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**QUALIFICATION TEST REPORT ABSTRACT FOR
GLENAIR
EL OCHITO MECHANICAL QUALIFICATION
REPORT NO. GT-21-365 ABSTRACT**



El Ochito White



El Ochito Blue



**El Ochito White
Type II**

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QUALIFICATION TEST REPORT
Glenair El Ochito

No.: GT-21-365 Abstract
 Date: February 2, 2022
 Sheet 2 of 8

1.0 Product Description/Application

High speed, harsh environment El Ochito octaxial contacts and pre-wired assemblies save size and weight. Suitable for aircraft avionics, weapons systems, satellites, radars, communications equipment, and other aerospace/defense gear. El Ochito® contacts and cables are optimized for 10G Ethernet, SuperSpeed USB and other multi-gigabit datalink protocols including HDMI, DisplayPort, and SATA.

1.1 Purpose

Testing was performed on 858-003, 858-004, 858-005, 858-006, 858-028, and 858-029 El Ochitos to determine their ruggedness and conformance to the performance requirements of MIL-DTL-38999.

1.2 Scope

This report summarizes mechanical and electrical qualification testing and results thereof in accordance with QTP-896. The information in this report was obtained from tests conducted by Vertical Laboratories LLC and Glenair Inc. The documents listed below are on file at Glenair and available upon request.

Applicable Test Reports		
Test Report Number	Provider	Date Tested
20128R1BMV3	Vertical Labs	07/01/2021
20128R2BMV2	Vertical Labs	07/01/2021
20128R3BMV3	Vertical Labs	01/25/2022
GT-21-365	Glenair Inc.	01/26/2022

1.3 Conclusion

Glenair El Ochito White, El Ochito Blue, and El Ochito Type II have been shown to be capable of meeting performance requirements of MIL-DTL-38999.

1.4 Test Specimen

Test Sample Description	
Description	Part Number
El Ochito Contact, Pin, 100 Ohms, MIL-DTL-38999, Series III	858-003-02F
El Ochito Contact, Socket, 100 Ohms, MIL-DTL-38999, Series III	858-004-02F
El Ochito Contact, Pin, Size 8, 100 Ohms, Integrated Removal Sleeve, Serviceable, High Speed SuperNine Series	858-005-04
El Ochito Contact, Socket, Size 8, 100 Ohms, Integrated Removal Sleeve, Serviceable, High Speed SuperNine Series	858-006-04
El Ochito, “Blue” Contact, Pin, 90 Ohms, MIL-DTL-38999, Series III	858-028-02F
El Ochito, “Blue” Contact, Socket, 90 Ohms, MIL-DTL-38999, Series III	858-029-02F



1.4.1 Test Specimen Preparation

For testing, each pin El Ochito was installed into a 233-217-G6ME11-1AN SuperNine Plug, and each socket El Ochito was installed into a 233-217-00ME11-1BN SuperNine Receptacle. El Ochito White and El Ochito Type II contacts were terminated onto Ethernet cable per 8571-0004. El Ochito Blue contacts were terminated onto USB 3.0 cable per 8572-0024.

Each cable assembly was secured to their connector with a strain relief backshell.

1.5 Inspection Procedure

All tests were performed with the test specimens at standard laboratory conditions and within procedural parameters as defined below.

1. Ambient room temperature: 25°C ± 10°C (77°F ± 18°F)
2. Relative humidity: Room ambient up to 90% relative
3. Barometric pressure: Prevailing room conditions

2.0 Qualification Test Summary

Qualification Test Summary		
Test Description	Abstract Reference	Results
Examination of product	3.1	Pass
Temperature Shock, -65°C to +175°C	3.2	Pass
Coupling & Uncoupling Torque	3.3	Pass
Insulation Resistance @ Ambient Temperature 5,000 MOhm @ 500 VDC	3.4	Pass
Insulation Resistance @ +175°C 1,000 MOhm @ 500 VDC	3.5	Pass
Mating Durability, 500 cycles	3.6	Pass
Sine Vibration, 60g	3.7	Pass
Random Vibration, 5g ²	3.8	Pass
Mechanical Shock, 300g	3.9	Pass
Humidity, 240 hours	3.10	Pass
Electrical Performance (after each test) 10GBASE-T for White & Type II USB 3.0 for Blue	3.11	Pass

3.0 Qualification Testing Details

3.1 **Visual and mechanical examination**

Specimen submitted for testing was representative of standard production lots. Specimen was assembled at Glenair and accepted by Glenair Quality Assurance prior to submittal for testing.

3.2 **Temperature Shock, -65°C to +175°C**

3.2.1 Test Method

EIA-364-32, Method A, Condition V
Steps 2 and 4: 2 minutes maximum duration

3.2.2 Requirement

No blistering, peeling, flaking, or separation of plating or other damage detrimental to the operation of the connector.

3.2.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) did not exhibit physical degradation.

3.2.4 Test Anomalies/Deviations

N/A

3.3 **Coupling & Uncoupling Torque**

3.3.1 Test Method

EIA-364-114

3.3.2 Requirement

12 in-lb. max engagement, 2 in-lb. min disengagement

3.3.3 Results

PASS. Connectors containing PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) did not exceed the torque specification

3.3.4 Test Anomalies/Deviations

N/A

3.4 Insulation Resistance at Ambient Temperature

3.4.1 Test Method

EIA-364-21

Unmated condition

3.4.2 Requirement

Resistance between any pair of inner contacts and between any contact and the outer body shall be 5,000 Megaohms minimum at 500 VDC

3.4.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) met the required minimum resistance levels

3.4.4 Test Anomalies/Deviations

N/A

3.5 Insulation Resistance at Elevated Temperature, +175°C

3.5.1 Test Method

EIA-364-21

Unmated condition, 30-minute soak

3.5.2 Requirement

Resistance between any pair of inner contacts and between any contact and the outer body shall be 1,000 Megaohms minimum at 500 VDC

3.5.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) met the required minimum resistance levels

3.5.4 Test Anomalies/Deviations

N/A

3.6 Mating Durability, 500 Cycles

3.6.1 Test Method

Pairs of populated connectors shall be mated and unmated 500 times

3.6.2 Requirement

No sign of defects detrimental to operation after testing

3.6.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) did not exhibit physical degradation.

3.6.4 Test Anomalies/Deviations

N/A

3.7 Sine Vibration, 60g

3.7.1 Test Method

One sample of each configuration shall be subjected to a simple harmonic motion from 10 to 2,000 Hz in each of three mutually perpendicular axes. The level of vibration shall be a velocity of 254 mm/sec from 10-50 Hz; 1.5 mm double amplitude from 50-140 Hz, and 60 G from 140- 2,000 Hz. The entire frequency range from 10-2,000 Hz and back shall be traversed in 20 minutes. The vibration shall be applied for a duration of 4 hours in each of the three mutually perpendicular axes for a total of 12 hours.

A test current of 100 milliamperes maximum shall be applied and the mated pair continuously monitored for microsecond discontinuities.

3.7.2 Requirement

No disengagement of the mated connectors, backing off, the coupling mechanism, evidence of cracking, breaking, or loosening of parts.

3.7.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) did not exhibit physical degradation.

3.7.4 Test Anomalies/Deviations

N/A

3.8 Random Vibration, 5g²

3.8.1 Test Method

EIA-364-28, Condition V

Except with vibration profile as specified in MIL-DTL-38999

3.8.2 Requirement

No disengagement of the mated connectors, backing off, the coupling mechanism, evidence of cracking, breaking, or loosening of parts.

3.8.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) did not exhibit physical degradation.

3.8.4 Test Anomalies/Deviations

N/A



3.9 **Mechanical Shock, 300g**

3.9.1 Test Method

EIA-364-27, Condition D

3.9.2 Requirement

No disengagement of mated connectors, backing off the coupling mechanism, evidence of cracking, breaking, or loosening of parts.

3.9.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) did not exhibit physical degradation.

3.9.4 Test Anomalies/Deviations

N/A

3.10 **Humidity, 240 Hours**

3.10.1 Test Method

EIA-364-31, Duration B

3.10.2 Requirement

Insulation resistance during final cycle shall be 100 megaohms minimum at 500 VDC

After test, DWV per EIA-364-20 at 500 VAC. Leakage shall be less than 2 mA.

Samples shall not show any deterioration which will adversely affect their performance

3.10.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), 858-028-02F + 858-029-02F (SN 003 and 004), and 858-005-04 + 858-006-04 (SN 005 and 006) show no deterioration and met the required IR and DWV testing levels

3.10.4 Test Anomalies/Deviations

N/A



3.11 **Electrical Performance (After Each Test)**

3.11.1 **10GBASE-T, El Ochito White & El Ochito Type II**

3.11.1.1 Test Method

After each test, mated pairs shall be tested using a Fluke Networks Cable Analyzer

3.11.1.2 Requirement

Samples shall pass 10GBASE-T

3.11.1.3 Results

PASS. PN 858-003-02F + 858-004-02F (SN 001 and 002), and 858-005-04 + 858-006-04 (SN 005 and 006) maintained their performance.

3.11.1.4 Test Anomalies/Deviations

N/A

3.11.2 **USB 3.0, El Ochito Blue**

3.11.2.5 Test Method

After each test, mated pairs shall be tested using a Total Phase Cable Tester

3.11.2.6 Requirement

Samples shall pass USB 3.0

3.11.2.7 Results

PASS. PN 858-028-02F + 858-029-02F (SN 003 and 004) maintained their performance

3.11.2.8 Test Anomalies/Deviations

N/A