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EIA STANDARD

TS-1000.01A

**ENVIRONMENTAL TEST METHODOLOGY FOR
ASSESSING THE PERFORMANCE OF ELECTRICAL
CONNECTORS AND SOCKETS USED IN CONTROLLED
ENVIRONMENT APPLICATIONS**

EIA/ECA-364-1000.01A

(Revision of EIA-364-1000.01)

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TEST SEQUENCE No. 1000.01A

ENVIRONMENTAL TEST METHODOLOGY FOR ASSESSING
THE PERFORMANCE OF ELECTRICAL CONNECTORS AND SOCKETS
USED IN CONTROLLED ENVIRONMENT APPLICATIONS

(From EIA Standards Proposal No. 5038, formulated under the cognizance of EIA CE-2.0 Committee on National Connector Standards, and previously published in EIA-364-1000.01.)

1 Introduction

1.1 Scope

This standard establishes the test procedures and test sequences to be followed when evaluating the performance of electrical connectors and sockets used in controlled environments.¹⁾ Furthermore, it applies to contacts operating under low level circuit conditions.²⁾ The assumption is made that the contacts are metal. Polymer contacts, or other contact types, may require a different test methodology.

2 Test specimen

2.1 Condition

Connectors or sockets to be tested may be prototype parts to assess their design, or production parts to evaluate against an end user's criteria. In either case, preparation of them for testing should consider board carrier or cable assembly processes. When access to a production or prototype soldering process to attach test specimens to a board carrier is not available, chemical and temperature exposure may be simulated by the procedures of EIA-364-11 (Resistance to Solvents Test Procedure for Electrical Connectors); and EIA-364-56, procedure 3 test condition E for a wave solder process, procedure 4 for a vapor phase reflow process, or procedure 5 level #3 for an infrared reflow process (Resistance to Soldering Heat Test Procedure for Electrical Connectors). When pressing test specimens to a board carrier or when terminating test specimens to a cable, appropriate tools should be used.

1) Controlled environments are classified as no more severe than class number G1.2, according to the latest revision of EIA-364 (Electrical Connector/Socket Test Procedures Including Environmental Classifications).

2) The applied voltage, generally < 50 millivolts, is not sufficient to break through any surface film. For contacts not operating under low level circuit conditions, such as those used in power applications; see the latest revision of EIA-364-70 (Test Procedure for Current vs. Temperature Rise of Electrical Connectors).

NOTE — Board carrier assembly operations are typically setup to attach all solderable components before press-fit connectors. Even so, the connectors may still be subjected to manual or automated soldering conditions during component rework. This circumstance should be considered by the test engineer when preparing test specimens.

2.2 Sample size

2.2.1 For the test sequences in each of the test groups of clause 3, at least 100 separable contact interfaces from at least 5 connector or socket systems (plug/receptacle) should be evaluated. For low contact counts, at least 10 connector or socket systems should be tested. If Option #1A and Option #1B of test group 4 are chosen, then twice this sample size for that test sequence is required. If the connector or socket contains contacts that differ in the design of the critical area, then the sample size requirement should be applied to each design and the test results should be distinguishable.

2.2.2 When a failure rate is desired, a significantly larger sample size for the test sequence in test group 4 should be tested. The user may require a larger sample size for other test groups, as well. The increase is dictated by the method of calculation chosen by the user.

3 Test groups

For an understanding of the objective of each test contained in the test groups; see annex B.

Table 1 - Test Group 1 (required for all connectors or sockets)

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
1	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	None (base line measurements)
2	Durability (preconditioning)	EIA-364-09 (perform 5 unplug/plug cycles if the application requires up to 25 over the life of the connector or socket; 20 cycles if the application requires 26-200; or, 50 cycles if the application requires 201 or greater)		No evidence of physical damage
3	Temperature life	EIA-364-17, method A (see table 8 for durations and temperatures)	Mated	None
4	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
5	Reseating	Manually unplug/plug the connector or socket. Perform 3 such cycles.		No evidence of physical damage
6	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user

Table 2 - Test Group 2 (required for all connectors and sockets)

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
1	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	None (base line measurements)
2	Durability (preconditioning)	EIA-364-09 (perform 5 unplug/plug cycles if the application requires up to 25 over the life of the connector or socket; 20 cycles if the application requires 26-200; or, 50 cycles if the application requires 201 or greater)		No evidence of physical damage
3	Thermal shock	EIA-364-32, test condition I (10 cycles with the exception of exposure times. Place a thermocouple in the center of the largest mass component of the connector or socket that is in the center of the test chamber to insure that the contacts reach the temperature extremes before ramping to the other temperature.)	Mated	None
4	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
5	Cyclic temperature & humidity	EIA-364-31 (Cycle the connector or socket between 25 °C ± 3 °C at 80 % ± 3% RH and 65 °C ± 3 °C at 50 % ± 3% RH. Ramp times should be 0.5 hour and dwell times should be 1.0 hour. Dwell times start when the temperature and humidity have stabilized within the specified levels. Perform 24 such cycles.)	Mated	None
6	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
7	Reseating	Manually unplug/plug the connector or socket. Perform 3 such cycles.		No evidence of physical damage
8	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user

Table 3 - Test Group 3 (required for all connectors or sockets)

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
1	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	None (base line measurements)
2	Durability (preconditioning)	EIA-364-09 (perform 5 unplug/plug cycles if the application requires up to 25 over the life of the connector or socket; 20 cycles if the application requires 26-200; or, 50 cycles if the application requires 201 or greater)		No evidence of physical damage
3	Temperature life (preconditioning)	EIA-364-17, method A (see table 9 for durations and temperatures)	Mated	None
4	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
5	Vibration	EIA-364-28, test condition VII, test condition letter D (15 minutes in each of 3 mutually perpendicular directions. Both mating halves should be rigidly fixed so as not to contribute to the relative motion of one contact against another. The method of fixturing should be detailed in the test report.)	Mated	No evidence of physical damage
6	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user

**Table 4 - Test Group 4 (required for connectors or sockets with
a precious metal plating on the contacts)**

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
1	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	None (base line measurements)
2	Durability (preconditioning)	EIA-364-09 (perform 5 unplug/plug cycles if the application requires up to 25 over the life of the connector or socket; 20 cycles if the application requires 26-200; or, 50 cycles if the application requires 201 or greater)		No evidence of physical damage
3	Temperature life (preconditioning)	EIA-364-17, method A (see table 9 for durations and temperatures)	Mated	None
4	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
5	Mixed flowing gas	EIA-364-65, class IIA (5 days to simulate a 3-year field life; 7 days to simulate a 5-year field life; or 14 days to simulate a 10-year field life)	See note	None
6	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
7	Thermal disturbance	Cycle the connector or socket between $15^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$, as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 10 such cycles.	Mated	None
8	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user

**Table 4 - Test Group 4 (required for connectors or sockets with
a precious metal plating on the contacts) (continued)**

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
9	Reseating	Manually unplug/plug the connector or socket. Perform 3 such cycles.		No evidence of physical damage
10	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
<p>NOTE — For 1-piece connectors or sockets: 1) expose unmated for 2/3 of the test duration; 2) mate each connector or socket to the same part that it was mated to during temperature life (preconditioning); and 3) expose for the remainder of the test duration. For 2-piece connectors, select either Options #1A and #1B or select Option #2.</p> <p>— Option #1A (plugs): 1) expose 1/2 of the specimens unmated for 2/3 of the test duration; 2) mate each specimen to the same receptacle that it was mated to during temperature life (preconditioning); and, 3) expose for the remainder of the test duration.</p> <p>— Option #1B (receptacles): 1) expose 1/2 of the specimens unmated for 2/3 of the test duration; 2) mate each specimen to the same plug that it was mated to during temperature life (preconditioning); and, 3) expose for the remainder of the test duration.</p> <p>— Option #2: 1) expose all plugs and receptacles unmated for 2/3 of the test duration; 2) mate each piece to the same piece that it was mated to during temperature life (preconditioning); and, 3) expose for the remainder of the test duration.</p>				

Table 5 - Test Group 5 (required for connectors or sockets with a tin-based plating on the contacts and optional for connectors or sockets with < 0.38 microns of gold plating on the contacts)

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
1	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	None (base line measurements)
2	Durability (preconditioning)	EIA-364-09 (perform 5 unplug/plug cycles if the application requires up to 25 over the life of the connector or socket; 20 cycles if the application requires 26-200; or, 50 cycles if the application requires 201 or greater)		No evidence of physical damage
3	Temperature life (preconditioning)	EIA-364-17, method A (see table 9 for durations and temperatures)	Mated	None
4	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
5	Thermal cycling	Cycle the connector or socket between $15^{\circ}\text{C} \pm 3^{\circ}\text{C}$. and $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$, as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 500 such cycles.	Mated	None
6	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user
7	Reseating	Manually unplug/plug the connector or socket. Perform 3 such cycles.		No evidence of physical damage
8	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user

Table 6 - Test Group 6 (required for connectors or sockets with a surface treatment on the contacts or for connectors or sockets with a wipe length of 0.127 mm or less)

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
1	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	None (base line measurements)
2	Durability (preconditioning)	EIA-364-09 (perform 5 unplug/plug cycles if the application requires up to 25 over the life of the connector or socket; 20 cycles if the application requires 26-200; or, 50 cycles if the application requires 201 or greater)		No evidence of physical damage
3	Dust	EIA-364-91 (benign dust composition)	Unmated	None
4	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user (see note)
5	Thermal disturbance	Cycle the connector or socket between $15^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$, as measured on the part. Ramps should be a minimum of $2^{\circ}\text{C}/\text{minute}$, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 10 such cycles.	Mated	None
6	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user (see note)
7	Reseating	Manually unplug/plug the connector or socket. Perform 3 such cycles.		No evidence of physical damage
8	Low level contact resistance	EIA-364-23 (termination of connector or socket to board carrier or cable shall be included in measurements)	Mated	Change in measurements evaluated against criteria specified by user (see note)

NOTE — Failure to meet the criteria does not necessarily disqualify the connector or socket. Rather, it may indicate the need for protection against particulate contamination, such as that afforded by a dust cover. For a connector or socket with a surface treatment on the contacts, a comparison of the test results to those obtained for the same connector or socket without a surface treatment on the contacts should be made. Only then can the impact of the surface treatment be determined.

**Table 7 - Test Group 7 (required for connectors or sockets rated for
> 50 mating/unmating cycles)**

Test Order	Test	Test procedure	Condition of test specimens	Test criteria
1	Dielectric withstanding voltage	EIA-364-20 (voltage level, ac or dc, and the orientation of the connector or socket should be defined in the details of the test report)	Mated	No disruptive discharge No leakage current in excess of the maximum specified by user
2	Low level contact resistance	EIA-364-23 (Termination of the connector or socket to the board carrier or cable shall be included in the measurements. The orientation of the connector or socket should be defined in the details of the test report.)	Mated	None (base line measurements)
3	Durability	EIA-364-09 (Perform the rated number of unplug/plug cycles. Retention features, such as latches, should not be deactivated. The orientation of the connector or socket should be defined in the details of the test report.)		No evidence of physical damage
4	Low level contact resistance	EIA-364-23 (Termination of the connector or socket to the board carrier or cable shall be included in the measurements. The orientation of the connector or socket should be defined in the details of the test report.)	Mated	Change in measurements evaluated against criteria specified by user
5	Dielectric withstanding voltage	EIA-364-20 (voltage level, ac or dc, and the orientation of the connector or socket should be defined in the details of the test report)	Mated	No disruptive discharge No leakage current in excess of the maximum specified by user
<p>NOTES</p> <p>1 Separate sets of test specimens may be used to assess dielectric withstanding voltage and the change in low level contact resistance.</p> <p>2 Dielectric withstanding voltage testing should involve different contacts than low level contact resistance testing.</p>				

4 Details to be specified

The following details shall be specified in the referencing document:

- 4.1 Rated number of durability cycles
- 4.2 Temperature and duration for temperature life test; see table 8
- 4.3 Temperature and duration for temperature life (preconditioning) test; see table 9
- 4.4 Option used for test group 4 (see note at the bottom of table 4) and the duration of exposure to mixed flowing gas
- 4.5 Connector or socket to be tested (supplier part number and family name)
- 4.6 Contact plating types and thicknesses (with measurement location and technique to be used)
- 4.7 Plastic material(s) (generic type, color, and glass and/or mineral content)
- 4.8 Contact alloy (CA number or other industry material designation)
- 4.9 Surface treatment (lubricant or other, if any)

NOTE — If present, do not remove during preparation of test specimens.

- 4.10 Pass/Fail criteria (if any)
- 4.11 Any information that differs from that described in this standard.

5 Test documentation

Documentation shall contain the following. Some items may be provided by the connector or socket supplier. Others may be determined by the testing laboratory.

- 5.1 Description of test specimen(s)
 - 5.1.1 Supplier part number(s)
 - 5.1.2 Supplier family name
 - 5.1.3 Applicable industry standards

5.1.4 Contact count and spacing

5.1.5 Number of rows of contacts

5.1.6 Plastic material (generic type, color, and glass and/or mineral content)

5.1.7 Contact alloy (CA number or other industry material designation)

5.1.8 Contact plating types

5.1.9 Test specimen plating thicknesses, including statistical summary of the measurements

5.1.10 Surface treatment, if any

5.1.10.1 Supplier name and/or generic description

5.1.10.2 How and when applied to contacts

5.1.11 For card edge connectors, thickness and bevel of mating card

5.1.12 Photographs (optional)

5.2 Preparation of test specimens

5.2.1 Description of board carrier attachment method

5.2.1.1 Chemical (flux, solvent, rinse, etc.) and temperature exposure

5.2.1.2 Application tools used

5.2.2 Description of cable/wire termination method

5.2.2.1 Application tools used

5.2.2.2 Cable/wire size

5.2.2.3 Cable/wire type

5.2.2.3.1 Plating

5.2.2.3.2 Number of strands

5.3 Test equipment used, and date of last and next calibration

5.4 Test procedures used

5.4.1 Deviation(s) to those specified, if any, including explanation(s)

5.5 Schematic diagram of the circuit used to measure low level contact resistance

5.6 Test results

5.6.1 Mean, minimum, and maximum change in low level contact resistance, and the standard deviation of the changes, as calculated at each interval of measurement in each of the test groups

5.6.2 Plots of the change in low level contact resistance (y-axis) versus cumulative % of the readings less than that change (x-axis) for each interval of measurement in each of the test groups (if requested)

5.6.3 Tabulated data of the change in low level contact resistance of each circuit that includes a separable contact interface, as calculated at each interval of measurement in each of the test groups (if requested)

5.6.4 Photographs (optional)

5.7 A discussion of the test results

5.8 Name of operator and date of tests

Table 8 - Test durations (hours) for temperature life

Field temperature and field life	Test temperature		
	90 °C	105 °C	115 °C
57 °C for 3 years	192	24	8
57 °C for 5 years	288	48	12
57 °C for 10 years	552	72	24
60 °C for 3 years	288	48	12
60 °C for 5 years	456	72	24
60 °C for 10 years	840	120	48
65 °C for 3 years	600	96	24
65 °C for 5 years	960	120	48
65 °C for 10 years	1,848	240	72
85 °C for 3 years	4,176	528	144
85 °C for 5 years	6,912	840	240
85 °C for 10 years	13,680	1,584	432

NOTES

- 1 Test durations pertaining to field temperatures of 57 °C, 60 °C, and 65 °C. are based on the assumption that the contact spends its entire field life at that temperature, whereas those associated with a field temperature of 85 °C are based on the assumption that the contact spends 1/3 of its field life at that temperature.
- 2 The materials used in the construction of the connector or socket and in the components of the test vehicle (e.g., printed circuit cards, wiring, etc.) should be considered when selecting a test temperature.

Table 9 - Test durations (hours) for temperature life (preconditioning)

Field temperature and field life	Test temperature		
	90 °C	105 °C	115 °C
57 °C for 3 years	144	24	8
57 °C for 5 years	168	24	8
57 °C for 10 years	216	36	8
60 °C for 3 years	192	24	8
60 °C for 5 years	240	36	12
60 °C for 10 years	360	72	24
65 °C for 3 years	312	48	12
65 °C for 5 years	456	72	24
65 °C for 10 years	816	120	48
85 °C for 3 years	1,200	168	48
85 °C for 5 years	2,736	336	96
85 °C for 10 years	5,616	672	192

NOTES

- 1 Test durations pertaining to field temperatures of 57 °C, 60 °C, and 65 °C. are based on the assumption that the contact spends its entire field life at that temperature, whereas those associated with a field temperature of 85 °C are based on the assumption that the contact spends 1/3 of its field life at that temperature.
- 2 The materials used in the construction of the connector or socket and in the components of the test vehicle (e.g., printed circuit cards, wiring, etc.) should be considered when selecting a test temperature.

Annex

A Normative

A.1 Reference documents

The following documents form a part of this standard to the extent indicated herein. In the event of conflict between the requirements of the standard and the reference documents this standard shall take precedence.

A.1.1 EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

A.1.2 EIA-364-09: Durability Test Procedure for Electrical Connectors

A.1.3 EIA-364-11: Resistance to Solvents Test Procedure for Electrical Connectors

A.1.4 EIA-364-17: Temperature Life With or Without Electrical Load Test Procedure for Electrical Connectors

A.1.5 EIA-364-20: Withstanding Voltage Test Procedure for Electrical Connectors

A.1.6 EIA-364-23: Low Level Contact Resistance Test Procedure for Electrical Connectors

A.1.7 EIA-364-28: Vibration Test Procedure for Electrical Connectors

A.1.8 EIA-364-32: Thermal Shock Test Procedure for Electrical Connectors

A.1.9 EIA-364-56: Resistance to Soldering Heat Test Procedure for Electrical Connectors

A.1.10 EIA-364-65: Mixed Flowing Gas

A.1.11 EIA-364-70: Test Procedure for Current vs. Temperature Rise of Electrical Connectors

A.1.12 EIA-364-91: Dust Test for Electrical Connectors and Sockets

B Informative**B.1 Objective of the tests contained in the test groups****B.1.1 Cyclic temperature and humidity**

To evaluate the susceptibility of the contacts to the damaging effects caused by wet oxidation of platings and/or base metals at the contact interface

B.1.2 Dielectric withstanding voltage

To detect the presence of contaminants or debris between conducting components of the connector or socket

B.1.3 Durability

To confirm the integrity of the connector or socket design with respect to its ability to withstand many mating/unmating cycles

B.1.4 Durability (preconditioning)

To subject the connector or socket to the number of mating/unmating cycles typically encountered during system manufacture and test and, in some cases, during early field use

B.1.5 Dust

To evaluate the susceptibility of the connector or socket to the damaging effects caused by dust accumulation at the separable contact interface

B.1.6 Low level contact resistance

To detect surface contaminants, corrosion products, and films at the contact interface by applying a voltage across that interface without physically altering it

B.1.7 Mixed flowing gas

To evaluate the susceptibility of the contacts to the damaging effects caused by pore corrosion at the separable contact interface

B.1.8 Reseating

To determine if reseating the connector or socket causes electrical instability

B.1.9 Temperature life

B.1.9.1 To evaluate the susceptibility of the connector or socket to the damaging effects caused by stress relaxation of the contacts, while allowing for other thermally activated material transformations, such as base metal diffusion to the contact interface and surface treatment degradation at the contact interface, to occur

NOTE — It is extremely difficult to define a single temperature life test that is efficient and accounts for every thermally activated material transformation. In fact, little data is available pertaining to some of these processes (i.e., the behavior of surface treatments over a significant range of exposure durations and temperatures). That being the case, the test durations and temperatures of table 8 were selected after consideration of the stress relaxation behavior of brass and phosphor bronze. The reasoning for this selection is as follows.

B.1.9.1.1 There is substantial data on the amount of stress relaxation in these copper alloys over a significant range of exposure durations and temperatures.

B.1.9.1.2 The amount of stress relaxation in beryllium-copper at equivalent exposure durations and temperatures is negligible.

B.1.9.2 Each set of test conditions (duration and temperature) yields about the same amount of stress relaxation as that found in brass or phosphor bronze after the corresponding field exposure.

B.1.10 Temperature life (preconditioning)

B.1.10.1 To accelerate thermally activated material transformations, thereby assuring that the contacts subjected to subsequent testing are representative of an aged condition

NOTE — Similar to the temperature life test, (see B.1.9), it is very difficult to define a single temperature life (preconditioning) test that efficiently accounts for every thermally activated material transformation. Once again, and for the same reasons, the test durations and temperatures of table 9 were selected after consideration of the stress relaxation behavior of brass and phosphor bronze.

B.1.10.2 Each set of test conditions (duration and temperature) results in 85% of the stress relaxation found in brass or phosphor bronze after the corresponding field exposure.

B.1.11 Thermal cycling

To evaluate the susceptibility of the connector or socket to the damaging effects caused by fretting corrosion at the contact interface

B.1.12 Thermal disturbance

To determine if a physical disruption of the contact interface causes electrical instability

B.1.13 Thermal shock

To confirm the integrity of the connector or socket with respect to its ability to handle the thermal stresses that might be encountered during storage and transportation

B.1.14 Vibration

To confirm the integrity of the connector or socket design

NOTE — This test does not simulate an actual application.

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