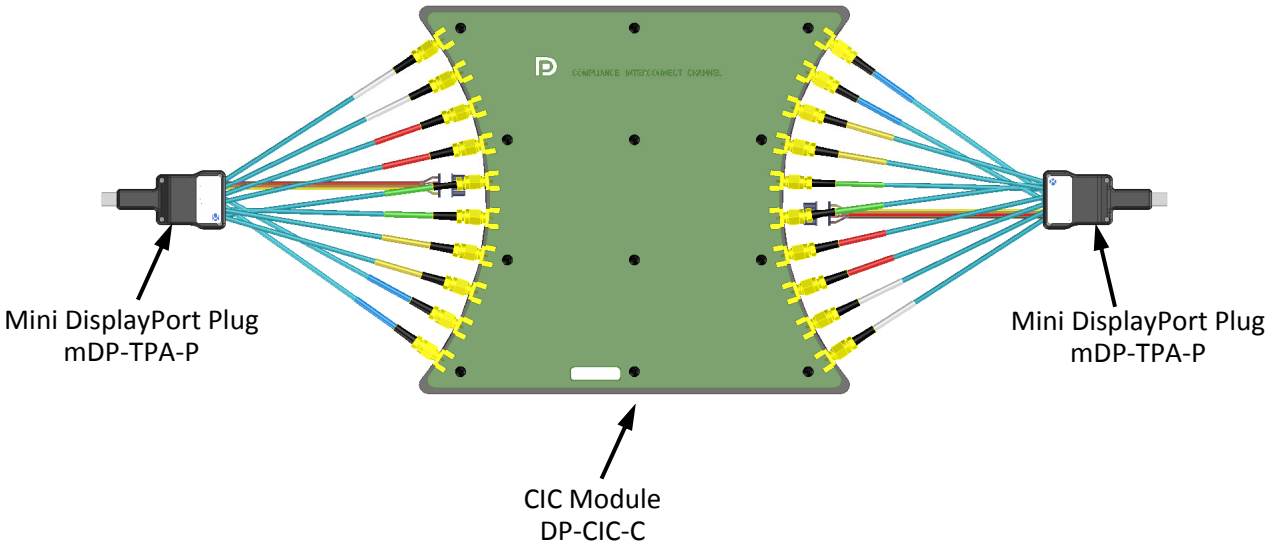

Figure 4.The DisplayPort Compliance Interconnect Channel Module, Type C3

Mechanical and Environmental Specifications

NOTE: All specifications in this manual are subject to change.

Table 1. General Specifications

ITEM	DESCRIPTION
Usage Environment	Controlled indoor environment
CIC (wo/Adapter cables)	226mm (8.92inches) X 208mm (8.15 inches)X 21mm (.84 inches)
Operating Temperature	0°C to +55°C (32°F to +131°F) (Characteristic)
Storage Temperature	-40°C to +70°C (-40°F to +158°F) (Characteristic)

Table 2. DisplayPort Plug Cable Connector Labeling and Color Coding (High-Speed)

LABEL	COLOR ID FOR DIFFERENTIAL PAIR	DESCRIPTION
T0_P/R3_N	White	Differential Data Lane 0+ for Source, Lane 3- for Sink
T0_N/R3_P	White	Differential Data Lane 0- for Source, Lane 3+ for Sink
T1_P/R2_N	Red	Differential Data Lane 1+ for Source, Lane 2- for Sink
T1_N/R2_P	Red	Differential Data Lane 1- for Source, Lane 2+ for Sink
T2_P/R1_N	Yellow	Differential Data Lane 2+ for Source, Lane 1- for Sink
T2_N/R1_P	Yellow	Differential Data Lane 2- for Source, Lane 1+ for Sink
T3_P/R0_N	Blue	Differential Data Lane 3+ for Source, Lane 0- for Sink
T3_N/R0_P	Blue	Differential Data Lane 3- for Source, Lane 0+ for Sink
AUX_P	Green	Differential Auxiliary Channel Positive (+)
AUX_N	Green	Differential Auxiliary Channel Negative (-)

Table 3 DisplayPort Plug 4 and 6-position Cable Connector "P2" (4 and 6 position assemblies in service)

LABEL	PIN NO.	COLOR ID FOR TPA-P (PLUG)	DESCRIPTION
HPD	Pin 1	Brown	Hot Plug Detect
PWR	Pin 2	Red	DP_PWR
RTN	Pin 3	Orange	Return
GND	Pin 4	Yellow	Ground
CONFIG 1	PIN 5	Green	CONFIG 1
CONFIG 2	PIN 6	Blue	CONFIG 2

DP-TPA-P Cable Identification

The DP-TPA-P cables provide ten SMA connectors (Main Link and Auxiliary signals) and one low-speed connector. Labels clearly mark each cable or connector. See Table 5 for cable high speed lane labeling. (For full details on this adapter refer to the DisplayPort user manual supplied on media disk or available at www.wilder-tech.com .)

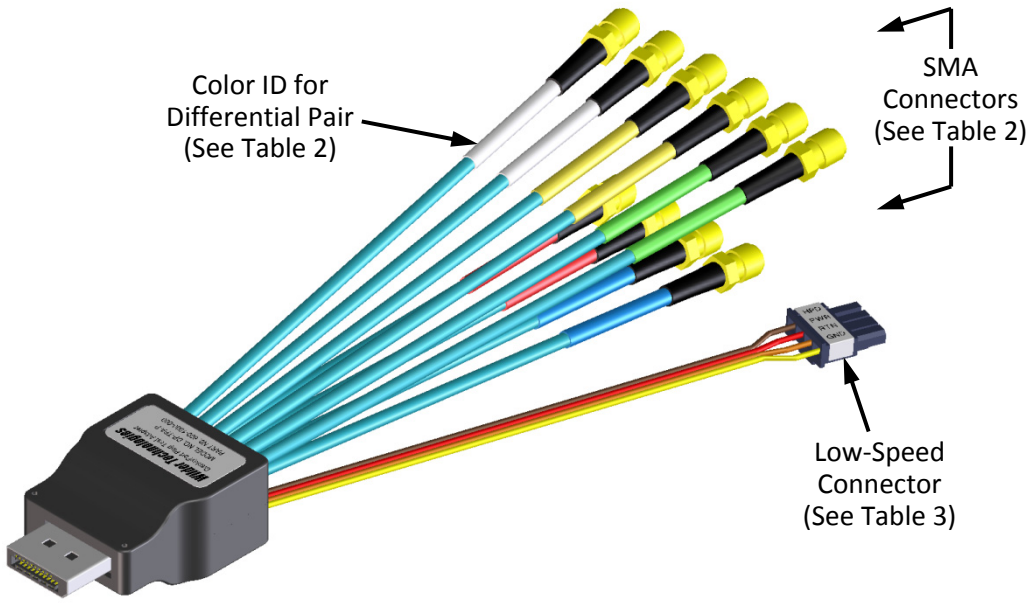

Figure 5. The Full-Size DisplayPort Plug Test Adapter (DP-TPA-P)

NOTE: To avoid damaging the cables, use the handling techniques described in the Care and Handling section before making any connections or configuring a test setup.

Always use a static-safe workstation when performing tests, as explained in the "Electrostatic Discharge Information" section.

mDP-TPA-P Cable Identification

The mDP-TPA-P cables provide ten SMA connectors (Main Link and Auxiliary signals) and one low-speed connector. Labels clearly mark each cable or connector. See Table 5 for cable high speed lane labeling. (For full details on this adapter refer to the Mini DisplayPort user manual supplied on media disk or available at www.wilder-tech.com .)

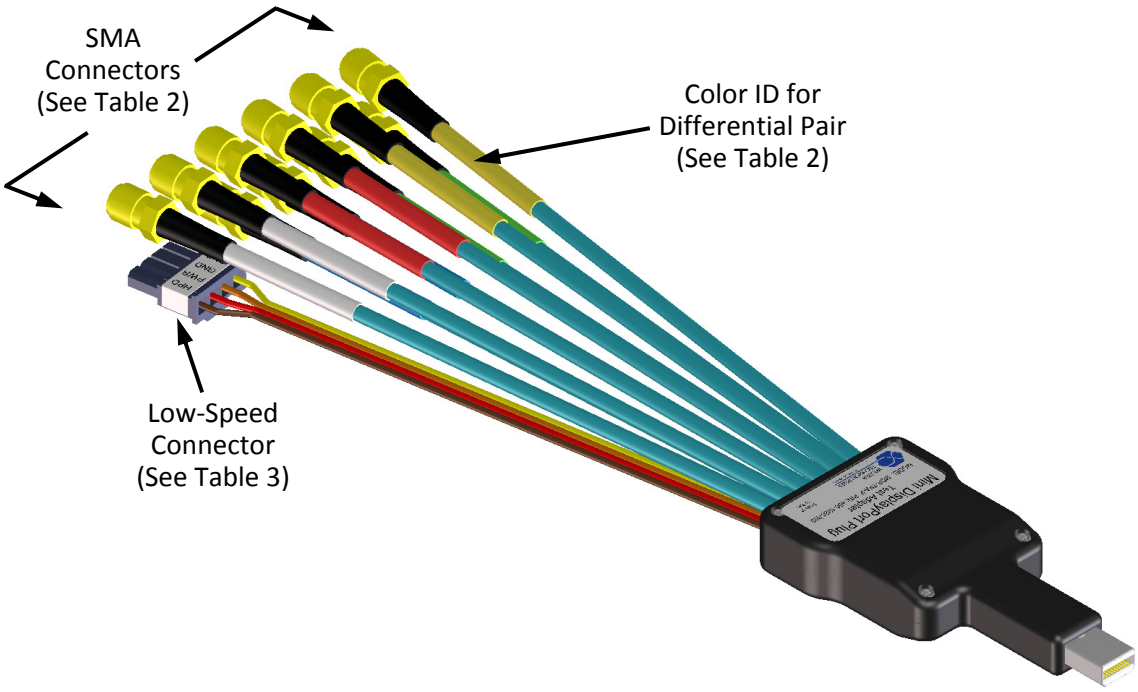

Figure 6. The Mini DisplayPort Plug Test Adapter (mDP-TPA-P)

NOTE: To avoid damaging the cables, use the handling techniques described in the Care and Handling section before making any connections or configuring a test setup.

Always use a static-safe workstation when performing tests, as explained in the "Electrostatic Discharge Information" section.

CIC Connection and Pin Assignment Reference

Table 4. Cable Type C1 CIC Connection and Pin Assignment Reference (Full-Size DisplayPort Plug to Full-Size DisplayPort Plug)

DisplayPort Source (Downstream)			DisplayPort Sink (Upstream)		
Connector Pin Number	**Cable ID CIC Location**	**Color Identification (Plug)**	**Connector Pin Number**	**Cable ID CIC Location**	**Color Identification (Plug)**
1	T0_P/R3_N	White Label	12	T3_N/R0_P	Blue Label
3	T0_N/R3_P	White Label	10	T3_P/R0_N	Blue Label
4	T1_P/R2_N	Red Label	9	T2_N/R1_P	Yellow Label
6	T1_N/R2_P	Red Label	7	T2_P/R1_N	Yellow Label
17	AUX_N	Green Label	17	AUX_N	Green Label
15	AUX_P	Green Label	15	AUX_P	Green Label
7	T2_P/R1_N	Yellow Label	6	T1_N/R2_P	Red Label
9	T2_N/R1_P	Yellow Label	4	T1_P/R2_N	Red Label
10	T3_P/R0_N	Blue Label	3	T0_N/R3_P	White Label
12	T3_N/R0_P	Blue Label	1	T0_P/R3_N	White Label
2	Ground	N/A	11	Ground	N/A
5	Ground	N/A	8	Ground	N/A
8	Ground	N/A	5	Ground	N/A
11	Ground	N/A	2	Ground	N/A
16	Ground	N/A	16	Ground	N/A
19	Ground	N/A	19	Ground	N/A
Reference Pin-Out of Low-Speed Lines (4 or 6 position low-speed interfaces for Test Adapters are in service. For 4 pin TPA assemblies use a 4 pin extension cable. For 6 position use 6 position extension cable)					
18	P2 Pin 1 (HPD)	Brown Insulation	18	P2 Pin 1 (HPD)	Brown Insulation
20	P2 Pin 2 (PWR)N/C	Red Insulation	20	P2 Pin 2(PWR)N/C	Red Insulation
19	P2 Pin 3 (RTN)	Orange Insulation	19	P2 Pin 3 (RTN)	Orange Insulation
2, 5, 8, 11, 16	P2 Pin 4 (GND)	Yellow Insulation	2, 5, 8, 11, 16	P2 Pin 4 (GND)	Yellow Insulation
13	P2 Pin 5 (CFG 1)	Green Insulation	13	P2 Pin 5 (CFG 1)	Green Insulation
14	P2 Pin 6 (CFG 2)	Blue Insulation	14	P2 Pin 6 (CFG 2)	Blue Insulation

Table 5. Cable Type C2 CIC Connection and Pin Assignment Reference (Mini DisplayPort Plug to Full Size DisplayPort Plug)

Mini DisplayPort Source (Downstream)			DisplayPort Sink (Upstream)		
Connector Pin Number	**Cable ID CIC Location**	**Color Identification (Plug)**	**Connector Pin Number**	**Cable ID CIC Location**	**Color Identification (Plug)**
3	T0_P/R3_N	White Label	12	T3_N/R0_P	Blue Label
5	T0_N/R3_P	White Label	10	T3_P/R0_N	Blue Label
9	T1_P/R2_N	Red Label	9	T2_N/R1_P	Yellow Label
11	T1_N/R2_P	Red Label	7	T2_P/R1_N	Yellow Label
18	AUX_N	Green Label	17	AUX_N	Green Label
16	AUX_P	Green Label	15	AUX_P	Green Label
15	T2_P/R1_N	Yellow Label	6	T1_N/R2_P	Red Label
17	T2_N/R1_P	Yellow Label	4	T1_P/R2_N	Red Label
10	T3_P/R0_N	Blue Label	3	T0_N/R3_P	White Label
12	T3_N/R0_P	Blue Label	1	T0_P/R3_N	White Label
1	Ground	N/A	11	Ground	N/A
7	Ground	N/A	8	Ground	N/A
8	Ground	N/A	2	Ground	N/A
13	Ground	N/A	5	Ground	N/A
14	Ground	N/A	16	Ground	N/A
19	Ground	N/A	19	Ground	N/A
Reference Pin-Out of Low-Speed Lines (4 or 6 position low-speed interfaces for Test Adapters are in service. For 4 pin TPA assemblies use a 4 pin extension cable. For 6 position use 6 position extension cable)					
2	P2 Pin 1 (HPD)	Brown Insulation	18	P2 Pin 1 (HPD)	Brown Insulation
20	P2 Pin2(PWR)N/C	Red Insulation	20	P2 Pin 2(PWR)N/C	Red Insulation
19	P2 Pin 3 (RTN)	Orange Insulation	19	P2 Pin 3 (RTN)	Orange Insulation
1, 7, 8, 13, 14, 19	P2 Pin 4 (GND)	Yellow Insulation	2, 5, 8, 11, 16, 19	P2 Pin 4 (GND)	Yellow Insulation
4	P2 Pin 5 (CFG 1)	Green Insulation	13	P2 Pin 5 (CFG 1)	Green Insulation
6	P2 Pin 6 (CFG 2)	Blue Insulation	14	P2 Pin 6 (CFG 2)	Blue Insulation

Table 6. Cable Type C3 CIC Connection and Pin Assignment Reference (Mini DisplayPort Plug to Mini DisplayPort Plug)

Mini DisplayPort Source (Downstream)			Mini DisplayPort Sink (Upstream)		
Connector Pin Number	**Cable ID CIC Location**	**Color Identification (Plug)**	**Connector Pin Number**	**Cable ID CIC Location**	**Color Identification (Plug)**
3	T0_P/R3_N	White Label	12	T3_N/R0_P	Blue Label
5	T0_N/R3_P	White Label	10	T3_P/R0_N	Blue Label
9	T1_P/R2_N	Red Label	17	T2_N/R1_P	Yellow Label
11	T1_N/R2_P	Red Label	15	T2_P/R1_N	Yellow Label
18	AUX_N	Green Label	18	AUX_N	Green Label
16	AUX_P	Green Label	16	AUX_P	Green Label
15	T2_P/R1_N	Yellow Label	11	T1_N/R2_P	Red Label
17	T2_N/R1_P	Yellow Label	9	T1_P/R2_N	Red Label
10	T3_P/R0_N	Blue Label	5	T0_N/R3_P	White Label
12	T3_N/R0_P	Blue Label	3	T0_P/R3_N	White Label
1	Ground	N/A	8	Ground	N/A
7	Ground	N/A	13	Ground	N/A
8	Ground	N/A	1	Ground	N/A
13	Ground	N/A	7	Ground	N/A
14	Ground	N/A	14	Ground	N/A
19	Ground	N/A	19	Ground	N/A
Reference Pin-Out of Low-Speed Lines (4 or 6 position low-speed interfaces for Test Adapters are in service. For 4 pin TPA assemblies use a 4 pin extension cable. For 6 position use 6 position extension cable)					
2	P2 Pin 1 (HPD)	Brown Insulation	2	P2 Pin 1 (HPD)	Brown Insulation
20	P2 Pin 2(PWR)N/C	Red Insulation	20	P2 Pin 2(PWR)N/C	Red Insulation
19	P2 Pin 3 (RTN)	Orange Insulation	19	P2 Pin 3 (RTN)	Orange Insulation
1, 7, 8, 13, 14, 19	P2 Pin 4 (GND)	Yellow Insulation	1, 7, 8, 13, 14, 19	P2 Pin 4 (GND)	Yellow Insulation
4	P2 Pin 5 (CFG 1)	Green Insulation	4	P2 Pin 5 (CFG 1)	Green Insulation
6	P2 Pin 6 (CFG 2)	Blue Insulation	6	P2 Pin 6 (CFG 2)	Blue Insulation

Electrical Specifications

NOTE: All specifications in this manual are subject to change.

Table 7. Electrical Specifications

SPECIFICATION	MINIMUM	TYPICAL	MAXIMUM	NOTES
Insertion Loss (GHz), at -3 db	TBD	TBD	TBD	TBD
Return Loss (GHz), at -20 db	TBD	TBD	TBD	TBD
Insertion Loss (GHz), at -3 db	TBD	TBD	TBD	TBD
Return Loss (GHz), at -20 db	TBD	TBD	TBD	TBD
Intra-lane Skew (ps)	TBD		TBD	All lanes and Aux CH, CIC only
Inter-lane Skew (ps)	TBD		TBD	All lanes and Aux CH, CIC only
NEXT (db), at 1.35 GHz, at 2.70 GHz at 5.40 GHz		 TBD TBD TBD		All lanes and Aux CH, CIC only

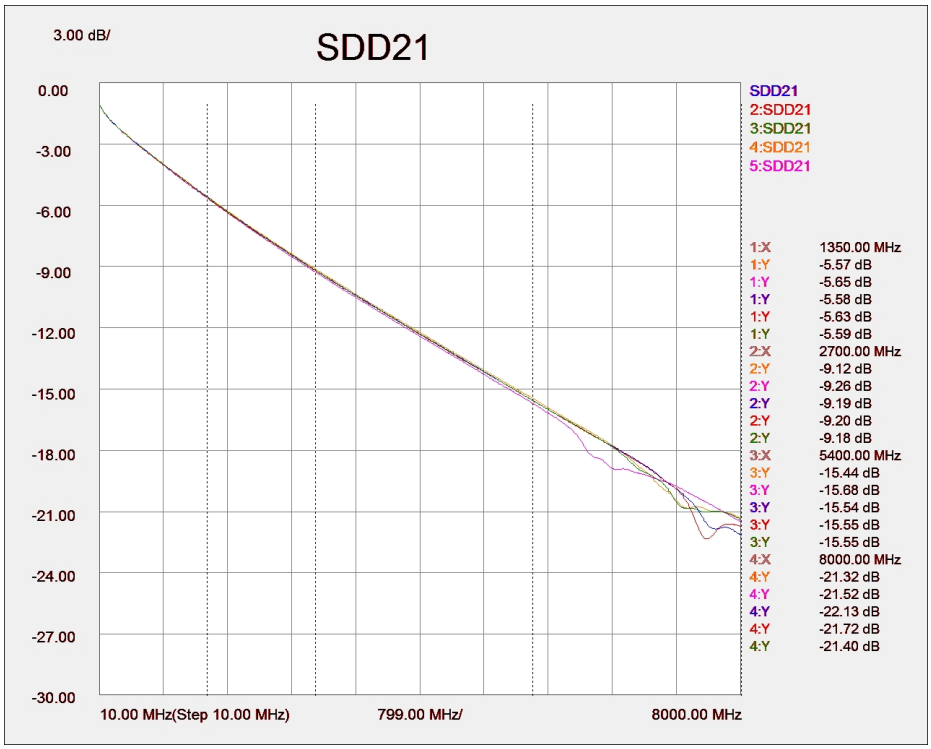

Figure 7. Typical CIC Balanced Insertion Loss (no TPAs connected).

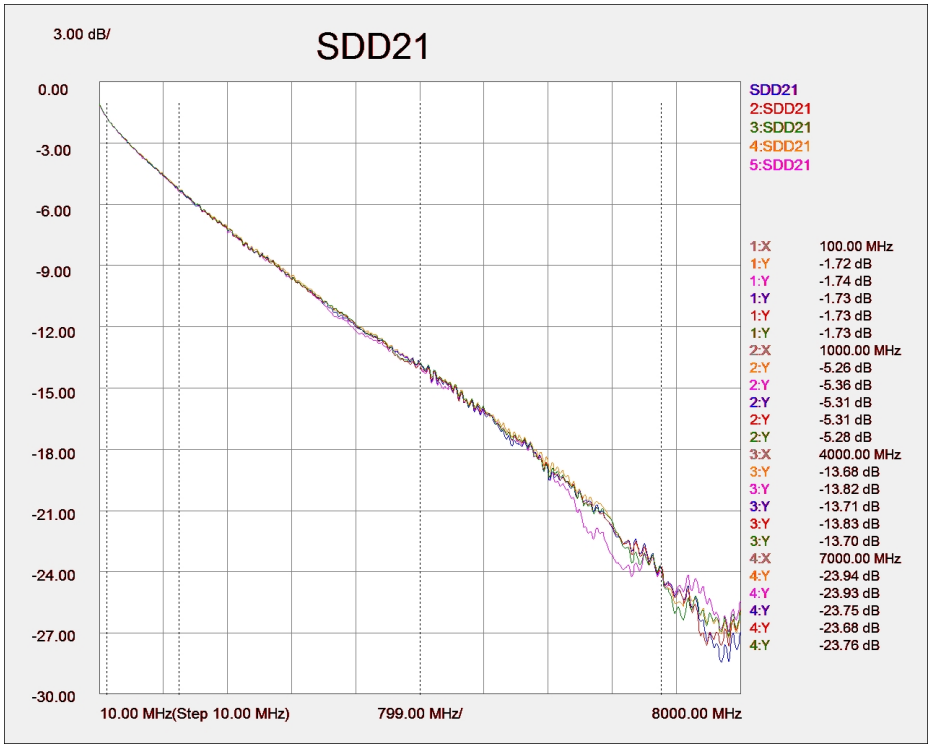

Figure 8. Typical C1 Balanced Insertion Loss. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

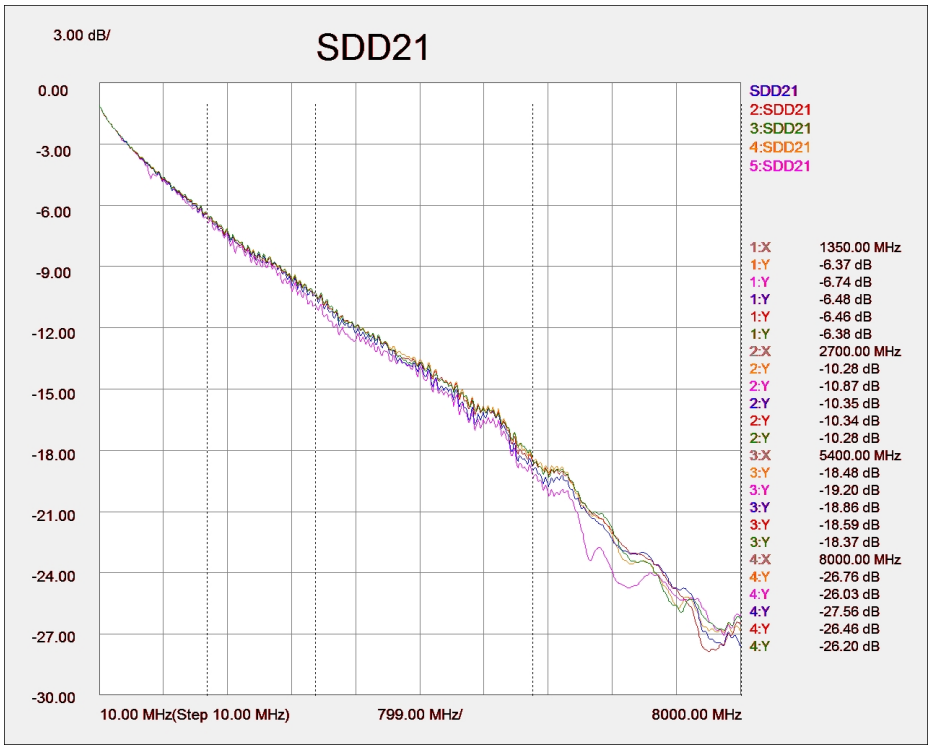

Figure 9. Typical C2 Balanced Insertion Loss. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

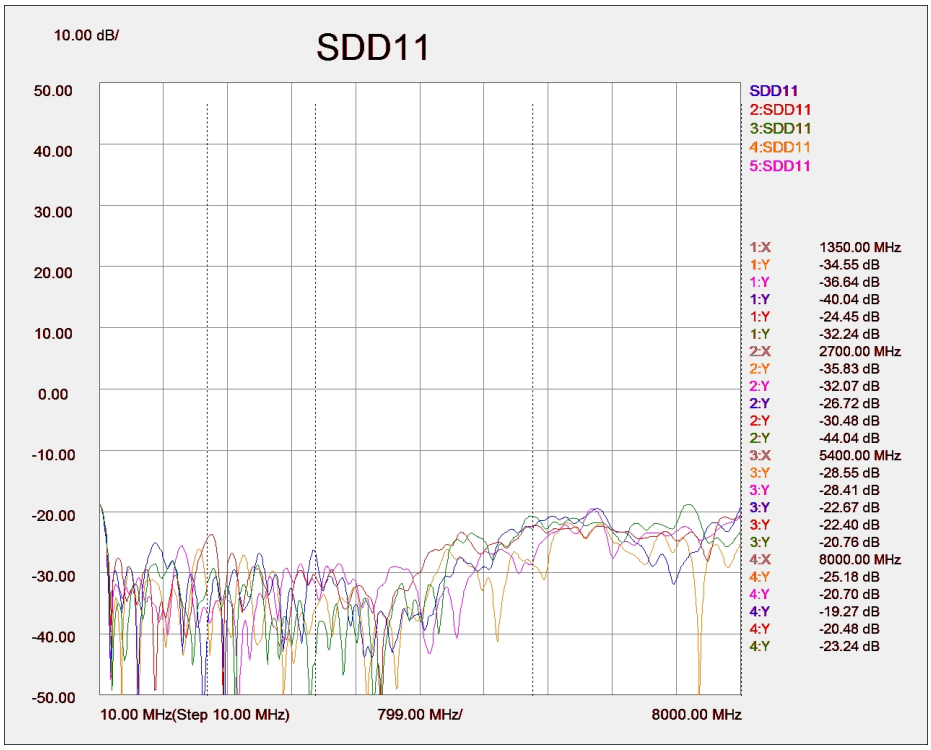

Figure 10. Typical CIC balanced Return Loss (no TPAs connected)

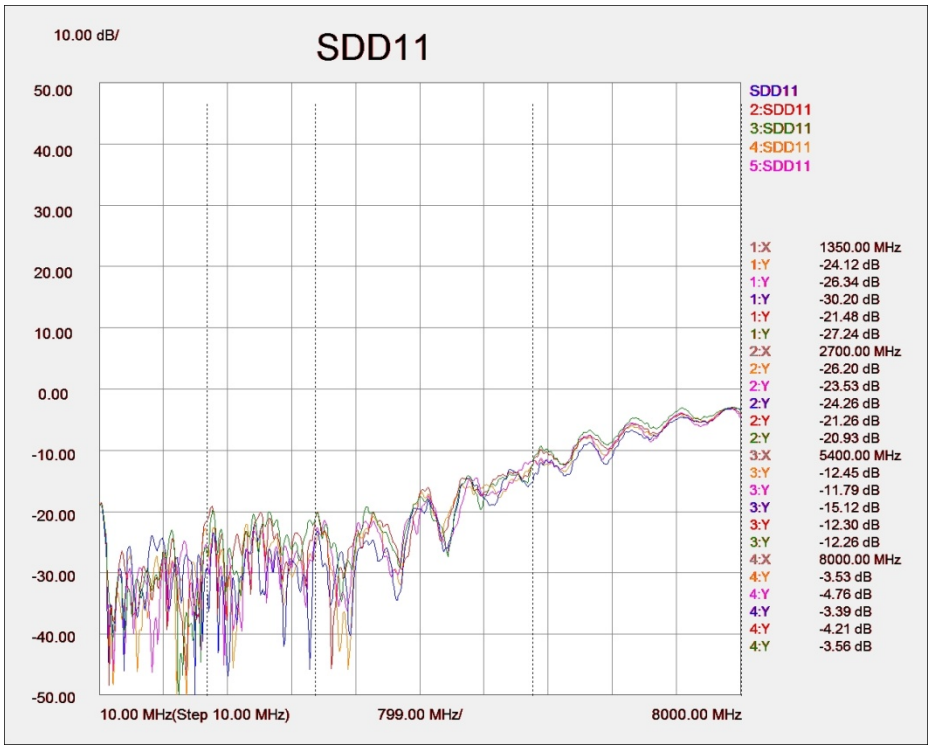

Figure 11. Typical C1 balanced Return Loss. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

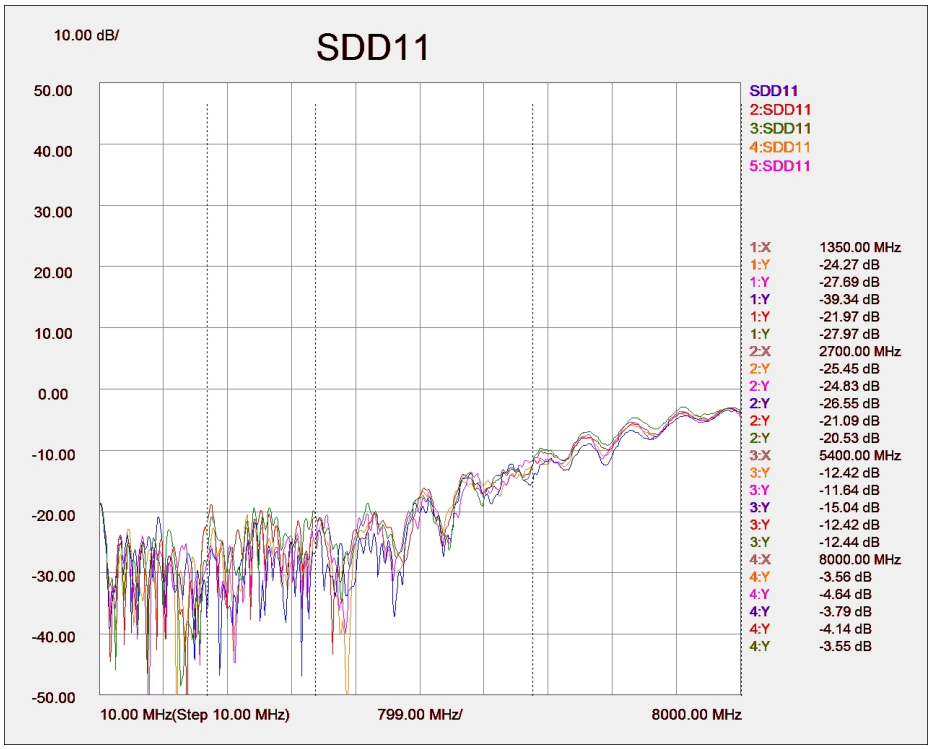

Figure 12. Typical C2 balanced Return Loss. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

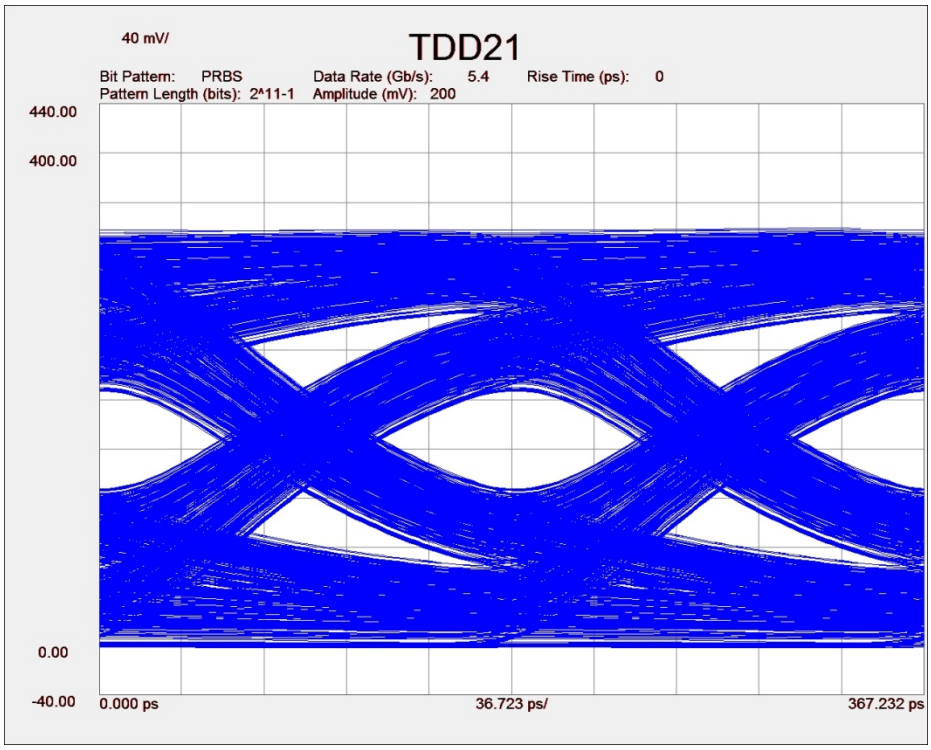

Figure 13. Typical C2 configured, 5.4 Gb/s eye diagram, Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

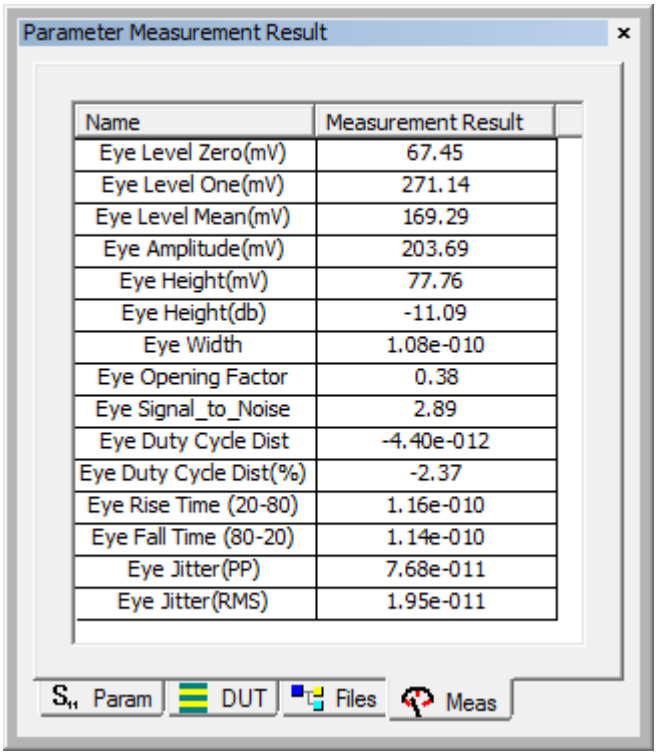

Figure 14. Typical C3 configured, 5.4 Gb/s eye diagram, Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

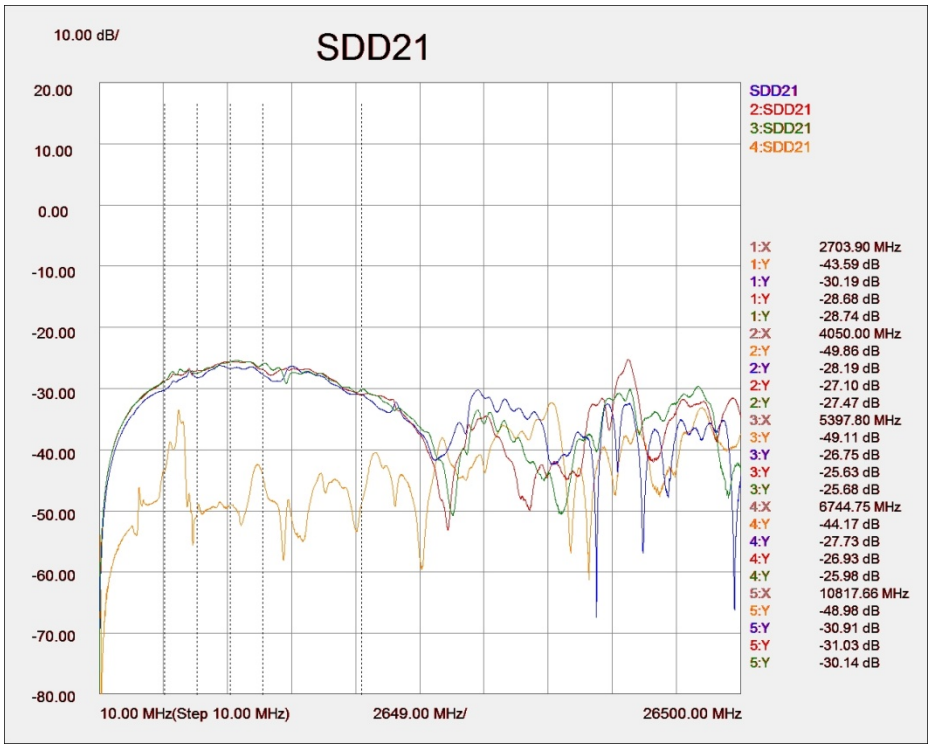

Figure 15. Typical C1 Differential NEXT with mated connectors, adjacent numbered lanes, all lanes terminated at both ends. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

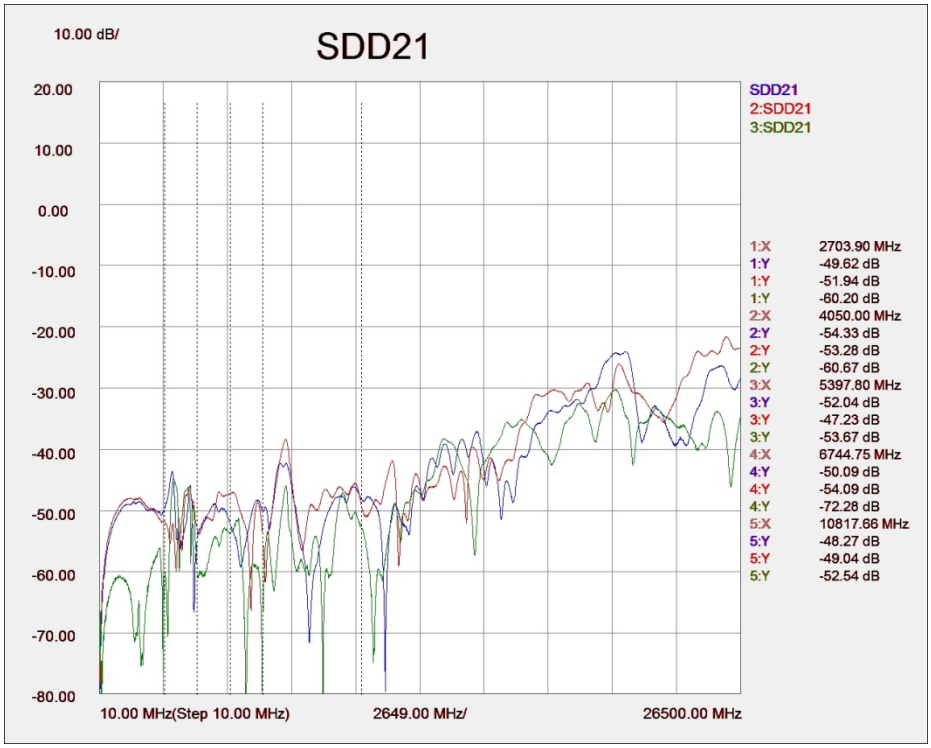

Figure 16. Typical C1 Differential NEXT with mated connectors; skipped lanes, even to even or odd to odd; all lanes terminated at both ends. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

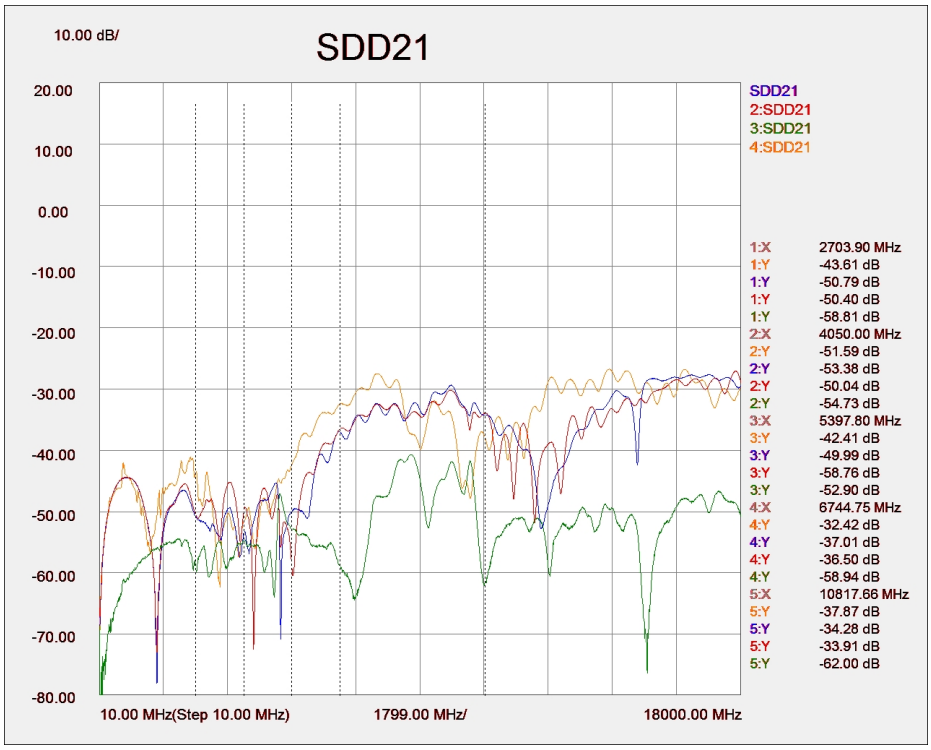

Figure 17. Typical C3 Differential NEXT with mated connectors, adjacent numbered lanes, all lanes terminated at both ends. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

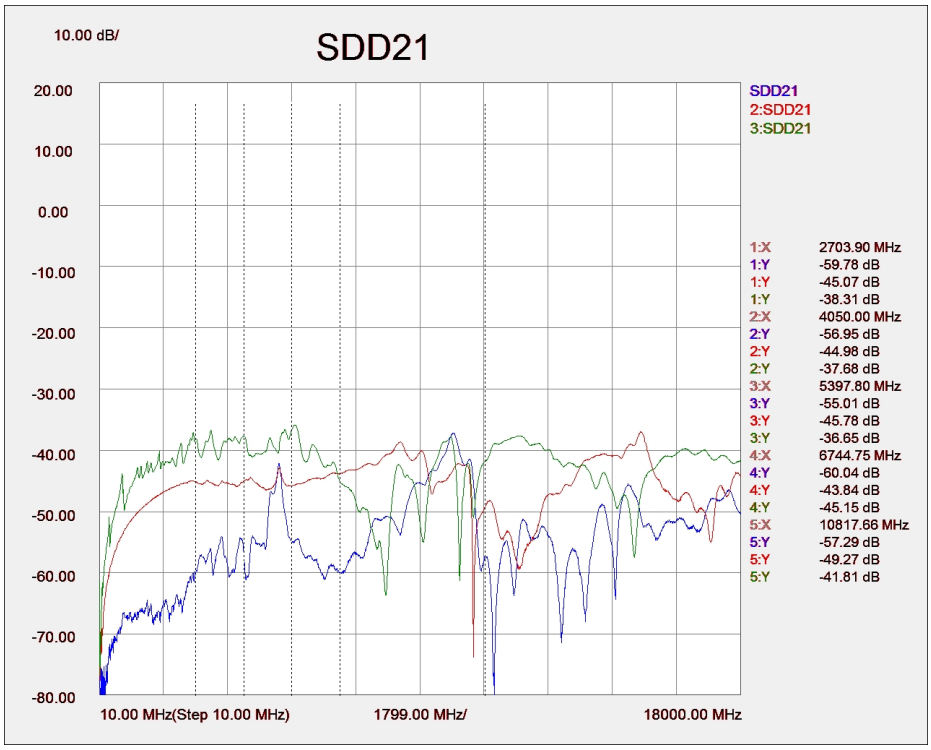

Figure 18. Typical C3 Differential NEXT with mated connectors; skipped lanes, even to even or odd to odd; all lanes terminated at both ends. Receptacle TPAs have been de-embedded leaving the receptacle connector as part of the DUT.

Wilder Technologies, LLC – Limited Warranty

Wilder Technologies, LLC warrants that each Test Adapter, 1) is free from defects in materials and workmanship and, 2) conforms to Wilder Technologies specifications for a period of 12 months. **See Consumable and Fragile Material Warranty for exceptions to the 12 month warranty**

The warranty period for a Test Adapter is a specified, fixed period commencing on the date of ship from Wilder Technologies, LLC. If you did not purchase your Test Adapter directly from Wilder Technologies, LLC, the serial number and a valid proof of purchase will be required to establish your purchase date. If you do not have a valid proof of purchase, the warranty period will be measured from the date of ship from Wilder Technologies, LLC.

If, during the warranty period, the Test Adapter is not in good working order, Wilder Technologies, LLC will, at its option, repair or replace it at no additional charge, except as is set forth below. In some cases, the replacement Test Adapter may not be new and may have been previously installed. Regardless of the Test Adapter's production status, Wilder Technologies, LLC appropriate warranty terms apply.

Consumable and Fragile Material Warranty
Wilder Technologies, LLC warrants that consumable materials and all fragile materials supplied by Wilder Technologies, LLC either as part of an instrument or system, or supplied separately, will be free from defects in material and workmanship at the time of shipment.

Extent of Warranty
The warranty does not cover the repair or exchange of a Test Adapter resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which Wilder Technologies, LLC is not responsible. The warranty is voided by removal or alteration of Test Adapter or parts identification labels. The initial three months are unconditional; the remaining months excludes plugs, receptacles and SMA connectors. Connectors are wear items and excluded from the warranty after the initial three months.

These warranties are your exclusive warranties and replace all other warranties or conditions, express or implied, including but not limited to, the implied warranties or conditions or merchantability and fitness for a particular purpose. These warranties give you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction. Some jurisdictions do not allow the exclusion or limitation of express or implied warranties, so the above exclusion or limitation may not apply to you. In that event, such warranties are limited in duration to the warranty period. No warranties apply after that period.

Items Not Covered by Warranty
Wilder Technologies, LLC does not warrant uninterrupted or error-free operation of a Test Adapter.

Any technical or other support provided for a Test Adapter under warranty, such as assistance via telephone with "how-to" questions and those regarding Test Adapter set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND**.

Warranty Service
Warranty service may be obtained from Wilder Technologies, LLC by returning a Wilder Technologies, LLC Returns Material Authorization and the Test Adapter to Wilder Technologies, LLC during the warranty period. To obtain RMA number, contact support@wilder-tech.com.

You may be required to present proof of purchase or other similar proof of warranty entitlement. You are responsible for any associated transportation charges, duties and insurance between you and Wilder Technologies, LLC. In all instances, you must ship Test Adapters in Wilder Technologies, LLC approved packaging. Information on packaging guidelines can be found at: www.wilder-tech.com. Wilder Technologies, LLC will ship repaired or replacement Test Adapter Delivery Duty Prepaid (DDP) and will pay for return shipment. You will receive title to the repaired or replacement Test Adapter and you will be the importer of record.

Wilder Technologies, LLC – Terms & Conditions of Sale

1. **Other Documents:** This Agreement may NOT be altered, supplemented, or amended by the use of any other document(s) unless otherwise agreed to in a written agreement signed by both you and Wilder Technologies, LLC. If you do not receive an invoice or acknowledgement in the mail, via e-mail, or with your Product, information about your purchase may be obtained at support@wilder-tech.com or by contacting your sales representative.

2. **Payment Terms, Orders, Quotes, Interest:** Terms of payment are within Wilder Technologies, LLC's sole discretion, and unless otherwise agreed to by Wilder Technologies, LLC, payment must be received by Wilder Technologies, LLC prior to Wilder Technologies, LLC's acceptance of an order. Payment for the products will be made by credit card, wire transfer, or some other prearranged payment method unless credit terms have been agreed to by Wilder Technologies, LLC. Invoices are due and payable within the time period noted on your invoice, measured from the date of the invoice. Wilder Technologies, LLC may invoice parts of an order separately. Your order is subject to cancellation by Wilder Technologies, LLC, in Wilder Technologies, LLC's sole discretion. Unless you and Wilder Technologies, LLC have agreed to a different discount, Wilder Technologies, LLC's standard pricing policy for Wilder Technologies, LLC-branded systems, which includes hardware, software and services in one discounted price, allocates the discount off list price applicable to the service portion of the system to be equal to the overall calculated percentage discount off list price on the entire system. Wilder Technologies, LLC is not responsible for pricing, typographical, or other errors in any offer by Wilder Technologies, LLC and reserves the right to cancel any orders resulting from such errors.

3. **Shipping Charges; Taxes; Title; Risk of Loss:** Shipping, handling, duties and tariffs are additional unless otherwise expressly indicated at the time of sale. Title to products passes from Wilder Technologies, LLC to Customer on shipment from Wilder Technologies, LLC's facility. Loss or damage that occurs during shipping by a carrier selected by Wilder Technologies, LLC is Wilder Technologies, LLC's responsibility. Loss or damage that occurs during shipping by a carrier selected by you is your responsibility. You must notify Wilder Technologies, LLC within 7 days of the date of your invoice or acknowledgement if you believe any part of your purchase is missing, wrong or damaged. Unless you provide Wilder Technologies, LLC with a valid and correct tax exemption certificate applicable to your purchase of Product and the Product ship-to location, you are responsible for sales and other taxes associated with the order. **Shipping dates are estimates only**.

4. **WARRANTY:** WILDER TECHNOLOGIES, LLC, warrants that the item(s) manufactured under the Buyer's contract shall be free from defects in materials and workmanship furnished by WILDER TECHNOLOGIES, LLC, and shall conform to the applicable drawings and specifications. WILDER TECHNOLOGIES, LLC'S liability herein, for breach of warranty, contract or negligence in manufacturing, shall be limited to repair or replacement. Repair or replacement of defective items will be applicable only if the Buyer notifies WILDER TECHNOLOGIES, LLC, by written notice within 30-days of delivery. All claims shall be addressed to: support@wilder-tech.com or WILDER TECHNOLOGIES, LLC, 6101A East 18th Street, Vancouver, Washington 98661 U.S.A.; ATTENTION: Customer Service Manager. WILDER TECHNOLOGIES, LLC, reserves the right to inspect at the Buyer's plant all items claimed to be defective or nonconforming prior to authorizing their return. WILDER TECHNOLOGIES, LLC, assumes no liability for the results of the use of its components in conjunction with other electric, electronic or mechanical components, circuits and/or systems. The foregoing constitutes the sole and exclusive remedy of the Buyer and the exclusive liability of WILDER TECHNOLOGIES, LLC, and is IN LIEU OF ANY AND ALL OTHER WARRANTIES, STATUTORY, IMPLIED OR EXPRESSED AS TO MERCHANTABILITY, FITNESS FOR THE PURPOSE SOLD, DESCRIPTION, QUALITY, and PRODUCTIVENESS OR ANY OTHER MATTER. Without limiting the foregoing, in no event shall WILDER TECHNOLOGIES, LLC, be liable for loss of use, profit or other collateral, or for special and/or consequential damages.

5. **RETURNED GOODS:** WILDER TECHNOLOGIES, LLC, will accept only those goods for return that have been authorized for return. All goods authorized for return shall be assigned a Returned Material Authorization (RMA) Number. The RMA Number shall be clearly marked on the shipping container(s) and all documentation accompanying the goods authorized for return. The RMA Number shall be assigned by WILDER TECHNOLOGIES, LLC pursuant to the conditions set forth in Paragraph 4, WARRANTY.

6. **UNITED STATES GOVERNMENT CONTRACTS:** In the event this offer is accepted under Government contract, WILDER TECHNOLOGIES, LLC, agrees to accept clauses required by Government regulations and to waive WILDER TECHNOLOGIES, LLC conditions inconsistent therewith. WILDER TECHNOLOGIES, LLC, certifies that it is a regular manufacturer or dealer of the goods and/or services offered herein and that the prices offered do not exceed those charged to any customer for like quantities, services or materials under the same conditions.

Compliance with Environmental Legislation

Wilder Technologies, LLC, is dedicated to complying with the requirements of all applicable environmental legislation and regulations, including appropriate recycling and/or disposal of our products.

WEEE Compliance Statement

The European Union adopted Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), with requirements that went into effect August 13, 2005. WEEE is intended to reduce the disposal of waste from electrical and electronic equipment by establishing guidelines for prevention, reuse, recycling and recovery.

Wilder Technologies has practices and processes in place to conform to the requirements in this important Directive.

In support of our environmental goals, effective January 1st, 2009 Wilder Technologies, LLC has partnered with E-Tech Recycling of Beaverton, Oregon, www.etechrecycling.com, to recycle our obsolete and electronic waste in accordance with the European Union Directive 2002/96/EC on waste electrical and electronic equipment ("WEEE Directive").

As a service to our customers, Wilder Technologies is also available for managing the proper recycling and/or disposal of all Wilder Technologies products that have reached the end of their useful life. For further information and return instructions, contact support@wilder-tech.com.

Glossary of Terms

TERMINOLOGY	DEFINITION
Aggressor	A signal imposed on a system (i.e., cable assembly) to measure response on other signal carriers.
AUX Channel	Half-duplex, bi-directional channel between the DisplayPort transmitter and DisplayPort receiver. Consists of one differential pair transporting self-clocked data. The DisplayPort AUX Channel supports a bandwidth of 1Mbps over the DisplayPort link. DisplayPort Source is the master that initiates an AUX Channel transaction. DisplayPort Sink is the slave that replies to the AUX Channel transaction initiated by the Requester.
Box-to-box connection	DisplayPort link between two boxes detachable by an end user. A DisplayPort cable-connector assembly for the box-to-box connection shall have four Main Link lanes.
CIC	Compliance Interconnect Channel
DDC/CI	Display Data Channel/Command Interface (VESA)
DisplayPort Receiver	Circuitry that receives the incoming DisplayPort Main Link data. Also contains the transceiver circuit for AUX Channel. Located in Sink Device and the upstream port of Intermediate Device.
DisplayPort Transmitter	Circuitry that transmits the DisplayPort Main Link data. Also contains the transceiver circuit for AUX CH. Located in Source Device and in the downstream port of Intermediate Device.
DP-CIC-C	
DP-TPA	DisplayPort Test Point Access. A specialized assembly that interfaces to a DisplayPort receptacle or plug and enables access of signals for measurement or stimulation.
Dual-standard Device Source or Sink	Device that supports both DisplayPort and DVI/HDMI operating modes.
Informative	The designation of a test that is not required for compliance but is considered important from a characterization standpoint. It is provided for informational purposes only.
mDP-TPA	Mini DisplayPort Test Point Access. A specialized assembly that interfaces to a Mini DisplayPort receptacle or plug and enables access to signals for measurement or stimulation.
Main Link	Unidirectional channel for isochronous stream transport from DisplayPort Source to DisplayPort Sink. Consists of one, 2, or 4 lanes, or differential pairs. Supports 2 bit rates: 2.7Gb/s per lane (referred to as “High Bit Rate”) and 1.62Gb/s per lane (referred to as “Reduced Bit Rate”).
Normative	The designation of a test that is required for compliance.
Sink Device	A device that contains A/V stream sinks for display and/or sound.
Source Device	A device that contains a stream source and originates an isochronous A/V stream.
Victim	A signal carrier on a system that has a response imposed on it by other signals in the system.

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