

Micro-D HDMI High-Speed Characterization

T180116 Rev1 – April 12, 2018



1. Product Description

- 1.1. **Assembly P/N:** A98196-001
- 1.2. **Connector Description:** 1-meter HDMI Micro-D Jumper
- 1.3. **Cable Primaries¹:** 30 AWG SPC PFA
- 1.4. **Cable Shield:** Braided Shielded (85% Min coverage) + Foil
- 1.5. **Cable Jacket:** Polyurethane UL94 V0 & LSZH Jacket
- 1.6. **Insulator:** 37-position (19 pins populated)

2. High-Speed Performance Targets²

- 2.1. **Connector Differential Impedance:** $100\Omega \pm 25\Omega$ based on 200 ps (10%-90%) T_{RISE}
- 2.2. **Cable Differential Impedance:** $100\Omega \pm 10\Omega$ based on 200 ps (10%-90%) T_{RISE}
- 2.3. **Differential Insertion Loss:** Defined by the following vertices:
 - (825 MHz, -5.0 dB)
 - (2.475 GHz, -12.0 dB)
 - (4.125 GHz, -20.0 dB)
 - (5.1 GHz, -25.0 dB)
- 2.4. **Differential Far-End Crosstalk:** Less than -20dB to 5.0 GHz
- 2.5. **Intra-Pair Skew:** Total skew less than 112ps

	Parameter	Spec	Actual
2.1	Connector Differential Impedance	Z_{MIN}	75 Ω
		Z_{MAX}	125 Ω
2.2	Cable Differential Impedance	Z_{MIN}	90 Ω
		Z_{MAX}	100 Ω
2.3	Differential Insertion Loss	0.825 GHz	5 dB
		2.475 GHz	12 dB
		4.125 GHz	20 dB
		5.100 GHz	25 dB
2.4	Differential Far-End Crosstalk	$FEXT_{MAX}$	< -20dB
2.5	Intra-Pair Skew	$Skew_{MAX}$	112ps

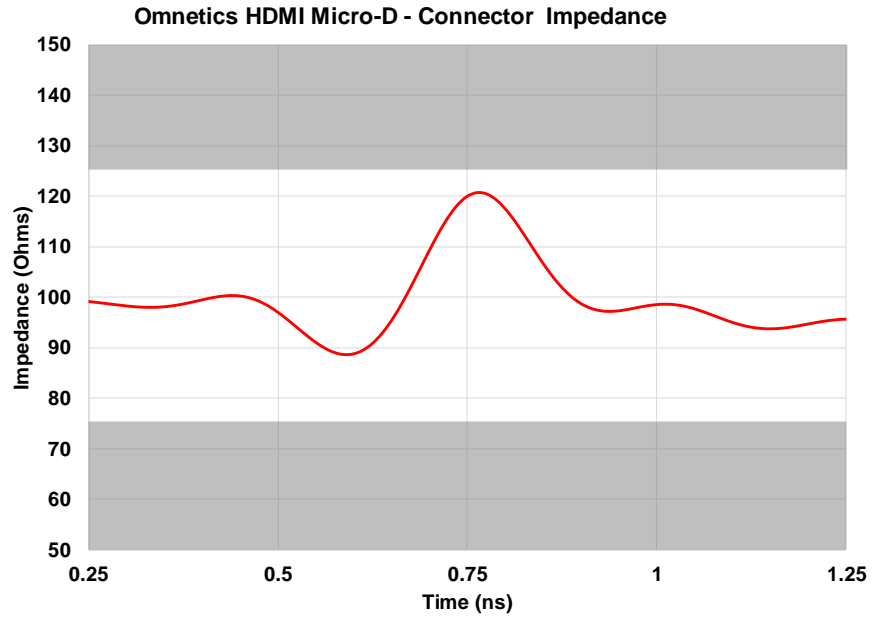
¹ Various cable options are available. Measurements shown above with cables manufactured in Asia.

² Per "High-Definition Multimedia Interface Specification Version 1.4", pages 21 (2.1-2.2), 65-66 (2.3-2.5), June 5, 2009.

2.1 Connector Differential Impedance

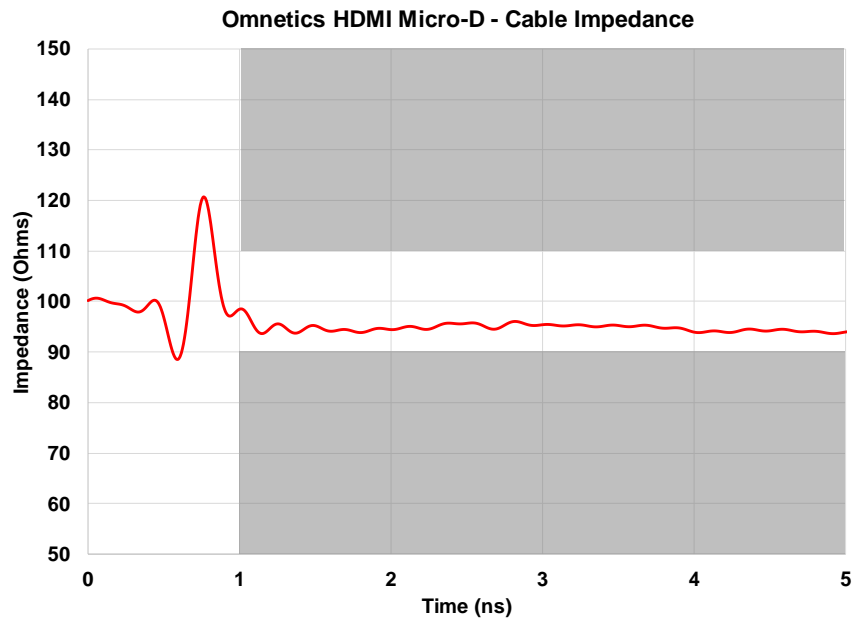
TDR (Time Domain Reflectometer) measures the impedance based on a 200ps (10%-90%) rise time.

	SPEC	1-METER
Z _{MIN}	75 Ω	89 Ω
Z _{MAX}	125 Ω	121 Ω



2.2 Cable Differential Impedance

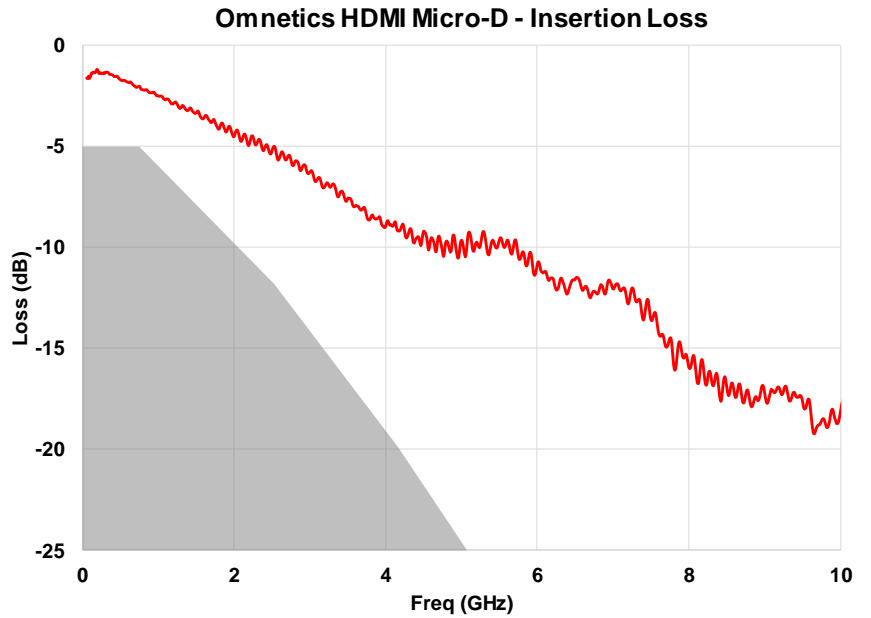
	SPEC	1-METER
Z _{MIN}	90 Ω	94 Ω
Z _{MAX}	100 Ω	99 Ω



2.3 Differential Insertion Loss

Insertion loss is the ratio of the transmitted signal to the incident signal.

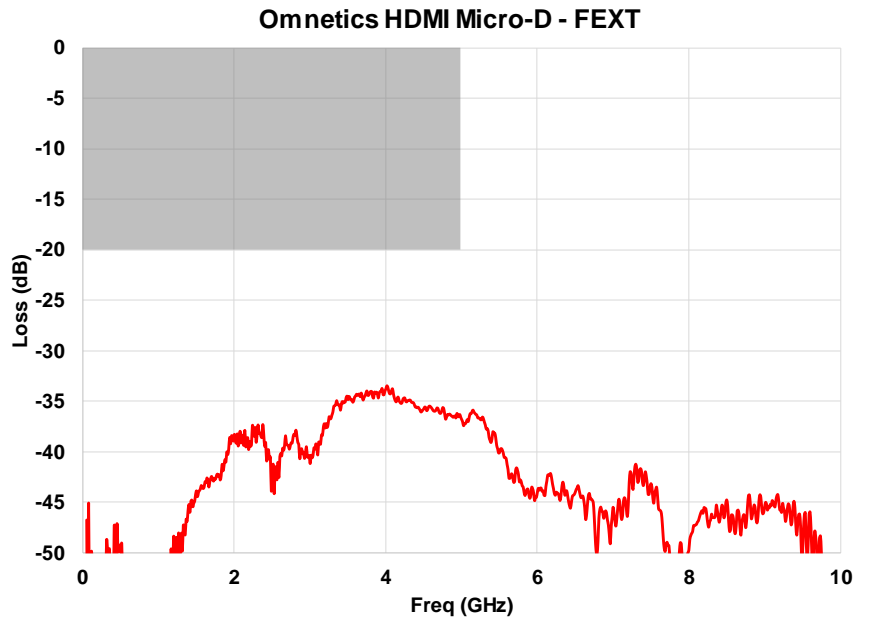
LOSS	SPEC	1-METER
0.825 GHz	5 dB	2 dB
2.475 GHz	12 dB	5 dB
4.125 GHz	20 dB	9 dB
5.100 GHz	25 dB	11 dB



2.4 Differential Near-End Crosstalk

Crosstalk measures the unwanted coupling between differential pairs.

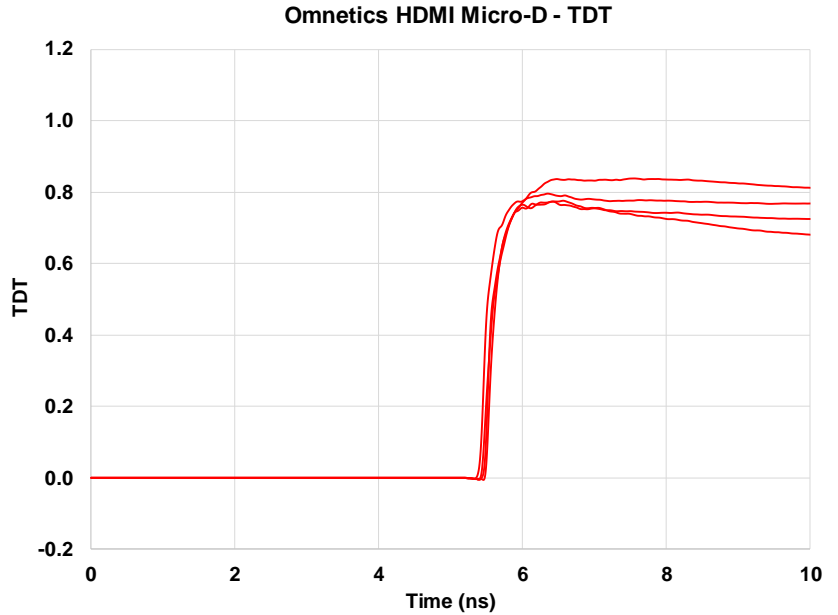
FEXT	SPEC	1-METER
5 GHz	< -20dB	-33 dB



2.5 Intra-Pair Skew

TDT (Time Domain Transmissometry) measures intra-pair skew, which is the difference in electrical length between to signals within a pair.

SKEW	SPEC	1-METER
Pair 1	112 ps	40 ps
Pair 2	112 ps	71 ps



Appendix 1 - Equipment List:

VNA	Agilent 8722ES
Test Fixtures	Omnetics Custom

Revision Control:

Rev1	April 12, 2018
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