



Glenair, Inc. 1211 Air Way, Glendale, California, 91201

Tel: (818) 247-6000 Fax: (818) 247-7240

July 7, 2021

**Ethernet Performance of Glenair's
El Ochito Contact at Altitude**

REPORT NO. GT-21-389

TEST REPORT
No. GT-21-389
July 7, 2021



Glenair, Inc. 1211 Air Way, Glendale, California, 91201
Tel: (818) 247-6000 Fax: (818) 247-7240

APPROVAL PAGE

Handwritten signature of Bryan Samowitz in black ink.

Bryan Samowitz
Design Engineer
Glenair, Inc.

7/7/21

Date

Handwritten signature of Guido Hunziker in black ink.

Guido Hunziker
Vice President, Research and Development
Glenair, Inc.

7/7/21

Date

Prepared By: Bryan Samowitz on July 7, 2021

TEST REPORT
No. GT-21-389
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REVISION HISTORY

REVISION LETTER	DESCRIPTION OF REVISION	DATE	APPROVAL
A	Released	07/07/21	B. Samowitz



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ABSTRACT

Glenair, Inc. conducted electrical testing on 858-003 and 858-004 El Ochito White contacts to determine the effect that altitude would have on its signal integrity.

The test samples were tested for 10GBase-T at altitudes up to 100,000 feet. Test samples comprised of an 858-003-02 El Ochito White Pin and 858-004-02 El Ochito White Socket installed into a mated pair of Mighty Mouse 801 connectors. Each El Ochito was terminated with ten feet of Cat 6A Ethernet cable with an RJ45 connector on the other end. The RJ45 connectors were plugged into a Fluke Network Analyzer for testing.

The altitude had no effect on the El Ochito's signal integrity. This was the expected result, as the only associated material property that changes with altitude is the dielectric constant (Dk) value of the air. As the Dk of a medium gets lower, the impedance of the signal lines within said medium increases. However, with the Dk value of air at sea level being approximately 1.1, and the Dk value of a vacuum being 1.0, there's effectively no difference being imparted on the signal lines.

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RESULTS OF TESTS

Altitude	10GBase-T
Sea Level	PASS
50,000 ft	PASS
70,000 ft	PASS
100,000 ft	PASS

SCOPE

This report documents the results of the testing performed on the El Ochito contacts. The acceptance test criteria referenced in QTP-862, Rev A, was used to help validate the testing requirements. The tests were performed by Glenair, Inc. and Vertical Laboratories LLC.

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REFERENCE DOCUMENTS

858-003 El Ochito Contact, Pin, 100 Ohms, MIL-DTL-38999, Series III
858-004 El Ochito Contact, Socket, 100 Ohms, MIL-DTL-38999, Series III

TEST ITEM DESCRIPTION

The test items consist of a mated pair of 801-007-16M8-AA (plug) and 801-009-02M8-1BA (receptacle). The Plug shall be populated with an 858-003-02 which is terminated to 10 feet of 963-033-26 cable. The receptacle shall be populated with an 858-004-02 which is terminated to 10 feet of 963-033-26 cable. Both cables will have an RJ45 on the end opposite the Ochito.

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APPENDIX A

GLENAIR, INC. QUALIFICATION TEST PLAN QTP-862 Rev A



Glenair, Inc. · 1211 Air Way · Glendale, California 91201

Cage Code: 06324	Document Description Rating of Ochito White 10G Base-T Ethernet Performance at Altitude	Document #: QTP-862 Revision: A Page 1 of 5
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**QTP-862
QUALIFICATION TEST PLAN**

Rating of Ochito White 10G Base-T Ethernet Performance at Altitude

PREPARED BY Bryan Samowitz **DATE** 8/12/2019
Bryan Samowitz
Design Engineer
Glenair, Inc.

APPROVED BY Guido Hunziker **DATE** 8/12/2019
Guido Hunziker
VP Research & development
Glenair, Inc.

Revisions

Rev/Sym	Description of Change	Originator	Date	Approval
A	Released	B. Samowitz	8/12/2019	



Glenair, Inc. · 1211 Air Way · Glendale, California 91201

Cage Code: 06324	Document Description Rating of Ochito White 10G Base-T Ethernet Performance at Altitude	Document #: QTP-862 Revision: A Page 2 of 5
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Glenair, Inc. · 1211 Air Way · Glendale, California 91201

Cage Code: 06324	Document Description Rating of Ochito White 10G Base-T Ethernet Performance at Altitude	Document #: QTP-862 Revision: A Page 3 of 5
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1. Purpose

- 1.1. This test plan defines the parameters, test methods, test sequence and test samples required to determine the capability of Ochito white to perform 10G Base-T at different altitudes.
- 1.2. The following Tests will be performed:
 - Electrical Performance

2. Applicable Documents

2.1. Military and Industry Specifications

IEEE 802.3 Amendment 1 Physical Layer and Management Parameters for 10 Gb/s Operation, Type 10GBASE-T

2.2. Glenair

801-007	Connector, Plug, Quick Coupling Threads, Crimp Rear Release Contacts, Banding Termination, Shell Sizes 5-21
801-009	Connector, Receptacle, Quick Coupling Threads, Crimp Rear Release Contacts, Banding Termination, Shell Sizes 5-21
858-003	El Ochito Contact, Pin, 100 Ohms, MIL-DTL-38999, Series III
858-004	El Ochito Contact, Socket, 100 Ohms, MIL-DTL-38999, Series III

3. Test Item Description

The test item consist of a mated pair of 801-007-16M8-AA (plug) and 801-009-02M8-1BA (receptacle). The Plug shall be populated with an 858-003-02 which is terminated to 10 feet of 963-033-26 cable. The receptacle shall be populated with an 858-004-02 which is terminated to 10 feet of 963-033-26 cable. Both cables will have an RJ45 on the end opposite the Ochito.



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Cage Code: 06324	Document Description Rating of Ochito White 10G Base-T Ethernet Performance at Altitude	Document #: QTP-862 Revision: A Page 4 of 5
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4. Test Conditions

4.1. Testing shall be in accordance with the specified procedures, requirements and parameters as contained herein.

4.2. Unless otherwise specified, conditions for conducting the testing shall be as stated below:

Ambient (Room) Temperature: 25± 10°C (77 ± 18°F)

Relative Humidity: Room ambient up to 90% relative

Barometric Pressure: Prevailing room conditions

4.3. The test equipment and measuring devices used to verify the electrical contact assembly shall be controlled in accordance with QCDP 010.

4.4. The contact assemblies shall be assembled at Glenair, in accordance with the appropriate Glenair assembly procedure.

5. Test Site:

Vertical Laboratories

1805 Flower St.

Glendale, CA 91201

949-633-7142

6. Test Sequences:

Group 1	
Test	Requirement Paragraph
Examination of Product	7.1.1
Electrical Performance @ Sea Level	7.2
Electrical Performance @ 50,000 Feet	7.2
Electrical Performance @ 70,000 Feet	7.2
Electrical Performance @ 100,000 Feet	7.2



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Cage Code: 06324	Document Description Rating of Ochito White 10G Base-T Ethernet Performance at Altitude	Document #: QTP-862 Revision: A Page 5 of 5
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7. Test Procedures:

7.1. Examination of Product

Cable Assemblies shall be inspected to ensure that all Ochito cable assemblies are secure

7.2. Electrical Performance Testing

The mated cable assembly shall be tested against IEEE 802.3 Amendment 1 for 10GBASE-T. If a failure occurs at any altitude, the cable assembly shall be tested against 1000BASE-T.

Testing shall be conducted as follows:

- The RJ45 end of each cable shall be brought out through the walls of the chamber.
- The sample shall be set in the chamber so that the connector, and as little of the cable as possible is exposed to the reduced pressure.
- The chamber shall be evacuated to each of the specified altitude pressure equivalents listed below.

The pressures used shall be as follows:

Altitude	Equivalent Pressure
Sea Level	Room Conditions
50,000 feet	87 torr
70,000 feet	33 torr
100,000 feet	8 torr

8. Test Report:

Upon completion of testing, the results shall be submitted to Glenair

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No. GT-21-389
July 7, 2021



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APPENDIX B

Vertical Laboratories LLC
Ethernet Performance at Altitude Test Report
19229D1BMV1

Ethernet Performance at Altitude Test Data

Rating of Ochito White 10G Base-T Ethernet Performance at Altitude

19229D1BMV1

Version 1

8/28/2019

Prepared By:	<u>Brian Morales</u> Test Engineer	
Reviewed By:	<u>Mehrdad Mostoufi</u> Test Engineer	<u>8/28/2019</u> Date
Approved By:	<u>Kane Liang</u> Quality Manager	<u>9/3/2019</u> Date



Vertical Laboratories LLC
1805 Flower St | Glendale, CA | 91201
818-858-1982
www.verticallaboratories.com

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Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Version History		

Version	Date	Comments	Prepared By	Reviewed By	Approved By
1	8/28/2019	Initial Version	Brian Morales	Mehrdad Mostoufi	Kane Liang



Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Deviations		

Deviation No.	Test Name	Description
-	-	-



Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Summary		

Job Name	Rating of Ochito White 10G Base-T Ethernet Performance at Altitude
Job No.	19229
Client	Glenair
Contact Name	Bryan Samowitz
Telephone No.	818-247-6000
Email	BSamowitz@glenair.com
Part Name	White El Ochito Connector
Part No.	See Test Sample ID
Serial No.	001
Controlling Document	QTP-862

Test Name	Serial No.	Start Date	End Date	Pass	Fail	Record
Ethernet Performance at Altitude	001	8/22/2019	8/22/2019	X	-	-

Test Summary
<p>The mated cable assembly was tested in accordance with IEEE 802.3 Amendment 1 for 10GBASE-T at various altitudes. The unit passed the 10GBASE-T test at Sea Level, 50,000 ft., 70,000 ft. and 100,000 ft. Upon completion of testing, no visual damage was noted.</p>



Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Equipment List		

ID No.	Equipment Name	Manufacturer	Model No.	Cal. Date	Cal. Due
PV016	Pressure Gauge	US Vacuum	USCG-100	03/19/2019	03/31/2020
VC01	Vacuum Chamber	Abess Industries	-	-	-
Customer provided equipment					
27831661	Cable Analyzer Module	Fluke	DSX-5001	6/12/2019	6/12/2020
2783146					



Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Sample Identification		

Date Received	8/28/2019
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Pre-test sample conditions
No visual damage noted.

Part Name	Connector End	Part No.	Serial No.
White El Ochito Connector	Plug	801-007-16M8-AA	001
	Receptacle	801-009-02M8-1BA	



Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Parameters		

Test Name	10GBASE-T (Ethernet Test) at Altitude
Specification	IEEE 802.3
Method / Procedure	Amendment 1
Figure / Table	-

Test Requirements	
<p>The mated cable assembly shall be tested in accordance with IEEE 802.3 Amendment 1 for 10GBASE-T with Fluke Cable Analyzer Module. The unit will be placed in vacuum chamber VC01 and tested at Sea level, 50,000 ft., 70,000 ft. and at 100,000 ft.</p>	



Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Engineering Notes		

Date	Ambient	Time	Notes
08/22/2019	22 °C 55 %RH	-	Ethernet testing will be performed on customer provided Fluke tester.
			Place unit 001 in Vacuum Chamber VC01.
			Perform initial Ethernet Test at ambient pressure.
			Test complete. Test Result: Pass
			Begin pulling vacuum in the chamber and set the pressure to 87 Torr.
			Perform Ethernet Test at 50,000 ft.
			Test complete. Test Result: Pass
			Set chamber pressure to 33 Torr.
			Perform Ethernet Test at 70,000 ft.
			Test complete. Test Result: Pass
			Set chamber pressure to 8 Torr.
			Perform Ethernet Test at 100,000 ft.
			Test complete. Test Result: Pass
			Ethernet testing, 10GBASE-T, is complete.

Test Operator	Brian Morales
----------------------	---------------



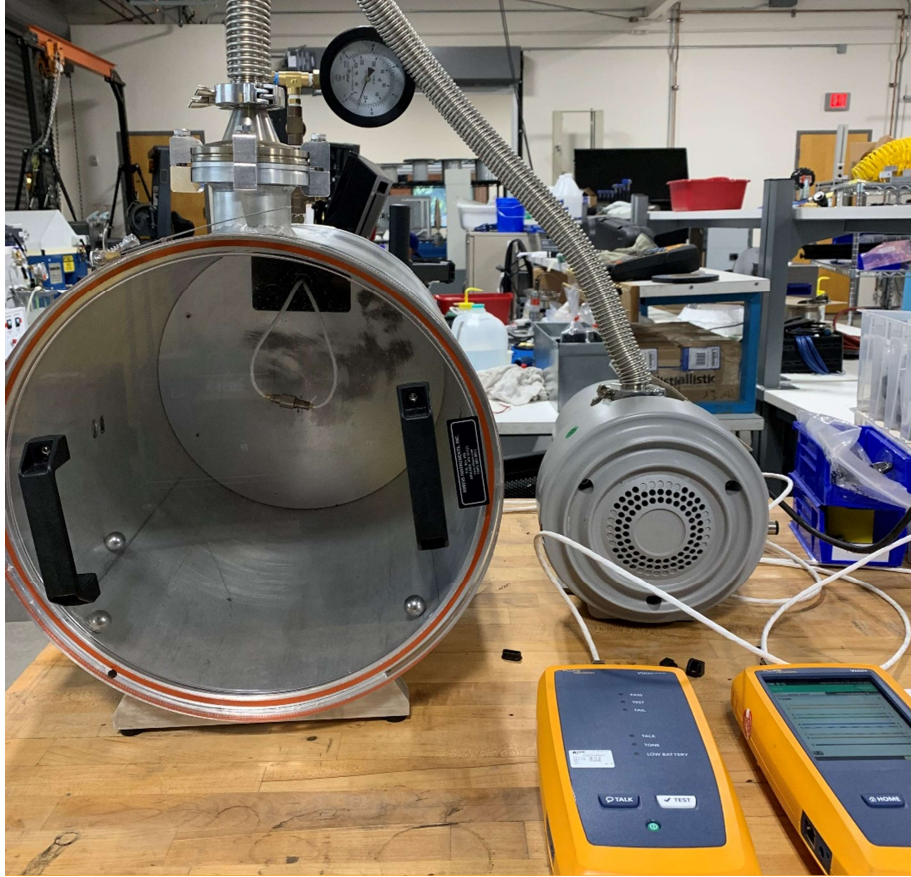
Ethernet Performance at Altitude Test Data

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Data		

Fluke Cable Analyzer Module, Test Results			
Serial No.	Altitude	Equivalent Pressure	Pass/Fail
001	Sea Level	Room Conditions	Pass
	50,000 feet	87 Torr	Pass
	70,000 feet	33 Torr	Pass
	100,000 feet	8 Torr	Pass

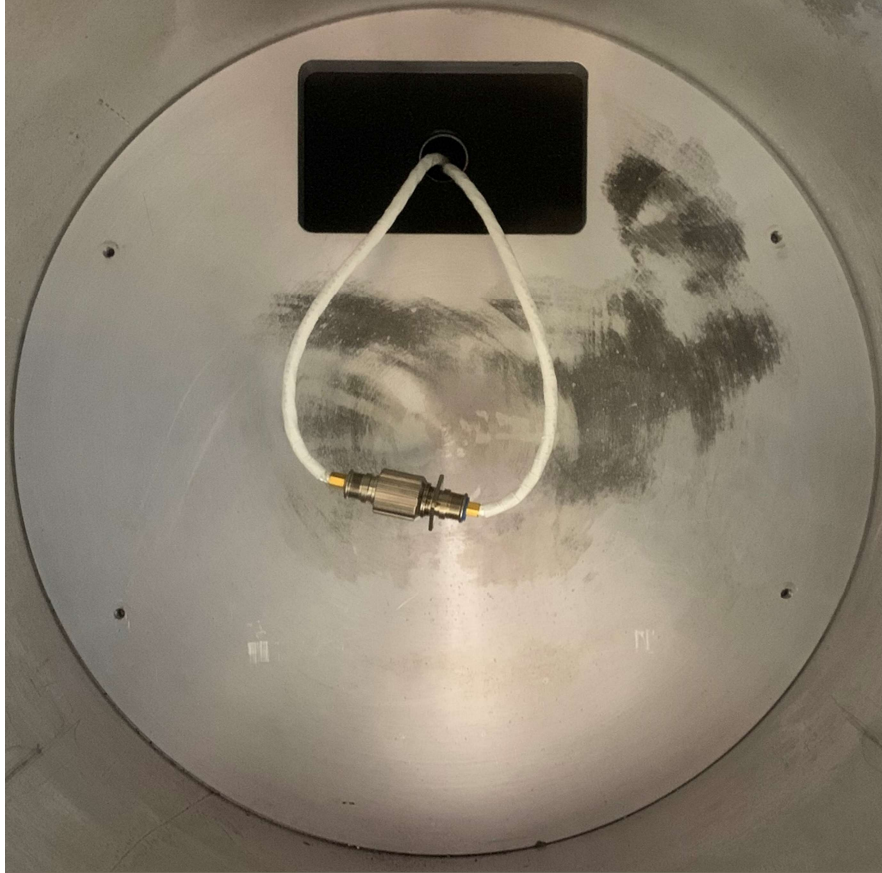
Test Name	10GBASE-T (Ethernet Test) at Altitude
Part Name	White El Ochito Connector

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Photos		



Description	Typical Test Setup
Test Name	10GBASE-T (Ethernet Test) at Altitude
Part Name	White El Ochito Connector
Test Group	-
Part No.	See Test Sample ID
Serial No.	001

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Photos		



Description	Typical Unit Placement
Test Name	10GBASE-T (Ethernet Test) at Altitude
Part Name	White El Ochito Connector
Test Group	-
Part No.	See Test Sample ID
Serial No.	001

Doc. No.	19229D1BMV1	Version	1
Sheet Name	Test Photos		



Description	Gauge readings of each altitude tested
Test Name	10GBASE-T (Ethernet Test) at Altitude
Part Name	White El Ochito Connector
Test Group	-
Part No.	See Test Sample ID
Serial No.	001

End of Test Data Sheet

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No. GT-21-389
July 7, 2021



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APPENDIX C

Fluke Network Analyzer Ethernet Performance Checks



Cable ID: AMBIENT

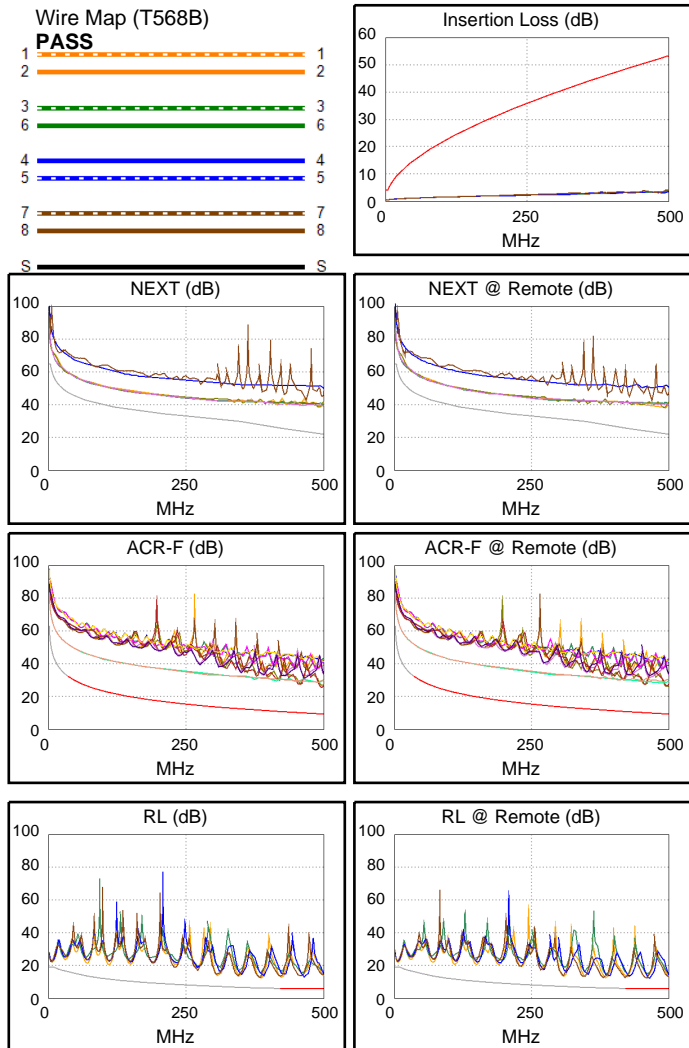
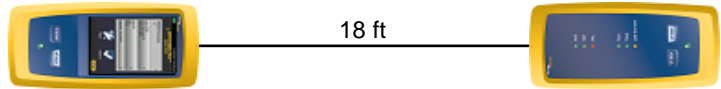
Date / Time: 08/22/2019 10:21:53 AM
Headroom 16.0 dB (NEXT 45-78)
Test Limit: 10GBASE-T
 Cable Type: Cat 6A F/UTP
 NVP: 74.0%

Operator: Vertical Labs
 Software Version: V5.5 Build 2
 Limits Version: V6.3
 Calibration Date:
 Main (Module): 04/20/2018
 Remote (Module): 04/20/2018

Test Summary: PASS

Model: DSX-5000
 Main S/N: 2766352
 Remote S/N: 2766289
 Main Adapter: DSX-CHA004
 Remote Adapter: DSX-CHA004

Length (ft), Limit 328	[Pair 45]	18
Prop. Delay (ns), Limit 555	[Pair 78]	26
Delay Skew (ns), Limit 50	[Pair 12]	1
Resistance (ohms), Limit 25.00	[Pair 78]	1.70
Insertion Loss Margin (dB)	[Pair 78]	49.3
Frequency (MHz)	[Pair 78]	499.0
Limit (dB)	[Pair 78]	53.3



Worst Case Margin Worst Case Value

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-78	45-78	12-36	12-36
NEXT (dB)	16.0	16.4	16.4	15.7
Freq. (MHz)	460.0	460.0	494.0	493.0
Limit (dB)	23.8	23.8	22.2	22.3
Worst Pair	78	78	36	36
PS NEXT (dB)	15.5	15.6	14.7	14.4
Freq. (MHz)	457.0	457.0	492.0	493.0
Limit (dB)	22.1	22.1	20.7	20.7

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-36	36-45	45-36	36-45
ACR-F (dB)	16.3	16.7	16.3	16.8
Freq. (MHz)	496.0	495.0	496.0	497.0
Limit (dB)	9.3	9.4	9.3	9.3
Worst Pair	45	45	45	45
PS ACR-F (dB)	18.5	18.1	18.7	18.1
Freq. (MHz)	456.0	495.0	497.0	495.0
Limit (dB)	7.1	6.4	6.3	6.4

PASS	MAIN	SR	MAIN	SR
Worst Pair	12	78	12	45
RL (dB)	6.2	6.1	6.2	6.2
Freq. (MHz)	386.0	383.0	386.0	466.0
Limit (dB)	6.1	6.2	6.1	6.0

Compliant Network Standards:
 10BASE-T 100BASE-TX 100BASE-T4
 1000BASE-T 10GBASE-T ATM-25
 ATM-51 ATM-155 100VG-AnyLan
 TR-4 TR-16 Active TR-16 Passive



Cable ID: 50K ft

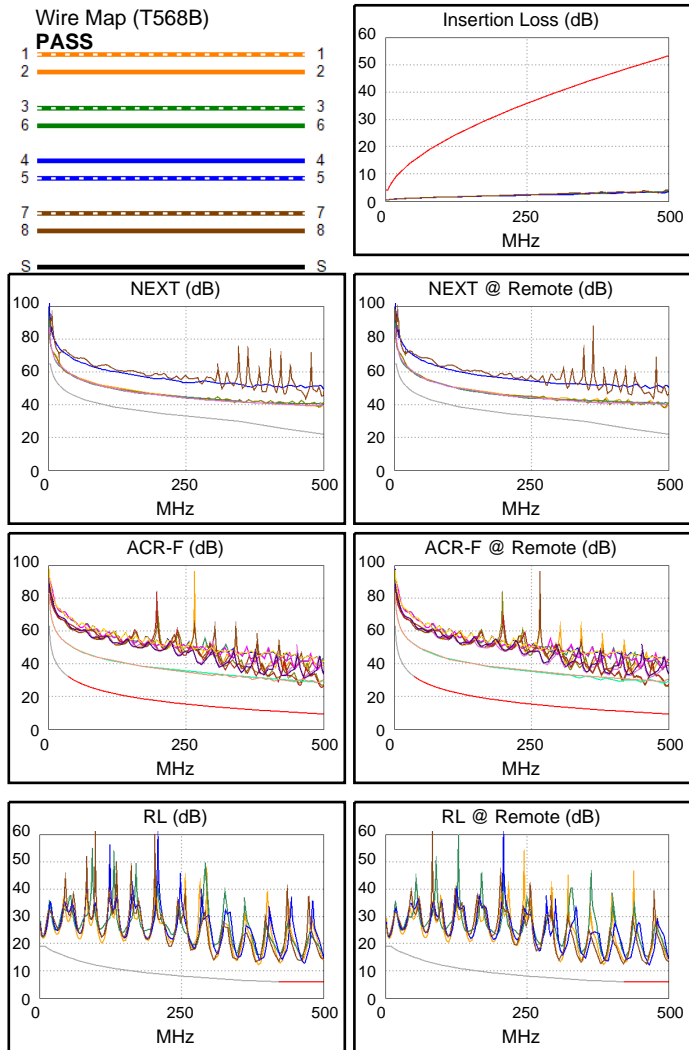
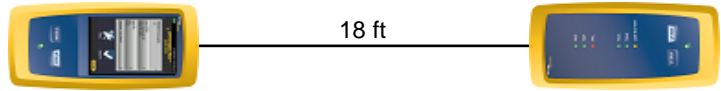
Date / Time: 08/22/2019 10:25:38 AM
Headroom 16.0 dB (NEXT 45-78)
Test Limit: 10GBASE-T
 Cable Type: Cat 6A F/UTP
 NVP: 74.0%

Operator: Vertical Labs
 Software Version: V5.5 Build 2
 Limits Version: V6.3
 Calibration Date:
 Main (Module): 04/20/2018
 Remote (Module): 04/20/2018

Test Summary: PASS

Model: DSX-5000
 Main S/N: 2766352
 Remote S/N: 2766289
 Main Adapter: DSX-CHA004
 Remote Adapter: DSX-CHA004

Length (ft), Limit 328	[Pair 45]	18
Prop. Delay (ns), Limit 555	[Pair 78]	26
Delay Skew (ns), Limit 50	[Pair 12]	1
Resistance (ohms), Limit 25.00	[Pair 78]	1.70
Insertion Loss Margin (dB)	[Pair 78]	49.3
Frequency (MHz)	[Pair 78]	499.0
Limit (dB)	[Pair 78]	53.3



Worst Case Margin Worst Case Value

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-78	45-78	12-36	12-36
NEXT (dB)	16.0	16.4	16.4	15.7
Freq. (MHz)	460.0	460.0	494.0	493.0
Limit (dB)	23.8	23.8	22.2	22.3
Worst Pair	78	78	36	36
PS NEXT (dB)	15.4	15.6	14.9	14.4
Freq. (MHz)	457.0	457.0	494.0	493.0
Limit (dB)	22.1	22.1	20.6	20.7

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-36	36-45	45-36	36-45
ACR-F (dB)	16.3	16.7	16.3	16.8
Freq. (MHz)	496.0	495.0	496.0	497.0
Limit (dB)	9.3	9.4	9.3	9.3
Worst Pair	45	45	45	45
PS ACR-F (dB)	18.5	18.1	18.7	18.1
Freq. (MHz)	456.0	495.0	497.0	495.0
Limit (dB)	7.1	6.4	6.3	6.4

PASS	MAIN	SR	MAIN	SR
Worst Pair	12	12	12	45
RL (dB)	6.1	6.2	6.1	6.2
Freq. (MHz)	386.0	386.0	386.0	466.0
Limit (dB)	6.1	6.1	6.1	6.0

Compliant Network Standards:
 10BASE-T 100BASE-TX 100BASE-T4
 1000BASE-T 10GBASE-T ATM-25
 ATM-51 ATM-155 100VG-AnyLan
 TR-4 TR-16 Active TR-16 Passive



Cable ID: 70K ft

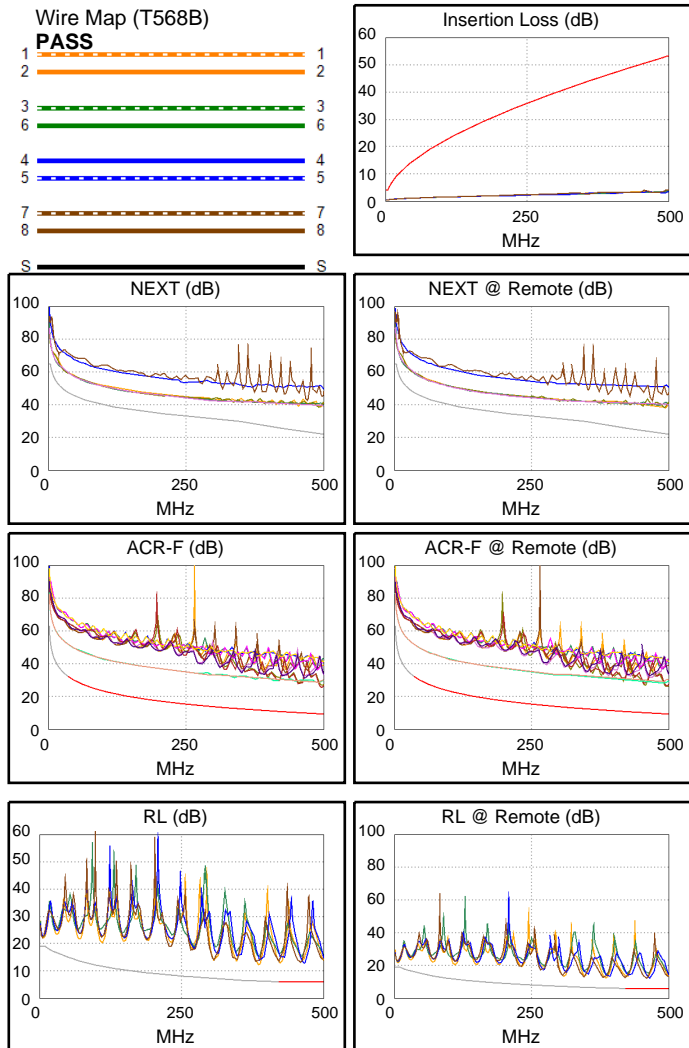
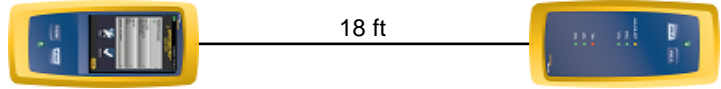
Date / Time: 08/22/2019 10:27:30 AM
Headroom 15.9 dB (NEXT 45-78)
Test Limit: 10GBASE-T
 Cable Type: Cat 6A F/UTP
 NVP: 74.0%

Operator: Vertical Labs
 Software Version: V5.5 Build 2
 Limits Version: V6.3
 Calibration Date:
 Main (Module): 04/20/2018
 Remote (Module): 04/20/2018

Test Summary: PASS

Model: DSX-5000
 Main S/N: 2766352
 Remote S/N: 2766289
 Main Adapter: DSX-CHA004
 Remote Adapter: DSX-CHA004

Length (ft), Limit 328	[Pair 45]	18
Prop. Delay (ns), Limit 555	[Pair 78]	26
Delay Skew (ns), Limit 50	[Pair 12]	1
Resistance (ohms), Limit 25.00	[Pair 78]	1.66
Insertion Loss Margin (dB)	[Pair 78]	49.3
Frequency (MHz)	[Pair 78]	499.0
Limit (dB)	[Pair 78]	53.3



Worst Case Margin Worst Case Value

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-78	45-78	12-36	12-36
NEXT (dB)	15.9	16.4	16.4	15.7
Freq. (MHz)	460.0	460.0	494.0	493.0
Limit (dB)	23.8	23.8	22.2	22.3
Worst Pair	78	78	36	36
PS NEXT (dB)	15.8	15.9	14.9	14.4
Freq. (MHz)	458.0	458.0	494.0	492.0
Limit (dB)	22.0	22.0	20.6	20.7

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-36	36-45	45-36	36-45
ACR-F (dB)	16.3	16.8	16.4	16.8
Freq. (MHz)	495.0	497.0	497.0	497.0
Limit (dB)	9.4	9.3	9.3	9.3
Worst Pair	45	45	45	45
PS ACR-F (dB)	18.5	18.2	18.7	18.3
Freq. (MHz)	456.0	495.0	497.0	497.0
Limit (dB)	7.1	6.4	6.3	6.3

PASS	MAIN	SR	MAIN	SR
Worst Pair	12	12	12	45
RL (dB)	6.1	6.2	6.1	6.2
Freq. (MHz)	386.0	386.0	386.0	466.0
Limit (dB)	6.1	6.1	6.1	6.0

Compliant Network Standards:
 10BASE-T 100BASE-TX 100BASE-T4
 1000BASE-T 10GBASE-T ATM-25
 ATM-51 ATM-155 100VG-AnyLan
 TR-4 TR-16 Active TR-16 Passive



Cable ID: 100K ft

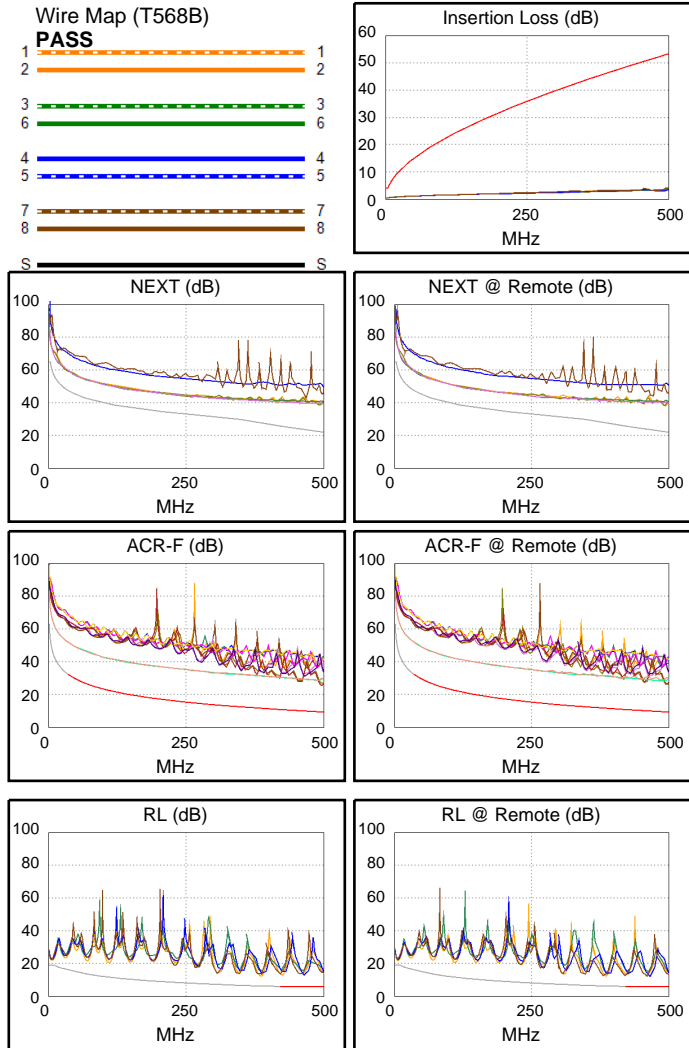
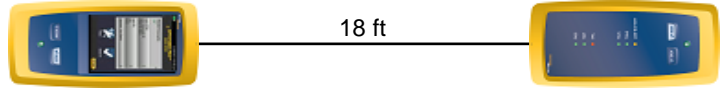
Date / Time: 08/22/2019 10:29:43 AM
Headroom 16.0 dB (NEXT 45-78)
Test Limit: 10GBASE-T
 Cable Type: Cat 6A F/UTP
 NVP: 74.0%

Operator: Vertical Labs
 Software Version: V5.5 Build 2
 Limits Version: V6.3
 Calibration Date:
 Main (Module): 04/20/2018
 Remote (Module): 04/20/2018

Test Summary: PASS

Model: DSX-5000
 Main S/N: 2766352
 Remote S/N: 2766289
 Main Adapter: DSX-CHA004
 Remote Adapter: DSX-CHA004

Length (ft), Limit 328	[Pair 45]	18
Prop. Delay (ns), Limit 555	[Pair 78]	26
Delay Skew (ns), Limit 50	[Pair 12]	1
Resistance (ohms), Limit 25.00	[Pair 78]	1.66
Insertion Loss Margin (dB)	[Pair 78]	49.3
Frequency (MHz)	[Pair 78]	499.0
Limit (dB)	[Pair 78]	53.3



Worst Case Margin Worst Case Value

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-78	45-78	12-36	12-36
NEXT (dB)	16.0	16.4	16.4	15.7
Freq. (MHz)	460.0	460.0	494.0	493.0
Limit (dB)	23.8	23.8	22.2	22.3
Worst Pair	78	78	36	36
PS NEXT (dB)	15.5	15.6	14.7	14.4
Freq. (MHz)	457.0	457.0	493.0	492.0
Limit (dB)	22.1	22.1	20.7	20.7

PASS	MAIN	SR	MAIN	SR
Worst Pair	45-36	36-45	45-36	36-45
ACR-F (dB)	16.3	16.7	16.4	16.8
Freq. (MHz)	495.0	495.0	497.0	497.0
Limit (dB)	9.4	9.4	9.3	9.3
Worst Pair	45	45	45	45
PS ACR-F (dB)	18.5	18.1	18.7	18.1
Freq. (MHz)	456.0	495.0	497.0	495.0
Limit (dB)	7.1	6.4	6.3	6.4

PASS	MAIN	SR	MAIN	SR
Worst Pair	12	78	12	45
RL (dB)	6.1	6.1	6.1	6.2
Freq. (MHz)	386.0	383.0	386.0	466.0
Limit (dB)	6.1	6.2	6.1	6.0

Compliant Network Standards:
 10BASE-T 100BASE-TX 100BASE-T4
 1000BASE-T 10GBASE-T ATM-25
 ATM-51 ATM-155 100VG-AnyLan
 TR-4 TR-16 Active TR-16 Passive