

# Octonet Contacts

Superior Ethernet Contact System for MIL-DTL-38999, Series III

**Amphenol**  
MILITARY HIGH SPEED

## OVERVIEW

Eight strategically spaced inner contacts form four 100 Ohm matched impedance differential pairs.



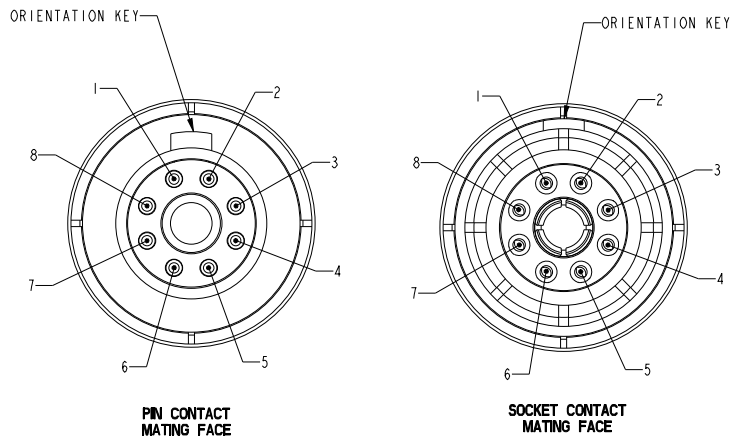
### FEATURES

- Available in size 8 crimp termination style
- Also available in PC Tails
- Can be installed in existing size 8 Quadrax cavities
- Meets performance specifications of CAT-6A cable
- 10G Ethernet compliant
- Overall higher bandwidth than standard CAT5E Quadrax-supports up to 4.0 Gbps per pair
- Enhanced crosstalk performance (compared to standard Quadrax)
- Supports wire ranges 26 to 24 gauge
- Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts
- Operating Temp -65°C to 175°C
- Recommended to use extender backshell.

### BENEFITS

- Easy drop-in replacement to installed connectors no need to redesign

### SUGGESTED DIFFERENTIAL PAIR NUMBERING



### SPECS

- Environmental Sealing:** IAW connector specification
- Corrosion Resistance:** 500 hours salt spray
- EMI Shielding:** 360 degree shielding on each pair
- Mating Cycles:** 500 cycles
- Voltage Rating:** 500 Vrms max @ sea level
- Dielectric Withstanding Voltage:** 500 VAC RMS sea level

Differential Pairing	
Pair #	Contact ID
1	1-2
2	3-4
3	5-6
4	7-8

### OCTONET CABLE DIMENSIONAL RESTRICTIONS

- OD over cable jacket - .309 inch max
- OD over braid - .268 inch max
- Inner conductor insulation OD - .050 inch max



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## FEATURES

- Integral removal tool
- Mates with Octonet II design
- Hex outer crimp



Pin

Socket

\*Not limited to cables shown

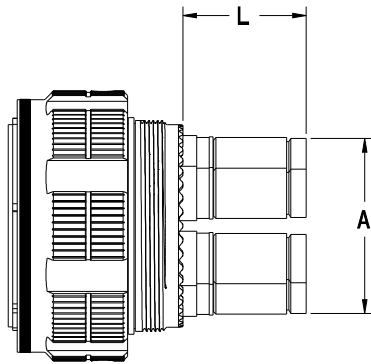
Pin	Socket	*Cable
21-032904-001	21-032905-001	Thermax: MX10G-24HP
21-032904-011	21-032905-011	W.L.Gore: RCN8966-24
21-032904-021	21-032905-021	PIC E6A3824, Harbour E10024065, E10024064, E6A6824, Gigaflight GF824B-6A, PIC E6A0824
21-032904-031	21-032905-031	W.L.Gore: GSC-03-84043-01
21-032904-041	21-032905-041	Axon P542810, W.L.Gore: RCN9235-26 (Cat8)
21-032904-061	21-032905-061	Thermax MX10G-24FLX4
21-032904-051	21-032905-051	PIC E6A3826, MX10G-26, PIC E74826
21-032904-071	21-032905-071	W.L.Gore: RCN9047-26, RCN8966-26, Quabbin 5710 QWC0042-03
21-032904-081	21-032905-081	TE C6A-26C444XB2MA
21-032904-111	21-032905-111	Marmon DL-CAT5E-26ENECT80.1
21-032904-131	21-032905-131	PIC E84824 (Cat6A)

\*Not limited to cables shown

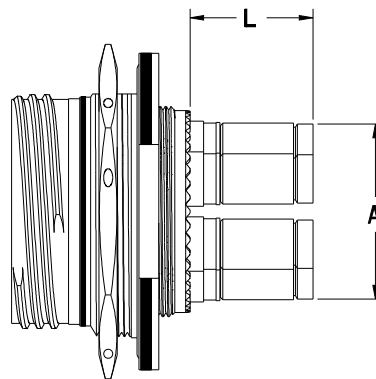
## CRIMP TOOLS

Inner Crimp Tool		Outer Crimp Tool	
Tool	Positioner	Tool	Die Set
M22520/2-01	DANIELS K1958	M22520/5-01	DANIELS Y039 or Y2242

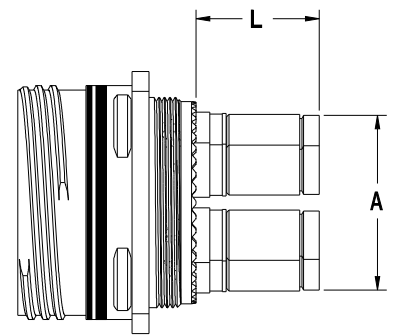
## CONTACT PROTRUSION - REAR OF GROMMET



Plug



Jam Nut Receptacle



Wall Mount Receptacle

Shell Size	A DIA MIN	L MN
9	.360	.840
17	.734	.840
19	.869	.840
21	.869	.840
23	1.088	.840
25	1.234	.840

# Octonet II Contacts

Superior Ethernet Contact System for MIL-DTL-38999, Series III

## FEATURES

- Uses removal tool M81969/14-12
- Shorten overall length
- Smaller overall diameter
- Circular outer crimp



Pin



Socket

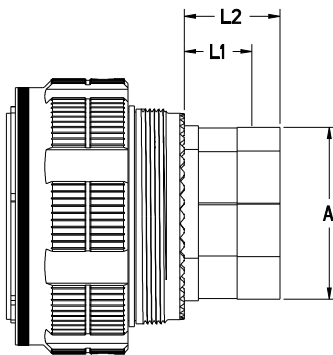
## CRIMP TOOLS

Pin	Socket	*Cable
21-032904-121	21-032905-121	W.L.Gore: RCN8966-24, PIC E6A3824, W.L.Gore: GSC-03-84043-01, Axon P542810, Thermax MX10G-24FLX4, PIC E6A3826, MX10G-26, W.L.Gore: RCN9047-26, RCN8966-26, TE C6A-26C444XB2MA, Marmon DL-CAT5E-26EN-ECT80.1, Gigafight GF824B-6A, W.L.Gore: RCN9235-26 (Cat8)

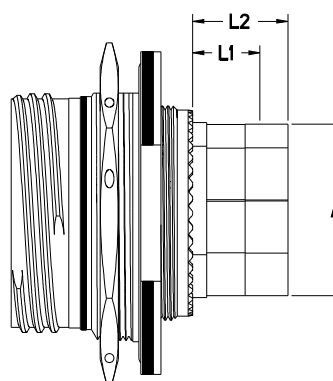
\*Not limited to cables shown

Inner Crimp Tool		Outer Crimp Tool	
Tool	Positioner	Tool	Die Set
M22520/2-01	DANIELS K1958	DANIELS GS206	DANIELS G2P1907

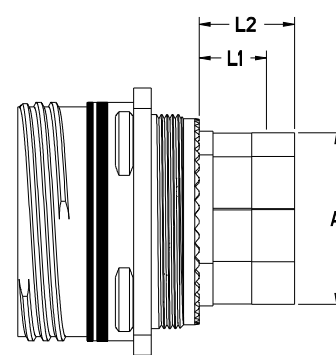
## CONTACT PROTRUSION - REAR OF GROMMET



Plug



Jam Nut Receptacle



Wall Mount Receptacle

Shell Size	A DIA MIN	L1 MN (End of shell to end of contact)	L2 MN (End of shell to end of seal)
9	.360	.440	.628
17	.734	.440	.628
19	.869	.440	.628
21	.869	.440	.628
23	1.088	.440	.628
25	1.234	.440	.628

# Octonet Contacts

PCB intermatable with Octonet and Octonet II

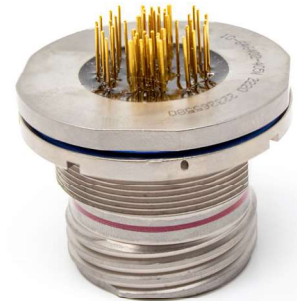


Pin PCB Tail



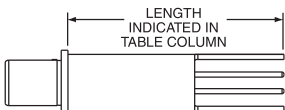
Socket PCB Tail

PCB Pin	PCB Socket	*Cable
		L Dimension + or - 15
21-032906-001	21-032907-001	Pin .884 / Socket 1.024
21-032906-011	21-032907-011	.884
21-032906-021	21-032907-021	.884
21-032906-031	21-032907-031	.950
21-032906-041	21-032907-041	.859
21-032906-051	21-032907-051	.518
21-032906-061	21-032907-061	.788
21-032906-071	21-032907-071	.740
21-032906-081	21-032907-081	.525
21-032906-091	21-032907-091	.918
21-032906-111	21-032907-111	.848
21-032906-121	21-032907-121	.976
21-032906-131	21-032907-131	1.024
21-032906-141	21-032907-141	1.035
21-032906-151	21-032907-151	.564
21-032906-161	21-032907-161	.594
21-032906-171	21-032907-171	1.110
21-032906-181	21-032907-181	.622
21-032906-191	21-032907-191	.771
21-032906-201	21-032907-201	.815
21-032906-211	21-032907-211	.580
21-032906-221	21-032907-221	.800
21-032906-231	21-032907-231	.740
21-032906-241	21-032907-241	.960



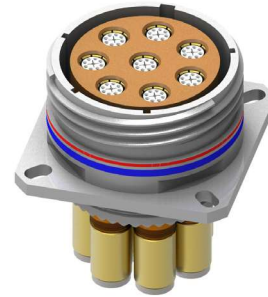
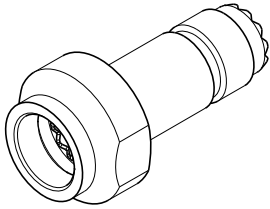
Stabilizer-To be used on all PCB Pins & Sockets. 21-033323-023

PCB L dimension length given in chart is the distance from the rear of the contact retention shoulder to the tip of the PCB tails.



Note: it does not indicate stickout length when installed in D38999 connector.

OCTONET TRANSITION ADAPTERS			
	Plug	21-032915-001	Thermax MX10G-24HP
	Plug	21-032915-011	GORE RCN 8966-26
	PCB Straight	21-032916-001	PCB length .135 inch
	PCB Straight	21-032916-021	PCB length .225 inch



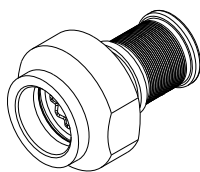
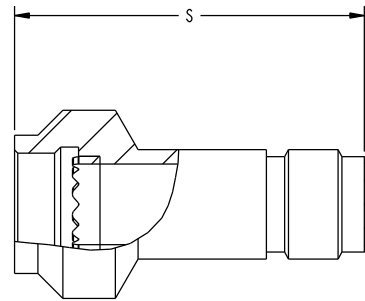
### BACKSHELL EXTENDER

Due to the protrusion of the Octonet Contacts through the rear of the grommet, a Backshell Extender must be used. The Extender is compatible with any Mil-Spec Backshell. Consult the factory for more information.

Part Number	Shell Size
FX-646409-01 ( )	9
FX-646409-02 ( )	11
FX-646409-03 ( )	13
FX-646409-04 ( )	15
FX-646409-05 ( )	17
FX-646409-06 ( )	19
FX-646409-07 ( )	21
FX-646409-08 ( )	23
FX-646409-09 ( )	25

FINISH TABLE	
Prefix	Description
F2	Black Zinc Nickel
F4	Green Zinc Nickel
F7	Durmalon
F9	Thick OD Cadmium plate, Nickel Base
FH	Thick Electroless Nickel
FJ	Black Electroless Nickel

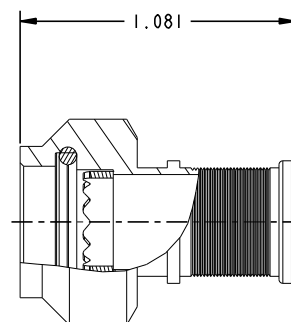
LENGTH TABLE	
Prefix	S ±.060
A	1.200
3	1.500
4	2.000
5	2.500
6	3.000
7	3.500
8	4.000
9	4.500



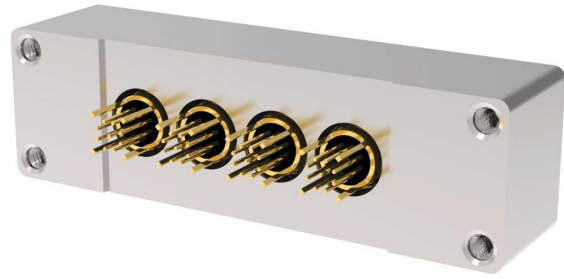
### BANDING BACKSHELL

Part Number	Shell Size
FX-646409-500 ( )	07
FX-646409-510 ( )	09
FX-646409-520 ( )	11
FX-646409-530 ( )	13
FX-646409-540 ( )	15
FX-646409-550 ( )	17
FX-646409-560 ( )	19
FX-646409-570 ( )	21
FX-646409-580 ( )	23
FX-646409-590 ( )	25

FINISH TABLE	
Prefix	Description
F2	Black Zinc Nickel
F4	Green Zinc Nickel
F7	Durmalon
F9	Thick OD Cadmium plate, Nickel Base
FH	Thick Electroless Nickel
FJ	Black Electroless Nickel



# Rectangular D-Sub Type Connectors with Octonet Contacts



Machined aluminum shells. Scoop proof interface, Military grade performance and construction. Connectors contain a spiral shield for EMI protection/grounding to the panel or box.

### FEATURES:

- Overall higher bandwidth than standard CAT5E Quadrx-supports up to 4.0 Gbps per pair
- Enhanced crosstalk performance (compared to standard Quadrx)
- Supports wire ranges 26 to 24 gauge
- Operating Temp -65°C to 175°C

### PROTOCOLS:

- 10G Base-T Ethernet
- ADVI 1.0 Single Link
- DVI 1.0 Single Link
- DVI 1.0 Dual link
- HDMI 1.3a
- HDMI 1.4
- DisplayPort v1.2
- USB3.0
- RapidIO 1.25 and 2.5 Gbaud
- ARINC 818

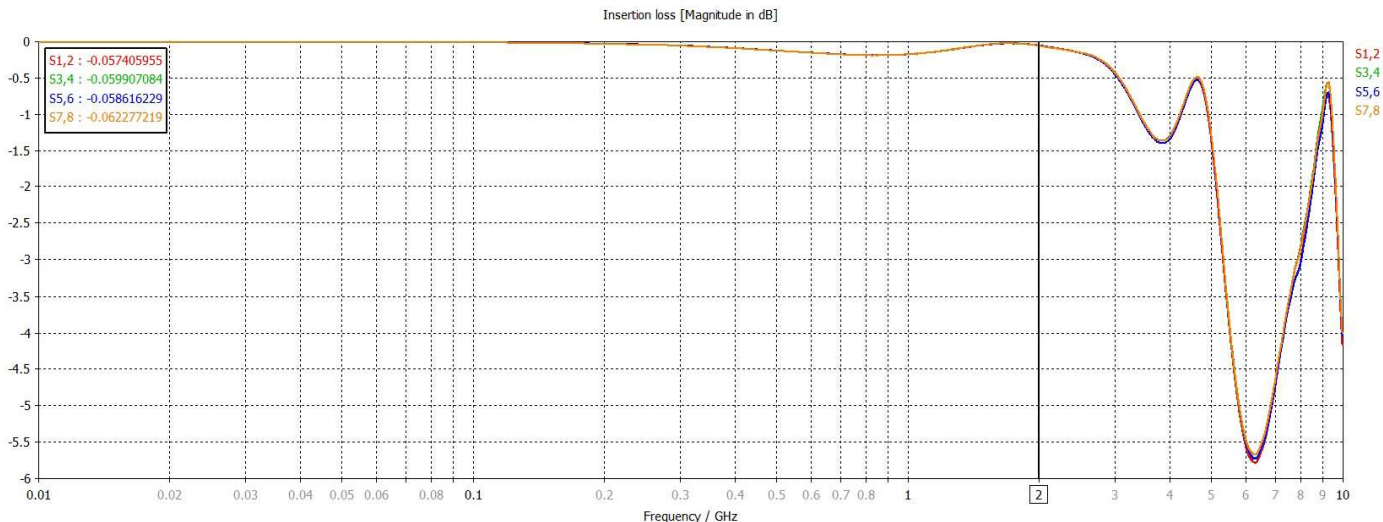
Connector Part Number	Contact	Type Contact	Number of Contacts	Mating Connector part number	Comments (sold separately)	Backshell * (sold separately) See chart below
91-646136-A01	PIN	PCB TAIL	1	91-646137-A01	SOCKET	10-6462R8-210 ( )
91-646136-A02	PIN	PCB TAIL	2	91-646137-A02	SOCKET	10-6462R8-220 ( )
91-646136-A03	PIN	PCB TAIL	3	91-646137-A03	SOCKET	10-6462R8-230 ( )
91-646136-A04	PIN	PCB TAIL	4	91-646137-A04	SOCKET	10-6462R8-240 ( )
91-646136-A05	PIN	PCB TAIL	5	91-646137-A05	SOCKET	10-6462R8-250 ( )

\*To complete part number add suffix. See below chart

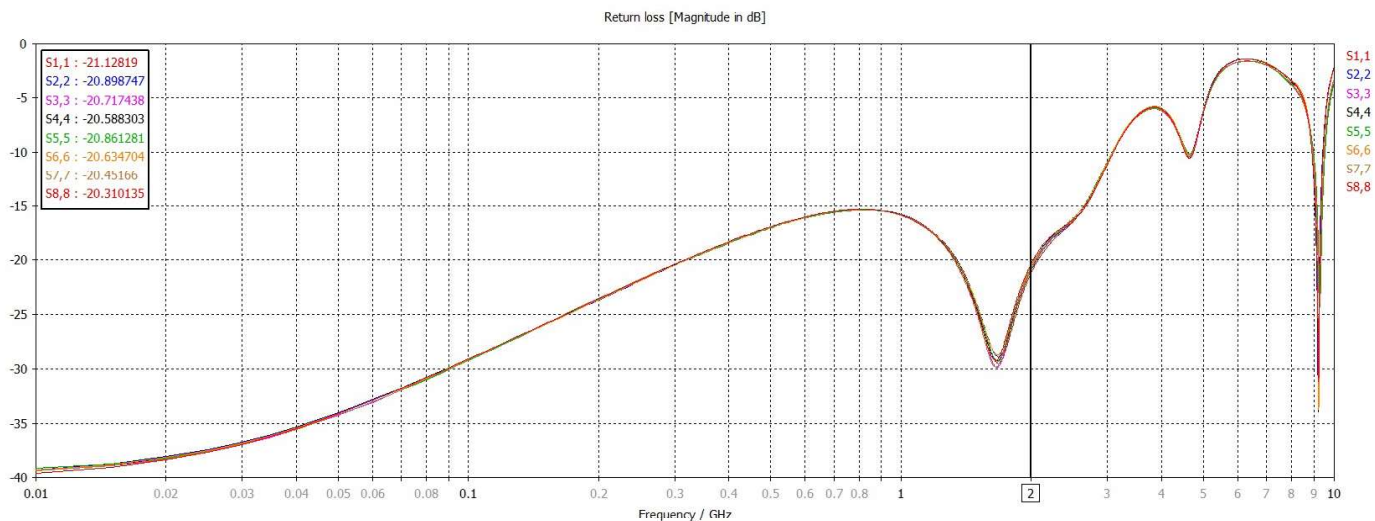
BACKSHELL*	
Variable	Space Rated Vacuum Degassed
T	No
S	Yes



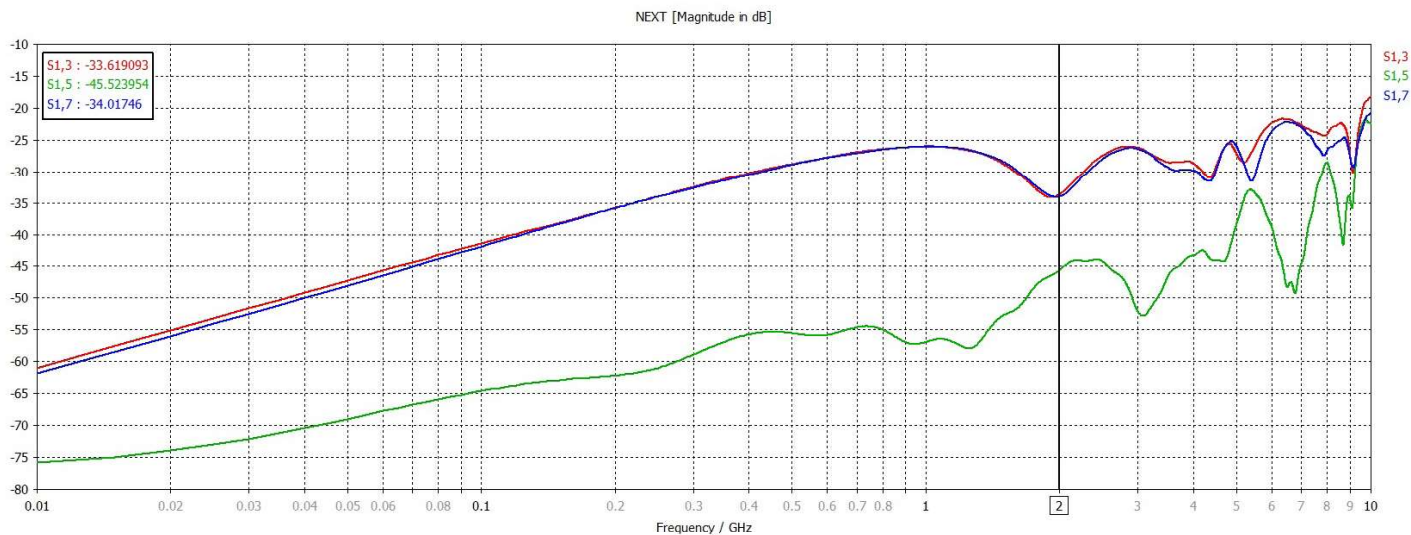
### CONTACT DIFFERENTIAL INSERTION LOSS



### CONTACT DIFFERENTIAL RETURN LOSS

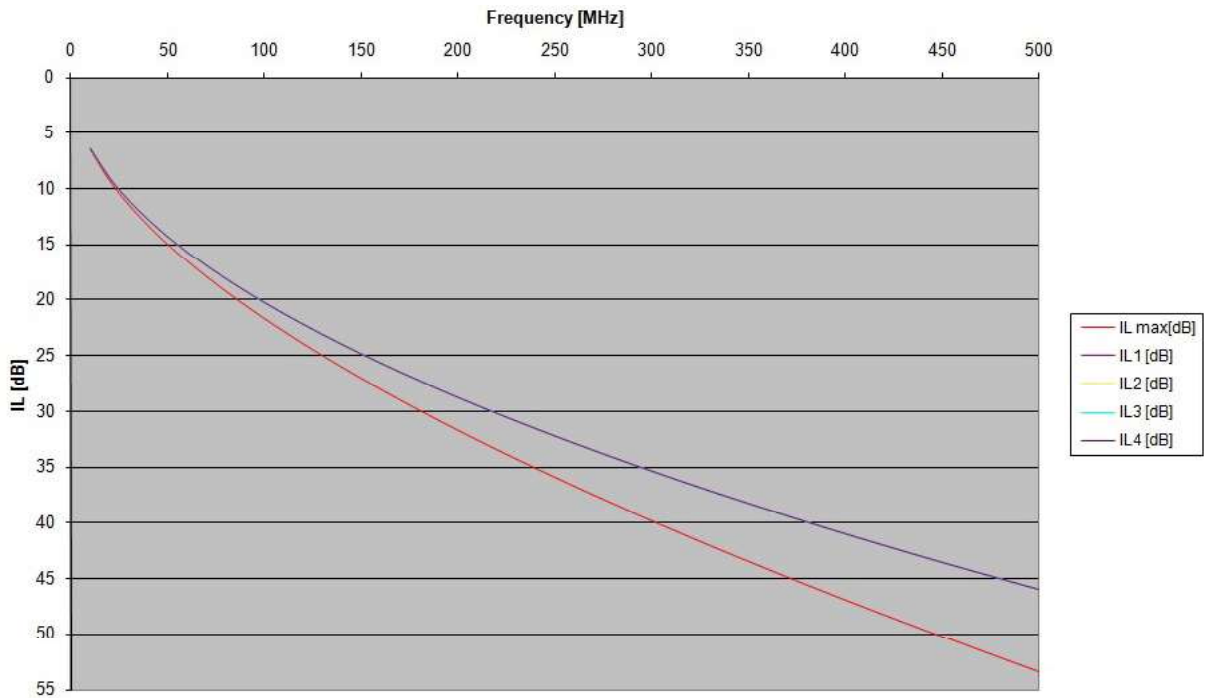


### CONTACT DIFFERENTIAL REAR-END CROSSTALK



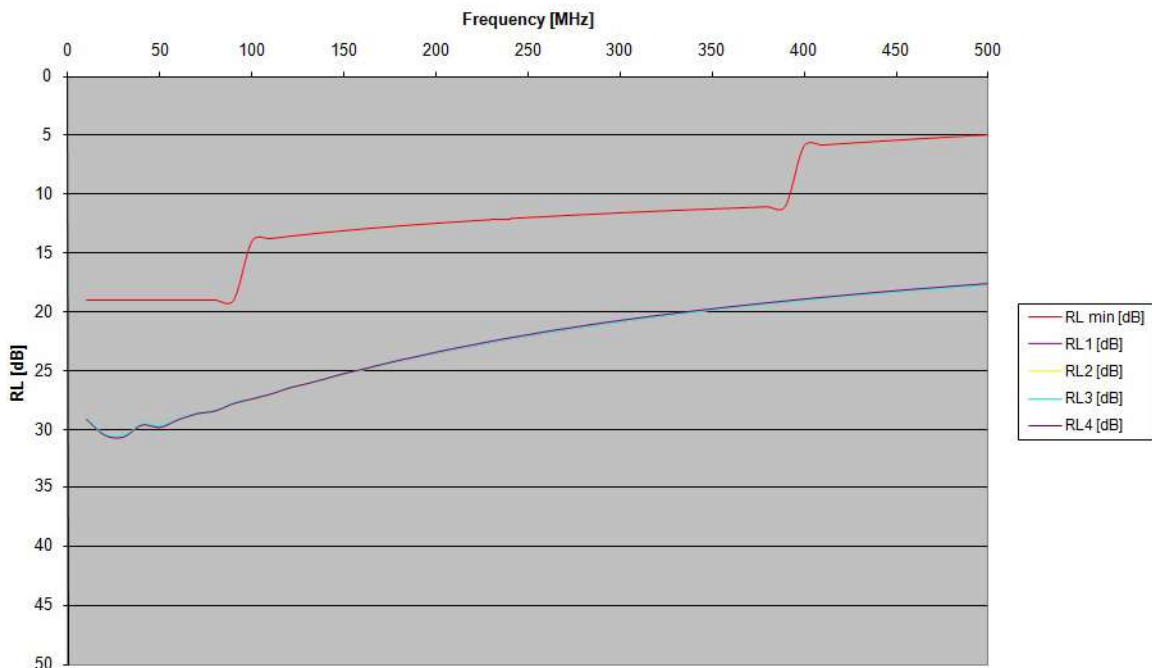
# Signal Integrity Contact Data

## 10GBASE-T DATA (TWO MATED CONTACTS ON EACH END OF 100 METER CAT6A CABLE) INSERTION LOSS



Cable assembly near-end crosstalk

## RETURN LOSS



Cable assembly return loss