3.9mm STRADA Whisper* R, PIR, 92-Ohm Receptacle Qualification

1. INTRODUCTION

1.1 Purpose

Testing was performed on TE Connectivity* (TE) STRADA Whisper* V2, 92-Ohm PiR 4x6 Receptacles to determine their conformance to the requirements of TE Product Specification 108-140186, Rev. A.

1.2 Scope

This report covers the electrical, mechanical, and environmental performance of the TE STRADA Whisper V2 92-Ohm PiR 4x6 Receptacles. Testing was performed at the TE Harrisburg Electrical Components Test Laboratory from 26-April-2019 to 9-August-2019. This documentation is on file and maintained at Harrisburg Electrical Components Test Lab under test file EA20190058T.

1.3 Conclusion

The TE STRADA Whisper V2 92-Ohm PiR 4x6 Receptacles listed in Table 1 of paragraph 1.4 met all electrical, mechanical, and environmental performance requirements of TE Product Specification 108-140186, Rev. A.

1.4 Product Description

The 3.9mm STRADA Whisper R Connector System uses a modular concept to interconnect two printed circuit boards. Both receptacle and pin connectors are connected to the printed circuit board with plated thru-hole compliant press-fit leads.

1.5 Test Specimens

The specimens as identified in Table 1 were submitted for testing.

Table 1 – Test Specimens

Test Group	Qty	Part Number	Description
1	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1939843-1 Rev A	LLCR Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824458-1 Rev A	LLCR Test Board – STRADA Whisper 92-ohm Header
2a	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1939843-1	LLCR Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824458-1	LLCR Test Board – STRADA Whisper 92-ohm Header
2b	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1939844-1	LLCPR Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824459-1	LLCPR Test Board – STRADA Whisper 92-ohm Header
3	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
4a	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1939843-1	LLCR Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824458-1	LLCR Test Board – STRADA Whisper 92-ohm Header
4b	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1939844-1	LLCPR Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824459-1	LLCPR Test Board – STRADA Whisper 92-ohm Header

Table 1 – Test Specimens (continued)

Test Group	Qty	Part Number	Description
4c	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1935845-1	Mechanical Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824397-1	Mechanical Test Board – STRADA Whisper 92-ohm Header
5	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1939843-1	LLCR Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824458-1	LLCR Test Board – STRADA Whisper 92-ohm Header
6	3	2325259-1 Rev 13	STRADA Whisper V2 PiR 92-ohm Receptacles – 4 Pair x 6 column
	3	2187726-1 Rev 1	STRADA Whisper PiR 92-ohm Header – 4 Pair x 6 Column
	3	60-1939843-1	LLCR Test Board – STRADA Whisper V2 92-ohm Receptacle
	3	60-1824458-1	LLCR Test Board – STRADA Whisper 92-ohm Header

1.6 Qualification Test Sequence

The test specimens listed in paragraph 1.4 and Table 1 were tested according to the test sequence shown in Table 2.

Table 2 – Test Sequence

Test or Examination	Test Group *(a)*								
	1	2a	2b	3	4a	4b	4c	5	6
	Test Sequence *(b)*								
Initial examination of product	1	1	1	1	1	1	1	1	1
LLCR	3,6,8, 10,12	2,4,6, 8,10			2*(c)*,4			2,4,6,8,10 ,12,14,16	
LLCPR			2,5			2,4			
Insulation resistance				6					
Withstanding voltage				7					
Vibration	9								
Mechanical shock	11								
Durability	5	3		2				3*(d)*,15*(d)*	
Mating force	2,14								
Unmating force	4,13								
Compliant pin insertion force							2		
Compliant pin retention force							4		
Minute disturbance								13	
Thermal shock		7	3	4					
Humidity/temperature cycling		9	4	5					
Temperature life					3	3	3		
Mixed flowing gas (mated)								9*(e)*,11*(e)*	
Mixed flowing gas (unmated)								5*(e)*,7*(e)*	
Dust contamination	7	5		3					
Temperature Rise vs Current									2
Final examination of product	15	11	6	8	5	5		17	3

a. Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production. Each test group shall consist of a minimum of 2 specimens.

b. Numbers indicate sequence in which tests are performed.

c. Perform 10 durability cycles prior to initial measurement.

d. Perform 100 durability cycles before, and 100 durability cycles after mixed flowing gas testing.

e. Exposure interval of 5 days.

1.6 Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15℃ to 35℃
Relative Humidity: 20% to 80%

2. SUMMARY OF TESTING

2.1 Initial Examination of Product - All Test Groups

The specimens were visually examined and no evidence of physical damage detrimental to the operation of the parts were observed. A certification of conformance was issued stating that the specimens in the test package were produced, inspected, and accepted as conforming to product drawing requirements and made using the same core manufacturing processes and technologies as production parts.

2.2 Low Level Contact Resistance (LLCR) – Test Groups 1, 2a, 4a, 5

Refer to Table 3 through Table 6 for LLCR summary data. All initial measurements were less than the maximum requirement of 200 milliohms for signal contacts. All final measurements had values below the maximum requirement of a delta R of 10 milliohms for signal contacts and delta R of 250 milliohms for ground contacts.

Table 3 –Group 1 - LLCR Summary (milliohms)

Reading	Initial	After 200 Durability Cycles	After Dust	After Vibration	After Mechanical Shock
	Actual	***Delta (ΔR)***			
Signal Contacts					
Minimum	44.62	-0.74	-0.42	-2.03	-2.00
Maximum	81.17	1.12	3.59	2.78	3.16
Average	62.08	0.08	0.29	-0.02	0.03
Std Dev	12.93	0.29	0.46	0.79	0.79
Max. Req.	*200 mΩ*	*10 mΩ Delta (ΔR)*			
Count	144				
Ground Contacts					
Minimum	14.82	-1.71	-1.37	-1.35	-1.67
Maximum	19.66	-0.08	-0.07	0.10	0.06
Average	16.70	-0.63	-0.45	-0.35	-0.45
Std Dev	1.94	0.50	0.36	0.39	0.45
Max. Req.		*250 mΩ Delta (ΔR)*			
Count	36				

Table 4 – Group 2a - LLCR Summary (milliohms)

Reading	Initial	After 200 Durability Cycles	After Dust	After Thermal Shock	After Temp-hum cycling
	Actual	***Delta (ΔR)***			
Signal Contacts					
Minimum	44.37	-0.86	-0.47	-1.00	-1.86
Maximum	81.23	1.55	2.44	2.21	6.14
Average	61.93	0.25	0.41	0.19	1.20
Std Dev	12.84	0.52	0.54	0.45	1.32
Max. Req.	*200 mΩ*	*10 mΩ Delta (ΔR)*			
Count	144				
Ground Contacts					
Minimum	14.76	-1.66	-1.33	-1.58	-1.29
Maximum	19.31	0.04	0.13	0.21	0.45
Average	16.59	-0.52	-0.29	-0.32	-0.10
Std Dev	1.92	0.51	0.35	0.45	0.41
Max. Req.		*250 mΩ Delta (ΔR)*			
Count	36				

Table 5 – Group 4a - LLCR Summary (milliohms)

Reading	Initial	After Temperature Life
	Actual	***Delta (ΔR)***
Signal Contacts		
Minimum	44.51	-1.64
Maximum	80.60	7.05
Average	61.86	1.36
Std Dev	12.79	1.38
Max. Req.	*200 mΩ*	*10 mΩ Delta (ΔR)*
Count	144	
Ground Contacts		
Minimum	14.88	0.31
Maximum	19.44	5.45
Average	16.52	2.39
Std Dev	1.84	1.37
Max. Req.		*250 mΩ Delta (ΔR)*
Count	36	

Table 6 – Group 5 - LLCR Summary (milliohms)

Reading	Initial	After 100 Durability Cycles	After 5 days MFG unmated	After 10 days MFG unmated	After 5 days MFG mated	After 10 days MFG mated	After Minute Disturbance	After 100 Durability Cycles
	Actual	***Delta (ΔR)***						
Signal Contacts								
Minimum	43.89	-0.55	-0.28	-1.47	-1.55	-1.58	-1.71	-1.32
Maximum	80.64	1.79	2.58	5.30	9.40	5.81	5.23	3.19
Average	61.83	0.13	0.73	1.34	1.55	1.27	0.87	0.87
Std Dev	12.79	0.43	0.63	1.21	1.63	1.43	1.17	0.93
Max. Req.	*200 mΩ*	*10 mΩ Delta (ΔR)*						
Count	144							
Ground Contacts								
Minimum	14.86	-1.95	-1.64	-1.61	-1.17	-1.16	-1.09	-1.00
Maximum	19.46	-0.09	0.07	0.18	2.37	3.82	3.80	0.96
Average	16.67	-0.63	-0.32	-0.31	-0.16	0.07	0.15	-0.22
Std Dev	1.93	0.53	0.38	0.43	0.67	1.04	1.08	0.39
Max. Req.		*250 mΩ Delta (ΔR)*						
Count	36							

2.3 Low Level Compliant Pin Resistance (LLCPR) – Test Groups 2b, 4b

Refer to Tables 7 and 8 for Group 2b and Group 4b, LLCPR summary data. All initial measurements were less than the maximum requirement of 1 milliohm (1,000 micro-ohms). All final measurements had delta R values below the maximum requirement of 1 milliohm.

Table 7 – Group 2b Receptacle Contacts - LLCPR Summary (micro-ohms)

Reading	Initial	After Temp-hum cycling
	Actual	***Delta (ΔR)***
Signal Contacts		
Minimum	30.00	-27.00
Maximum	244.00	93.00
Average	92.60	18.23
Std Dev	53.43	30.87
Max. Req.	*1000 µΩ*	*1000 µΩ Delta (ΔR)*
Count	30	
Ground Contacts		
Minimum	34.00	-25.00
Maximum	135.00	82.00
Average	83.77	7.40
Std Dev	26.73	19.85
Max. Req.	*1000 µΩ*	*1000 µΩ Delta (ΔR)*
Count	30	

Table 8 – Group 4b Receptacle Contacts - LLCPR Summary (micro-ohms)

Reading	Initial	After Temp-Life
	Actual	***Delta (ΔR)***
Signal Contacts		
Minimum	24.00	-13.00
Maximum	127.00	33.00
Average	66.73	10.83
Std Dev	29.49	11.13
Max. Req.	*1000 µΩ*	*1000 µΩ Delta (ΔR)*
Count	30	
Ground Contacts		
Minimum	44.00	-16.00
Maximum	128.00	30.00
Average	88.07	3.90
Std Dev	22.08	11.84
Max. Req.	*1000 µΩ*	*1000 µΩ Delta (ΔR)*
Count	30	

2.4 Insulation Resistance – Test Group 3

All initial and final insulation resistance measurements were greater than the 1000 megohms minimum requirement. A total of 30 signal to signal and 30 signal to ground contacts were tested.

2.5 Withstanding Voltage – Test Group 3

No dielectric breakdown or flashover occurred and none of the specimens had leakage current that exceeded 5 mA. A total of 30 signal to signal and 30 signal to ground contacts were tested.

2.6 Random Vibration – Test Group 1

No apparent physical damage or discontinuities of one microsecond or greater occurred during testing.

2.7 Mechanical Shock – Test Group 1

No apparent physical damage or discontinuities of one microsecond or greater occurred during testing.

2.8 Durability – Test Group 1, 2a, 3, 5

No physical damage occurred to the specimens as a result of mating and unmating the specimens 200 times.

2.9 Mating Force – Test Group 1

Refer to Table 9 for mating force data. The full connector force was divided by 48 to obtain the maximum average per differential pair including ground. All specimens had measurements less than the initial and final maximum requirements of 2.1 N and 2.5 N, respectively, for average mating force per differential pair including ground.

Table 9 – Mating Force Summary (N)

Reading	Initial		Final	
	Whole Connector	Per Diff. Pair	Whole Connector	Per Diff. Pair
Minimum	32.32	0.67	32.17	0.67
Maximum	34.31	0.72	36.56	0.76
Average	33.39	0.70	34.78	0.72
Std Dev	1.01	0.02	2.31	0.05
Max. Req.	*100.8 N*	*2.1 N*	*120 N*	*2.5 N*

2.10 Unmating Force – Test Group 1

Refer to Table 10 for unmating force data. The connector unmating force was divided by 48 to obtain the minimum average per differential pair including ground. All specimens had measurements greater than the initial and final minimum requirement of 0.31 for average mating force per differential pair including ground.

Table 10 – Unmating Force Summary (N)

Reading	Initial		Final	
	Whole Connector	Per Diff. Pair	Whole Connector	Per Diff. Pair
Minimum	30.44	0.63	29.64	0.62
Maximum	32.85	0.68	36.20	0.75
Average	31.35	0.65	33.35	0.69
Std Dev	1.31	0.03	3.36	0.07
Min. Req.	*14.88 N*	*0.31 N*	*14.88 N*	*0.31 N*

2.11 Compliant Pin Insertion Force – Test Group 4c

Refer to Table 11 for compliant pin insertion force data. The full receptacle connector force was divided by 108 to obtain the average force per pin. All forces were below the requirement of 17.8 N [4.0 lbf] maximum average per pin.

Table 11 – Receptacle Connector Compliant Pin Insertion Force Summary (N)

	Whole Connector	Per Pin
Minimum	731.11	6.76
Maximum	738.49	6.85
Average	733.84	6.79
Std Dev	4.05	0.05
Max. Req.	*1922.4 N*	*17.8 N*

2.12 Compliant Pin Retention Force – Test Group 4c

Refer to Table 12 for compliant pin retention force data. The full connector force was divided by 108 to obtain the average force per pin. All forces were greater than the requirement of 1.8 N [0.40 lbf] minimum average per pin.

Table 12 – Receptacle Connector Compliant Pin Retention Force Summary (N)

	Whole Connector	Per Pin
Minimum	267.48	2.48
Maximum	357.22	3.31
Average	305.03	2.82
Std Dev	46.63	0.43
Min. Req.	*194.4 N*	*1.8 N*

2.13 Minute Disturbance – Test Group 5

No evidence of physical damage was visible as a result of unmating and mating the specimens distance of approximately 0.1 mm [.004 in] and subsequent LLCR measurements were below the maximum requirement of a delta R of 10 milliohms for signals and delta R of 250 milliohms for grounds

2.14 Thermal Shock – Test Groups 2a, 2b, 3

No evidence of physical damage was visible as a result of exposure to thermal shock.

2.15 Humidity/Temperature Cycling – Test Groups 2a, 2b, 3

No evidence of physical damage was visible as a result of exposure to humidity-temperature cycling.

2.16 Temperature Life – Test Group 4a, 4b, 4c

No evidence of physical damage was visible as a result of exposure to temperature life.

2.17 Mixed Flowing Gas (mated) – Test Group 5

No evidence of physical damage to the mating interface was visible as a result of exposure to the pollutants of mixed flowing gas in the mated state.

2.18 Mixed Flowing Gas (unmated) – Test Group 5

No evidence of physical damage to the mating interface was visible as a result of exposure to the pollutants of mixed flowing gas in the unmated state.

2.19 Dust Contamination – Test Groups 1, 2a, 3

No physical damage detrimental to product performance was visible due to exposure to benign dust.

2.20 Temperature Rise vs. Current – Test Group 6

All specimens were below a 30℃ temperature rise ab ove ambient when all signal contacts were energized with a current of 0.5 amperes DC.

3. TEST METHODS

3.1. Initial Examination of Product

A Certification of Conformance was issued stating that all specimens in this test package have been produced, inspected, and accepted as conforming to product drawing requirements, and made using the same core manufacturing processes and technologies as production parts. Where specified specimens were visually examined with the unaided eye for signs of physical damage detrimental to product performance. Testing was performed in accordance with EIA-364-18B.

3.2 Low Level Contact Resistance (LLCR) – Test Groups 1, 2a, 4a, 5

Low level contact resistance measurements at low level current were made on an automated scanning station using a four-terminal measuring technique. The test current was maintained at 100 milliamperes maximum with a 20-millivolt maximum open circuit voltage. Testing was performed in accordance with EIA-364-23C.

3.3 Low Level Compliant Pin Resistance (LLCPR) – Test Groups 2b, 4b

Low level compliant pin resistance at low level current were made using a four terminal measuring technique. The test current was maintained at 100 milliamperes maximum with a 20 millivolt maximum open circuit voltage. Measurements points were between printed circuit board holes and the compliant pin tip. Testing was performed in accordance with EIA-364-23C.

3.4 Insulation Resistance – Test Group 3

Insulation resistance was measured between adjacent signal contacts and adjacent signal and ground contacts of the mated specimens. A test voltage of 100 volts DC was applied for two minutes before the resistance was measured. Testing was performed in accordance with EIA-364-21E.

3.5 Withstanding Voltage – Test Group 3

A test potential of 250 volts AC was applied between the adjacent signal contacts and the adjacent signal to ground contacts of mated specimens. This potential was applied for one minute and then returned to zero. Testing was performed in accordance with EIA-364-20F.

3.6 Random Vibration – Test Group 1

The test specimens were subjected to a random vibration test in accordance with specification EIA-364-28F, test condition “VII”, test condition letter “D”. The parameters of this test condition are specified by a random vibration spectrum with excitation frequency bounds of 20 and 500 Hertz (Hz). The spectrum remains flat at 0.02 G^2/Hz from 20 Hz to the upper bound frequency of 500 Hz. The root-mean square amplitude of the excitation was 3.10 GRMS. The test specimens were subjected to this test for 15 minutes in each of the three mutually perpendicular axes, for a total test time of 45 minutes per test specimen. The test specimens were monitored for discontinuities of 1 microsecond or greater using an energizing current of 100 milliamperes.

3.7 Mechanical Shock – Test Group 1

The test specimens were subjected to a mechanical shock test in accordance with specification EIA-364-27C, test condition “A”. The parameters of this test condition are a half-sine waveform with an acceleration amplitude of 50 gravity units (g's peak) and a duration of 11 milliseconds. Three shocks in each direction were applied along the three mutually perpendicular axes of the test specimens, for a total of eighteen shocks. The test specimens were monitored for discontinuities of 1 microsecond or greater using an energizing current of 100 milliamperes.

3.8 Durability – Test Group 1, 2a, 3, 5

The specimens from Groups 1, 2a and 5 were mated and unmated for 200 cycles using a durability machine at a maximum rate of 600 cycles per hour. Test Group 5 specimens were cycled 100 times before and cycled 100 times after mixed flowing gas testing. Durability for the Group 3 specimens (unmounted) was conducted by hand at a maximum rate of 300 cycles per hour. Testing was done in accordance with test procedure EIA 364-9D.

3.9 Mating Force – Test Group 1

The receptacle and header connectors were subjected to a mating force test using a tensile/compression machine. Testing was conducted at a rate of 12.7 mm/min until the specimen was fully mated and the peak force was recorded. Testing was done in accordance with test procedure EIA 364-13E.

3.10 Unmating Force – Test Group 1

The receptacle and header connectors were subjected to an unmating force test using a tensile/compression machine. Testing was conducted at a rate of 12.7 mm/min until the specimen was fully unmated and the peak force was recorded. Testing was done in accordance with test procedure EIA 364-13E.

3.11 Compliant Pin Insertion Force – Test Group 4c

Force was applied to the receptacle connector using a tensile/compression machine in a downward direction at a rate of 12.7 mm per minute until the specimens were fully inserted into the printed circuit boards. Testing was performed in accordance with EIA-364-05B.

3.12 Compliant Pin Retention Force – Test Group 4c

Force was applied to the receptacle connector using a tensile/compression machine in an upward direction at a rate of 12.7 mm per minute until the receptacle specimens were fully removed from the printed circuit boards. Testing was performed in accordance with EIA-364-05B.

3.13 Minute Disturbance – Test Group 5

The header and receptacle connectors were unmated and mated a distance of approximately 0.1 mm [.004 in].

3.14 Thermal Shock – Test Groups 2a, 2b, 3

Mated specimens were subjected to 5 cycles of thermal shock with each cycle consisting of 30 minute dwells at -55℃ and 85℃. The transition between temperatures was less than one minute. Testing was performed in accordance with EIA-364-32G.

3.15 Humidity/Temperature Cycling – Test Groups 2a, 2b, 3

Mated specimens were exposed to 50 cycles (800 hours) of humidity/temperature cycling. Each cycle lasted 16 hours and consisted of cycling the temperature between 5℃ and 85℃ twice while maintaining humidit y at 80 to 100%. The eight hour ambient dwell was removed from the test parameters in order to achieve 50 cycles in 800 hours. Testing was performed in accordance with TE Product Specification 108-140186, Rev. A and EIA-364-31F.

3.16 Temperature Life – Test Group 4a 4b, 4c

Mated specimens were exposed to a temperature of 105℃ for 1000 hours in an air circulating oven. Test ing was performed in accordance with EIA-364-17C.

3.17 Mixed Flowing Gas (mated) – Test Group 5

Mated specimens were subjected to a 4-gas environment in accordance with EIA-364-65B, Class IIA for 10 days. LLCR measurements were taken every 5 days during the exposure period. Refer to Table 18 for MFG Class IIA test parameters.

3.18 Mixed Flowing Gas (unmated) – Test Group 5

Unmated specimens (both halves) were subjected to a 4-gas environment in accordance with EIA-364-65B, Class IIA for 10 days. LLCR measurements were required every 5 days during the exposure period. Refer to Table 13 for MFG Class IIA test parameters.

Table 13 – MFG Test Parameters

Environment	**Class IIA**
Temperature (^{0}C)	**30±1**
Relative Humidity (%)	**70±2**
Chlorine (Cl2) Concentration (ppb)	**10±3**
Hydrogen Sulfide (H2S) Concentration (ppb)	**10±5**
Nitrogen Dioxide (NO2) Concentration (ppb)	**200±50**
Sulfur Dioxide (SO2) Concentration (ppb)	**100±20**
Exposure Period [actual]	**20 days**
Chamber Volume Exchange Rate [minimum of 6/hr.]	**8.8/hr.***

***Volume exchange rate for 105-liter test chamber [Total flow rate of 15.4 L/Min]**

3.19 Dust Contamination – Test Groups 1, 2a, 3

Unmated receptacle specimens were subjected to dust exposure in accordance with EIA-364-91B. The dust composition was #1 benign.

3.20 Temperature Rise vs. Current – Test Group 6

Temperature measurements were recorded when the specimens reached thermal stability. The ambient temperature was then subtracted from this measured temperature to obtain the temperature rise. Testing was performed in accordance with EIA-364-70C.

3.21 Final Examination of Product – All Test Groups

Specimens were visually examined with the unaided eye for signs of physical damage detrimental to product performance. Testing was performed in accordance with EIA-364-18B.