STRADA Whisper Cable Assembly

1. SCOPE

1.1. Content

This specification defines performance, tests and quality requirements for 100 Ω PiR STRADA Whisper Cable Assemblies. Properties specific to the board mount connector are covered by STRADA Whisper Connector system specifications 108-32021 and 108-32112.

1.2. Qualification Testing

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using applicable inspection plan and product drawings.

Successful qualification testing on the STRADA Whisper Cable Assembly product was completed on January 31, 2020. The Qualification Test Report number for testing is 501-134100. Additional mixed flowing gas testing is documented in test report EA20200151T.

2. APPLICABLE DOCUMENTS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies. In the event of conflict between the

2.1. TE Documents

- 108-32021: Product Specification (3.9 STRADA Whisper Connector System)
- 108-32112: Product Specification (3.9 STRADA Whisper Connector System – No Pd/Ni)
- 501-134100: Qualification Test Report
- EA20200151T: Engineering Test Report (mixed flowing gas test sequence)- Cabled Header
- EA20210085T: Engineering Test Report (mixed flowing gas test sequence)- Cabled Receptacle

2.2. Industry Standard

- EIA-364 Electrical Connector/Socket Test Procedures including Environmental Classifications

2.3. Reference Document

- 109-197 Test Specification (AMP Test Specifications vs. EIA and IEC Test Methods)

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawings.

3.2. Ratings

- Voltage: 80 volts AC maximum peak (1/3 of minimum withstanding voltage)
- Current: See Figure 2
- Temperature: -55 to +85 degrees Celsius

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

Test Description	Requirement	Procedure
Initial Examination	Meets product drawing requirements.	EIA-364-18. Visual and dimensional (CofC) inspection per product drawing.
Final Examination	Meets visual requirements.	EIA-364-18. Visual Inspection.
ELECTRICAL		
Low Level Contact Resistance (LLCR)	△R 10 milliohms maximum for individual signal reading and ΔR 250 milliohms maximum for individual ground reading final.	EIA-364-23. Subject specimens to 100 milliamps maximum and 20 millivolts maximum open circuit voltage. See Figure 3
Insulation Resistance	1000 megaohms minimum	EIA-364-21. 100 volts DC, 2 minute hold. Test between adjacent contacts of mated specimens.
Withstanding Voltage	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 250 volts AC at sea level. Test between adjacent contacts and signal contacts to ground of mated specimens.
Temperature Rise VS. Current	30°C maximum temperature rise at the current ratings shown in Figure 2.	EIA-364-70, Method 1. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C.
MECHANICAL		
Mating Force	2.10 N [.47 lb] maximum average per differential pair including ground.	EIA-364-13. Measure force necessary to mate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Unmating Force	0.31 N [.07 lb] minimum average per differential pair including ground.	EIA-364-13. Measure force necessary to unmate specimens at a maximum rate of 12.7 mm [.5 in] per minute.
Cablet Retention	44.5 N [10 lb] minimum per cablet.	Measure force necessary to pull the cablet out of the housing at a maximum rate of 12.7 mm [.5 in] per minute.
Durability	No physical damage and post testing LLCR. See note	EIA-364-9. Mate and unmate specimens for 200 cycles at a maximum rate of 600 cycles per hour.

Figure 1 (Cont'd)

Test Description	Requirement	Procedure
Mechanical Shock	No physical damage or discontinuities of 1 microsecond or longer in duration.	EIA-364-27, Test Condition A. Subject mated specimens to 490 m/s² (50 G's) half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 5.
Random Vibration	No physical damage or discontinuities of 1 microsecond or longer in duration.	EIA-364-28 Test Condition VII, Condition D, Subject mated specimens to 3.10 G's rms between 20 to 500 Hz. 15 minutes in each of 3 mutually perpendicular planes. Secure connector to vibrating surface and hold cable a minimum of 4" from back of connector. See Figure 5.
ENVIRONMENTAL		
Thermal Shock	No physical damage and post testing LLCR.	EIA-364-32, Method A, Test Condition I. Subject mated specimens to 5 cycles between -55 and 85°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.
High Humidity / Temperature Cycling	No physical damage and post testing LLCR.	EIA-364-31, Method IV. Subject mated specimens to 50 cycles (800 hours total, no 8 hr ambient dwell in each cycle) between 5 and 85°C at 80 to 100% RH.
Temperature Life	No physical damage and post testing LLCR.	EIA-364-17, Method A, Test time condition D. Subject mated specimens to 105°C for 1000 hours.
Dust Contamination	See note	EIA-364-91, Subject unmated receptacle specimens to dust contamination #1 for 1 hour. Air flow shall be 360 cfm.

NOTE
Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 3.

Figure 1

Pair Size	Current Rating (Amps) Fully Energized
4 - 6	0.50
7 - 12	0.25

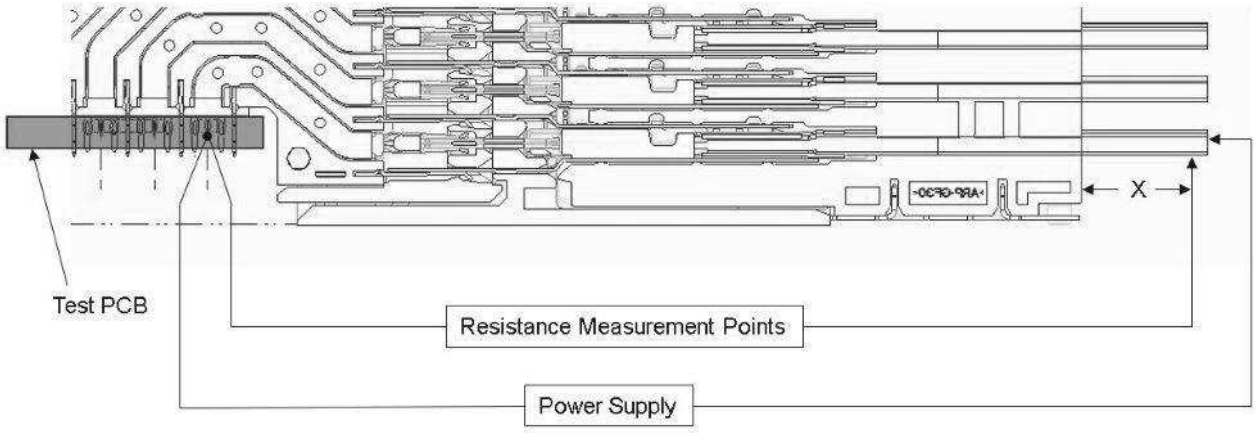
Figure 2

3.4. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group			
	1	2	3	4
	Test Sequence (d)			
Initial Examination	1	1	1	1
LLCR		3,6,8,10,12	2,4,6,8,12	2,4
Insulation Resistance			10	
Withstanding Voltage			11	
Mate Force		2,14		
Unmate Force		4,13		
Cablet Retention				5
Durability		5	3	
Mechanical Shock		11		
Random Vibration		9		
Thermal Shock			7	
High Humidity / Temp Cycling			9	
Temperature Life				3(a)
Dust Contamination		7	5	
Temperature Rise vs Current	2			
Final Examination	3	15	13	6

NOTE
a) Perform 10 durability cycles prior to initial measurement.

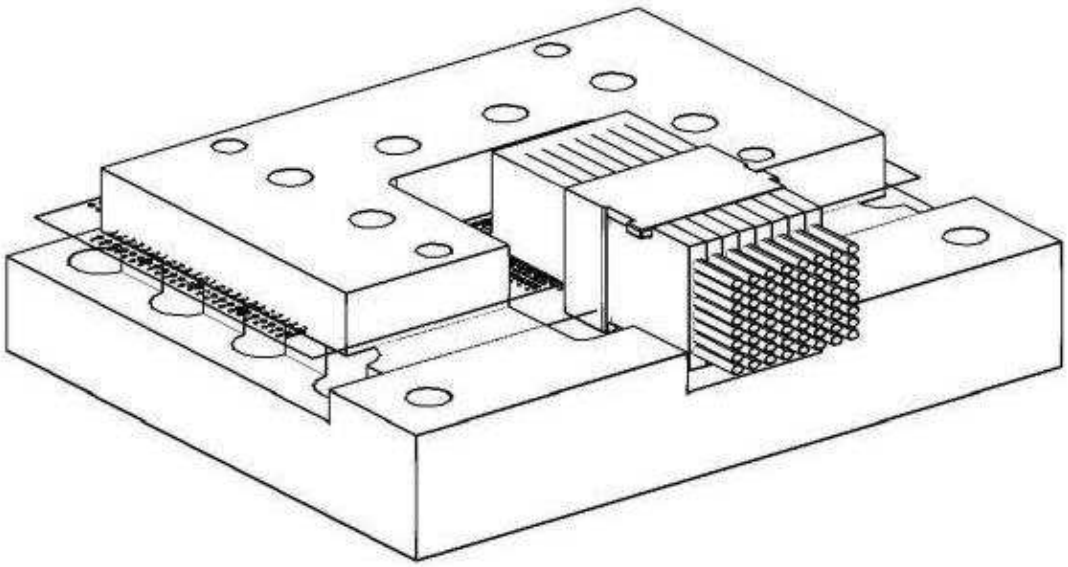
Figure 3



Note: "X" Length of wire bulk included in initial measurement.

**For cable to cable connector configuration, DIM X applies to both sides.*

LLCR Measurement Points
Figure 4



Vibration and Mechanical Shock Mounting Fixture
Figure 5