Contents

INTRODUCTION

Description

Amphenol OCuLink is a high speed connector and cable assembly solution that can be used in PCIe Gen3/Gen4, SAS3.0/SAS4.0 and other potential applications. The solution can support wire to board application in system.

OCuLink cable assemblies can be provided with 30AWG~34AWG discrete pairs and flat ribbon cable. The OCuLink connector design is scalable to 12 channels and is available in straight, right angle, right side-exit and left side-exit plug configurations to mate with board mount connectors.

OCuLink cables are designed for applications in the data center and networking markets that use SAS, PCIe and other signal protocols. OCuLink cables and connectors support many interconnection configurations including backplane to motherboard, backplane to add-in card and card to motherboard.

Features and Benefits

- Support cable to board application
- Multiple channels are optional: 4X/6X(42pos),8X/12X(80pos)
- Small size design: pitch 0.5mm connector
- Excellent SI performance: signal rates up to PCIe4 16GT/s and SAS 4.0 24Gbps
- Straight, right angle, side exit and customization cable plug are optional
- Supports 85 ohm impedance applications, 100 ohm is available on request
- 30-34AWG cables are available for both discrete and ribbon cable
- RoHS compliant. Halogen free is available on request

Product Applications

- Servers and storage devices
- High performance computing
- Data center & networking equipment

Industry Standards

- SAS 3.0 / 4.0
- PCIe Gen 3 / Gen 4

Technical Documents

Product Specification: PS-AST-0868 and PS-AST-917 OCuLink Cable Assembly

Plug Part Numbers

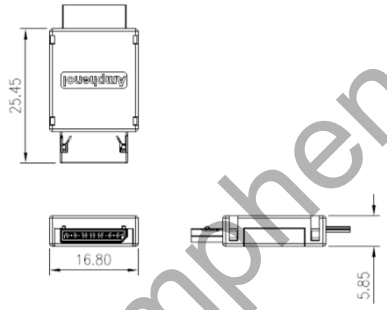
Table 1. Cable Connector Part Number Selection Guide

		42position	80position
Part Description	**Bulk Cable**	**Plug Part Number**	
Straight Plug with Passive Latch	Discrete pairs or Ribbon Cable	OCL42-0001	OCL80-0001
Straight Plug with Active Latch	Discrete pairs or Ribbon Cable	OCL42-0003	OCL80-0002
Straight Plug with Reverse Active Latch	Discrete pairs or Ribbon Cable	OCL42-0008	NA
Right Angle Plug with Passive Latch	Discrete pairs or Ribbon Cable	OCL42-0005	OCL80-0003
Right Angle Plug with Active Latch	Discrete pairs or Ribbon Cable	OCL42-0007	OCL80-0004
Right Side Exit Plug with Active Latch	Discrete pairs or Ribbon Cable	OCL42-0006	OCL80-0006
Left Side Exit Plug with Active Latch	Discrete pairs or Ribbon Cable	OCL42-0009	OCL80-0005

These plugs can be combined each other, please contact Amphenol for customized cable assembly

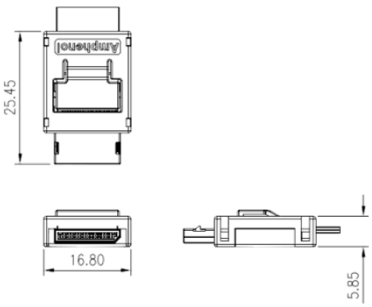
OCL42-0001

42pos Straight Plug with Passive Latch



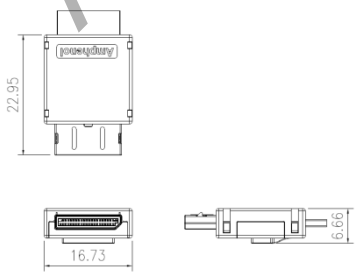
OCL42-0003

42pos Straight Plug with Active Latch



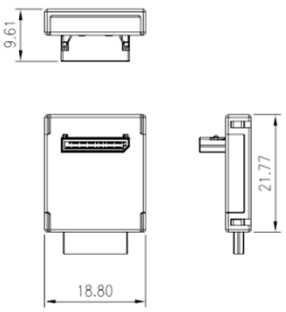
OCL42-0008

42pos Straight Plug with Reverse Active Latch



OCL42-0005

42pos Right Angle Plug with Passive Latch

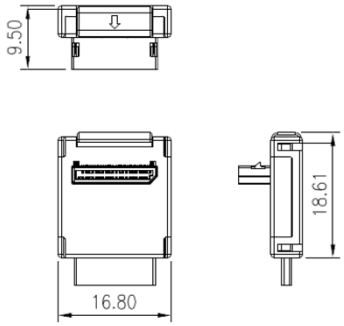


Note: the above dimensions proportion is off.

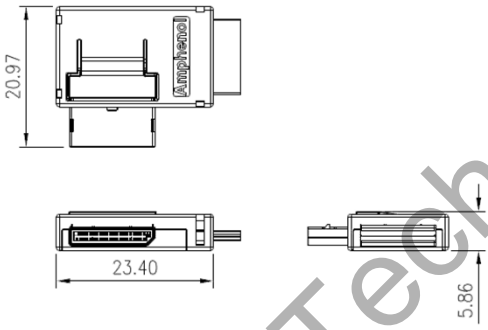
Part Numbers

Cable Connector Part Number Selection Guide

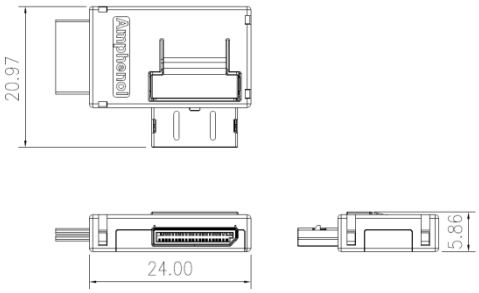
OCL42-0007
42pos Right Angle Plug with Active Latch



OCL42-0006
42pos Right Side Exit Plug with Active Latch

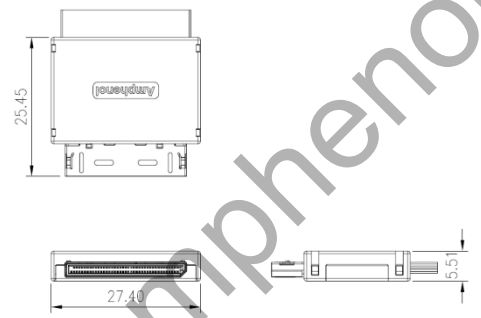


OCL42-0009
42pos Left Side Exit Plug with Active Latch



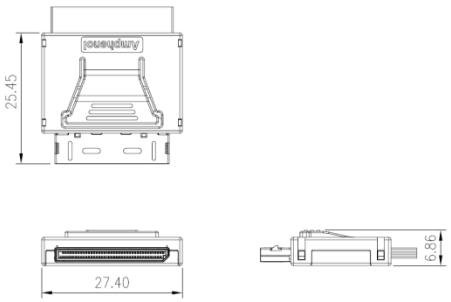
OCL80-0001

80pos Straight Plug with Passive Latch

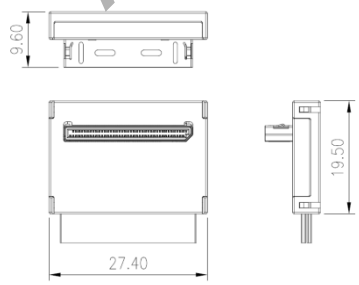


OCL80-0002

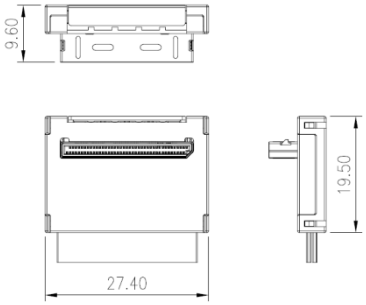
80pos Straight Plug with Active Latch



OCL80-0003
80pos Right Angle Plug with Passive Latch



OCL80-0004
80pos Right Angle Plug with Active Latch

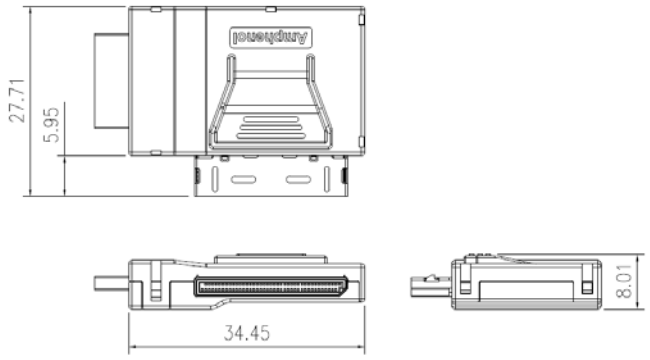


Note: the above dimensions proportion is off.

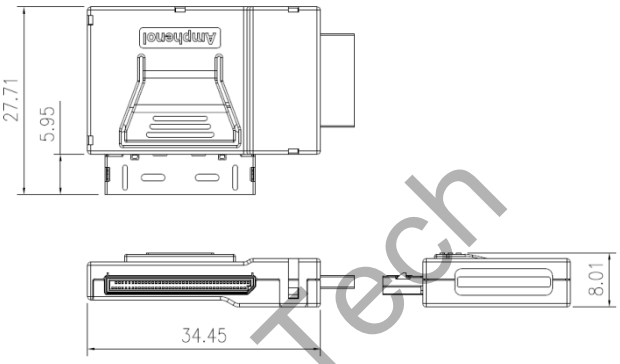
Part Numbers

Cable Connector Part Number Selection Guide

OCL80-0005
80pos Left Side Exit Plug with Active Latch



OCL80-0006
80pos Right Side Exit Plug with Active Latch



Note: the above dimensions proportion is off.

Product Specifications

Table 2. Material Specifications

Contact	30μin min hard Gold plated contact pads
Connector housing	Thermoplastic UL94V-0
Active latch	Stainless steel
Raw Cable (30-34AWG)	Silver plated copper conductor
	Fluoropolymer dielectric
	Tinned copper drain wire
	Metallic tape pair shield
	Polyester tape jacket

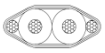
Table 3. Electrical/Mechanical Specifications

Impedance	85Ω, optional 100Ω
Data Rate	24Gbps per channel
Within Pair Skew	Max. 10 ps/m
Rated Voltage	30V
Rated Current	0.5A per pin
Durability	250 mating cycles
Mating force	Connector W/Active latch: 8~40N Connector W/Passive latch: 10~40N
Un-Mating force	8~25N
Wrenching test	Max 10N for each axis direction

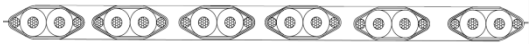
Table 4. Environmental Specifications

Storage Temperature	-20° to 80°C
Operating Temperature	0° to 80°C
Flammability Rating	VW-1
Safety Certificates	RoHS compliant, HF optional

Table 5. Typical Cable Specifications



30AWG 85Ω Cable Bend Radius	1.95mm (good way bend)
Cable Dimensions	Thickness =0.78 mm
	Width per pair = 1.80 mm
31AWG 85Ω Cable Bend Radius	1.8mm (good way bend)
Cable Dimensions	Thickness = 0.72mm
	Width per pair = 1.70 mm
32AWG 85Ω Cable Bend Radius	1.6mm (good way bend)
Cable Dimensions	Thickness =0.65 mm
	Width per pair = 1.56 mm
34AWG 85Ω Cable Bend Radius	1.4 mm (good way bend)
Cable Dimensions	Thickness =0.55 mm
	Width per pair = 1.25 mm



30AWG 85Ω Cable Bend Radius	2.1mm (good way bend)
Cable Dimensions	Thickness =0.85 mm
	Width/12 pairs = 27.30 mm
31AWG 85Ω Cable Bend Radius	1.95mm (good way bend)
Cable Dimensions	Thickness = 0.78mm
	Width/12 pairs = 25.90 mm
32AWG 85Ω Cable Bend Radius	1.8mm (good way bend)
Cable Dimensions	Thickness =0.71 mm
	Width/6 pairs = 13.80 mm
34AWG 85Ω Cable Bend Radius	1.5mm (good way bend)
Cable Dimensions	Thickness =0.60 mm
	Width/6 pairs = 12.0 mm

30AWG 85Ω Cable Attenuation (max)	4.5GHz = 4.5 dB/m
	9.0 GHz = 8.8 dB/m
	12.0 GHz = 10.7 dB/m
31AWG 85Ω Cable Attenuation (max)	4.5GHz = 5.0 dB/m
	9.0 GHz = 8.8 dB/m
	12.0 GHz = 10.7 dB/m
32AWG 85Ω Cable Attenuation (max)	4.5GHz = 5.8 dB/m
	9.0 GHz = 10.5 dB/m
	12.0 GHz = 14.0 dB/m
34AWG 85Ω Cable Attenuation (max)	4.5GHz = 4.8 dB/0.7m
	9.0 GHz = 9.8 dB/0.7m
	12.0 GHz = 12.8 dB/0.7m

Note:
Conductor is solid copper for discrete and ribbon cable.
For more details, please contact local Amphenol sales person or visit www.amphenol-ast.com.

Pin Configurations

OCuLink 42 Position

P1		P2	
A1	RESERVED	B1	RESERVED
A2	GROUND	B2	GROUND
A3	PERp0	B3	PETp0
A4	PERn0	B4	PETn0
A5	GROUND	B5	GROUND
A6	PERp1	B6	PETp1
A7	PERn1	B7	PETn1
A8	GROUND	B8	GROUND
A9	BP TYPE	B9	BP TYPE
A10	CWAKE#	B10	CWAKE#
A11	GROUND	B11	GROUND
A12	VSP	B12	VSP
A13	VSP	B13	VSP
A14	GROUND	B14	GROUND
A15	PERp2	B15	PETp2
A16	PERn2	B16	PETn2
A17	GROUND	B17	GROUND
A18	PERp3	B18	PETp3
A19	PERn3	B19	PETn3
A20	GROUND	B20	GROUND
A21	RESERVED	B21	RESERVED

P1		P2	
B1	RESERVED	A1	RESERVED
B2	GROUND	A2	GROUND
B3	PETp0	A3	PERp0
B4	PETn0	A4	PERn0
B5	GROUND	A5	GROUND
B6	PETp1	A6	PERp1
B7	PETn1	A7	PERn1
B8	GROUND	A8	GROUND
B9	2-WIRE CLOCK	A9	2-WIRE CLOCK
B10	2-WIRE DATA	A10	2-WIRE DATA
B11	GROUND	A11	GROUND
B12	PERST#	A12	PERST#
B13	CPRSNT#	A13	CPRSNT#
B14	GROUND	A14	GROUND
B15	PETp2	A15	PERp2
B16	PETn2	A16	PERn2
B17	GROUND	A17	GROUND
B18	PETp3	A18	PERp3
B19	PETn3	A19	PERn3
B20	GROUND	A20	GROUND
B21	RESERVED	A21	RESERVED

OCuLink 80 Position

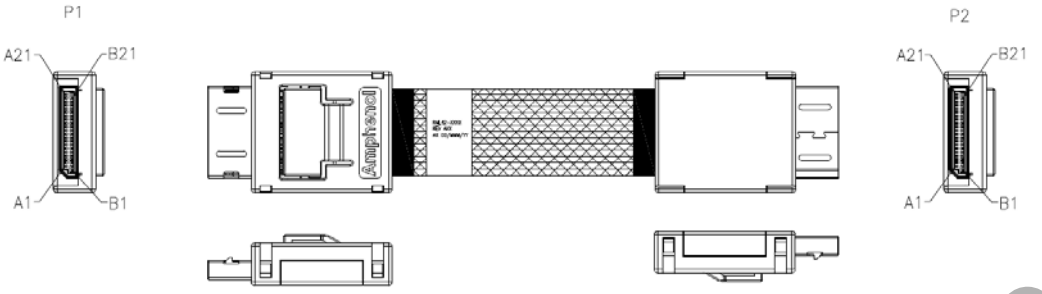
P1		P2	
A1	GROUND	B1	GROUND
A2	PERp0	B2	PETp0
A3	PERn0	B3	PETn0
A4	GROUND	B4	GROUND
A5	PERp1	B5	PETp1
A6	PERn1	B6	PETn1
A7	GROUND	B7	GROUND
A8	BP TYPE	B8	BP TYPE
A9	CWAKE#	B9	CWAKE#
A10	GROUND	B10	GROUND
A11	VSP	B11	VSP
A12	VSP	B12	VSP
A13	GROUND	B13	GROUND
A14	PERp2	B14	PETp2
A15	PERn2	B15	PETn2
A16	GROUND	B16	GROUND
A17	PERp3	B17	PETp3
A18	PERn3	B18	PETn3
A19	GROUND	B19	GROUND
A20	RESERVED	B20	RESERVED
A21	RESERVED	B21	RESERVED
A22	GROUND	B22	GROUND
A23	PERp4	B23	PETp4
A24	PERn4	B24	PETn4
A25	GROUND	B25	GROUND
A26	PERp5	B26	PETp5
A27	PERn5	B27	PETn5
A28	GROUND	B28	GROUND
A29	2-WIRE CLOCK	B29	2-WIRE CLOCK
A30	2-WIRE DATA	B30	2-WIRE DATA
A31	GROUND	B31	GROUND
A32	PERST#	B32	PERST#
A33	CPRSNT#	B33	CPRSNT#
A34	GROUND	B34	GROUND
A35	PERp6	B35	PETp6
A36	PERn6	B36	PETn6
A37	GROUND	B37	GROUND
A38	PERp7	B38	PETp7
A39	PERn7	B39	PETn7
A40	GROUND	B40	GROUND

P1		P2	
B1	GROUND	A1	GROUND
B2	PETp0	A2	PERp0
B3	PETn0	A3	PERn0
B4	GROUND	A4	GROUND
B5	PETp1	A5	PERp1
B6	PETn1	A6	PERn1
B7	GROUND	A7	GROUND
B8	BP TYPE	A8	BP TYPE
B9	CWAKE#	A9	CWAKE#
B10	GROUND	A10	GROUND
B11	VSP	A11	VSP
B12	VSP	A12	VSP
B13	GROUND	A13	GROUND
B14	PETp2	A14	PERp2
B15	PETn2	A15	PERn2
B16	GROUND	A16	GROUND
B17	PETp3	A17	PERp3
B18	PETn3	A18	PERn3
B19	GROUND	A19	GROUND
B20	RESERVED	A20	RESERVED
B21	RESERVED	A21	RESERVED
B22	GROUND	A22	GROUND
B23	PETp4	A23	PERp4
B24	PETn4	A24	PERn4
B25	GROUND	A25	GROUND
B26	PETp5	A26	PERp5
B27	PETn5	A27	PERn5
B28	GROUND	A28	GROUND
B29	2-WIRE CLOCK	A29	2-WIRE CLOCK
B30	2-WIRE DATA	A30	2-WIRE DATA
B31	GROUND	A31	GROUND
B32	PERST#	A32	PERST#
B33	CPRSNT#	A33	CPRSNT#
B34	GROUND	A34	GROUND
B35	PETp6	A35	PERp6
B36	PETn6	A36	PERn6
B37	GROUND	A37	GROUND
B38	PETp7	A38	PERp7
B39	PETn7	A39	PERn7
B40	GROUND	A40	GROUND

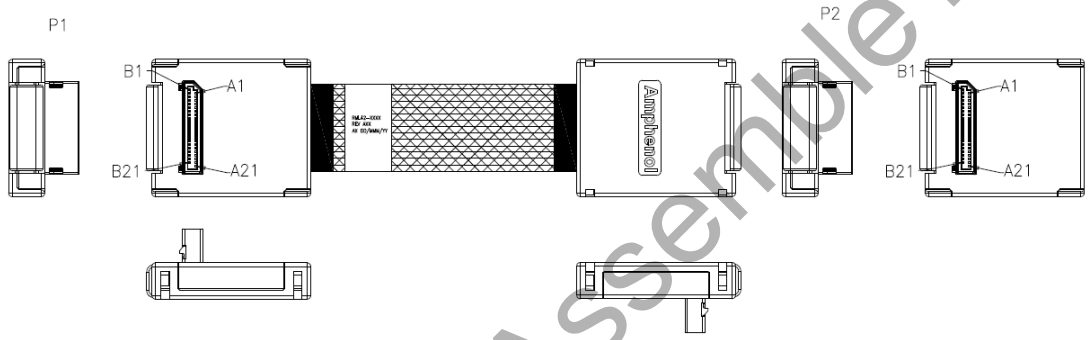
Note: P1 and P2 are connectors on both ends of cable assembly.

OCuLink CABLE ASSEMBLY MECHANICAL SCHEMATICS

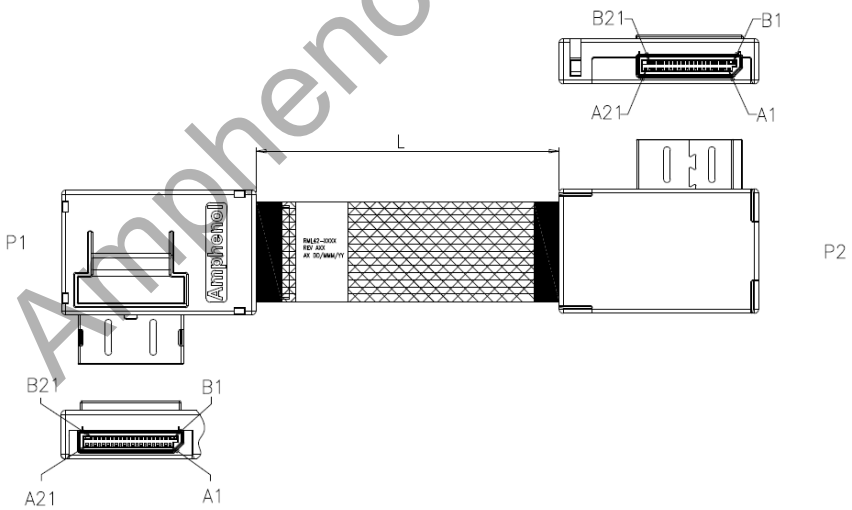
OCuLink 42 Position Straight to Straight Cable Assembly



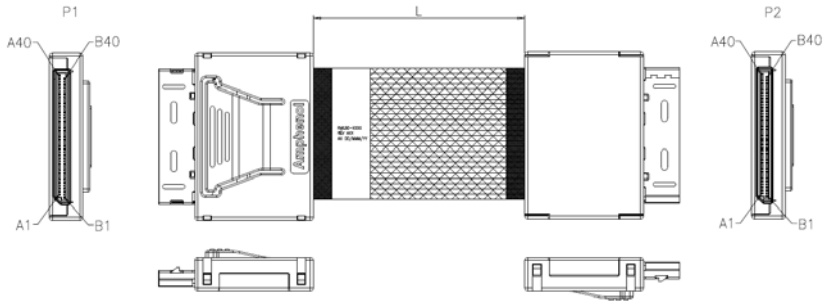
OCuLink 42 Position Right Angle to Right Angle Cable Assembly



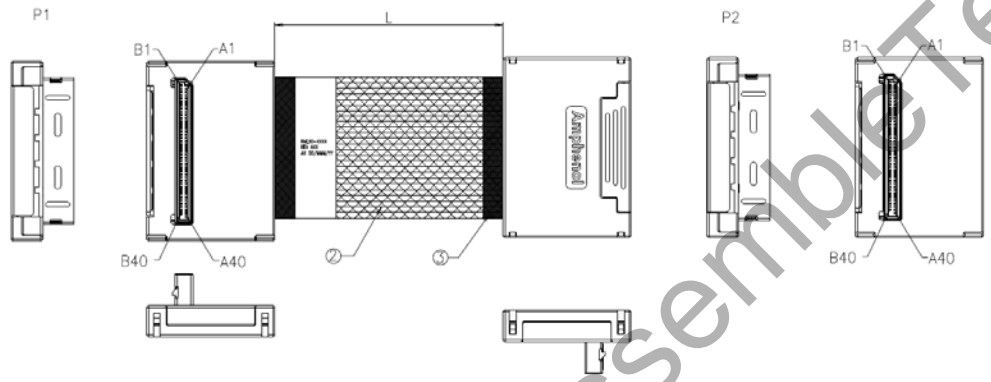
OCuLink 42 Position Right Side Exit to Left Side Exit Cable Assembly



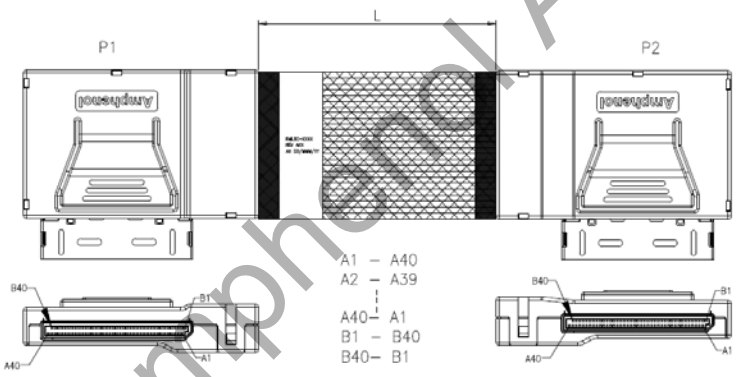
OCuLink 80 Position Straight to Straight Cable Assembly



OCuLink 80 Position Right Angle to Right Angle Cable Assembly

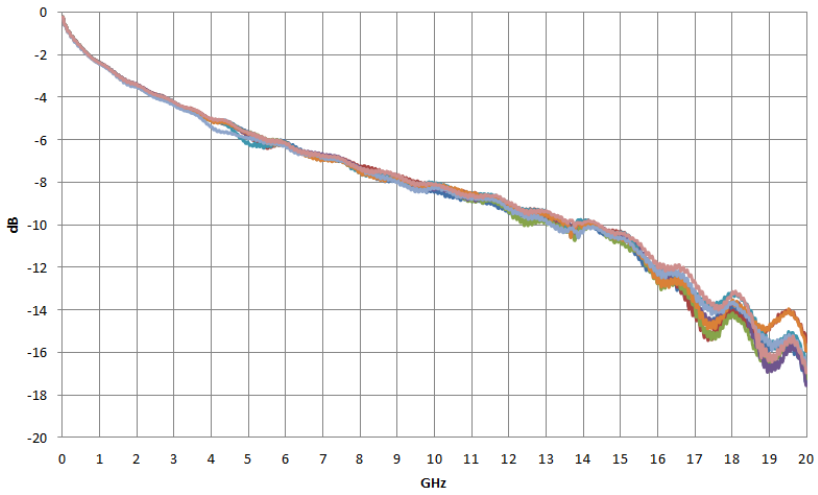


OCuLink 80 Position Right Side Exit to Left side Exit Cable Assembly

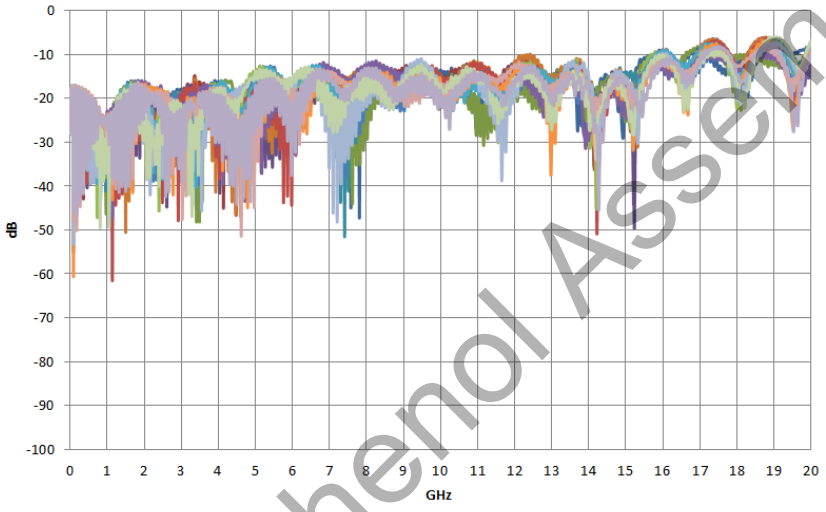


Signal Integrity Performance

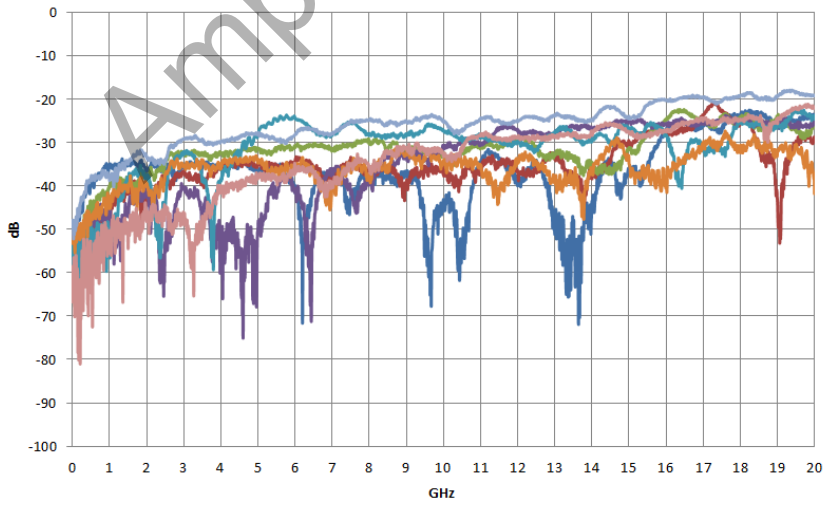
Insertion Loss (SDD21) of 1m 32AWG 85 Ohm OCuLink



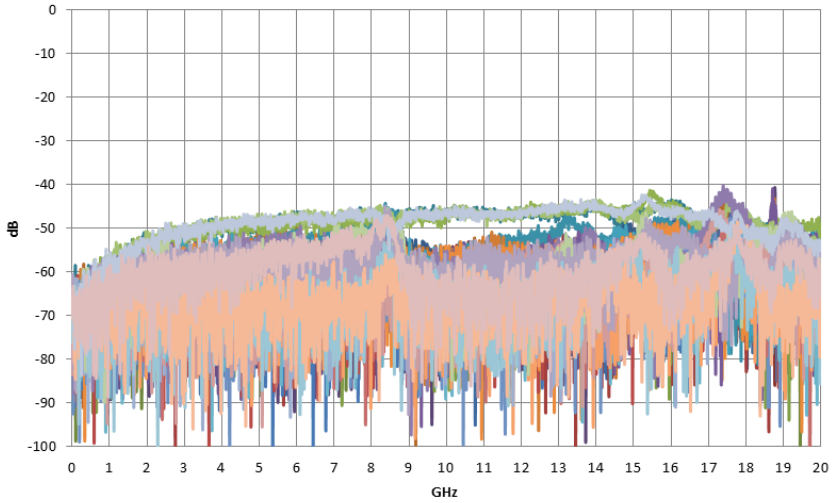
Return Loss (SDD11) of 1m 32AWG 85 Ohm OCuLink



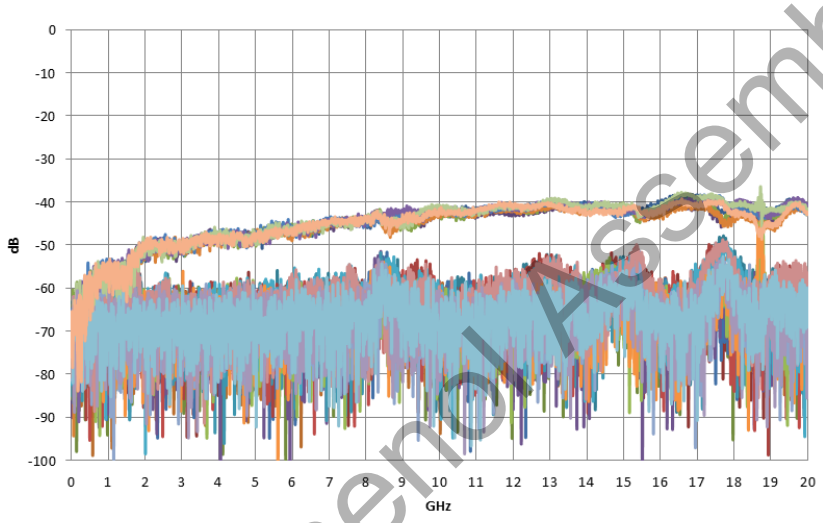
SCD21-SDD21 of 1m 32AWG 85 Ohm OCuLink



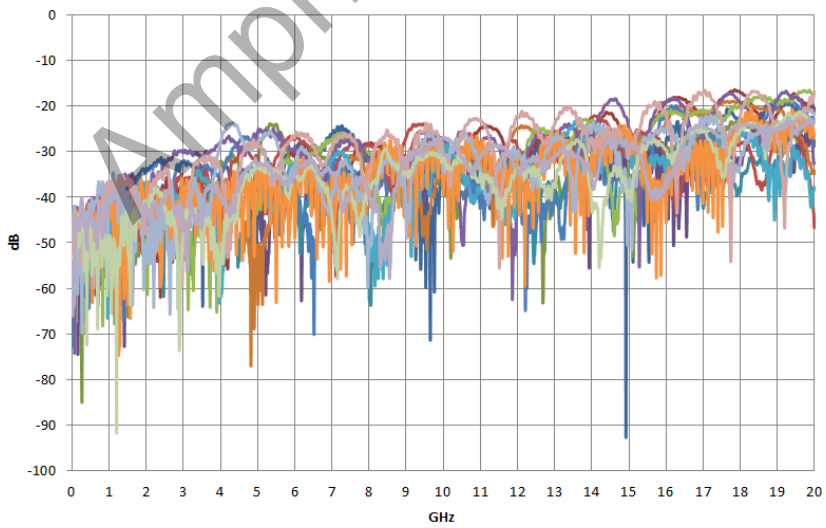
NEXT of 1m 32AWG 85 Ohm OCuLink



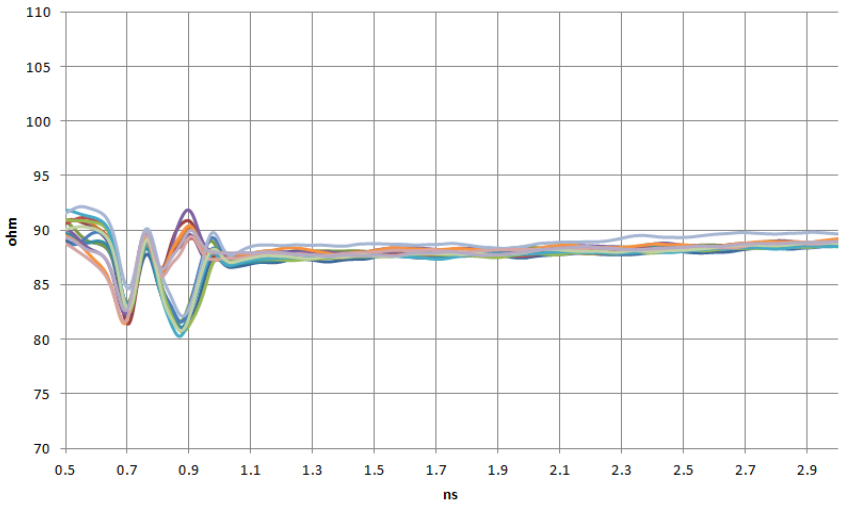
FEXT of 1m 32AWG 85 Ohm OCuLink



SCD21 of 1m 32AWG 85 Ohm OCuLink



Differential Impedance @ Tr=40ps(20%-80%) of 1m 32AWG 85 Ohm OCuLink



Note:
1. Please visit our website http://www.amphenol-ast.com/V3/en/product.aspx?classId=164 to find specific product information.
2. Any requirement, please send email to sales@amphenol-ast.com or inquire our local sales.