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Design, Critical Process and Acceptance Requirements for Polymeric Applications

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- Show relationship to Design for Manufacturability (DFM) and Design for the Environment (DFE)
- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feedback system on use and problems for future improvement

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- Increase cycle time
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- Contain anything that cannot be defended with data

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Developed by 5-24g Polymerics Standard Task Group

Users of this publication are encouraged to participate in the development of future revisions.

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Acknowledgment

Any document involving a complex technology draws material from a vast number of sources. While the principal members of the of IPC Polymerics Standard Task Group (5-24g) are shown below, it is not possible to include all of those who assisted in the evolution of this standard. To each of them, the members of the IPC extend their gratitude.

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Design, Critical Process and Acceptance Requirements for Polymeric Applications

1 GENERAL REQUIREMENTS

1.1 Scope This document prescribes the minimum design, critical process and acceptance requirements for the application of polymeric materials to electrical/electronic components, modules, printed wiring assemblies and other elements thereof.

IPC-AJ-820, IPC-HDBK-001, IPC-HDBK-830 and IPC-HDBK-850 are companion documents to this specification. They contain valuable explanatory and tutorial information compiled by IPC Technical Committees that is relevant to this specification.

Although the handbooks are not a part of this specification, when there is confusion over the specification verbiage, the reader is encouraged to refer to the handbooks for assistance.

Reference materials listed in this text are recommended reading. The User is encouraged to obtain all relevant referenced materials as this document cannot (nor can any single document) cover every material, process, environment, performance or safety aspect that affects a given design.

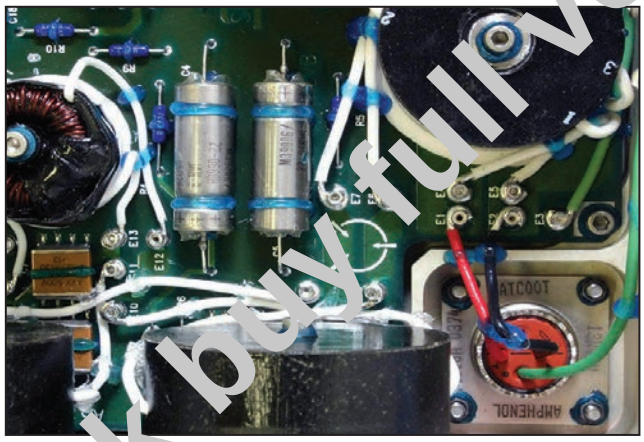

Figure 1-1 Printed wire Assembly With Staking
Image courtesy of NASA/Johnson Space Center (JSC) Quality & Flight Equipment Division Group

1.2 Purpose The intent of this document is to establish a baseline of requirements, procedures, practices and process attributes based on Lessons Learned and Best Practices that have been demonstrated through use and experience, to result in a robust design and high reliability.

This document is intended for use by the design engineer, manufacturing engineer, quality engineer or other individual responsible for implementation and compliance with requirements of this document to the applicable performance class.

a. In-Service Criteria. This document defines design requirements and acceptability criteria for "New/Beginning of Life" hardware. It is not the intent of this document to establish or define "In Service" acceptance criteria to address performance or reliability issues caused by aging or use. However, the acceptability criteria and limits that are currently detailed in this document may be considered to be wide enough to be applicable to the more common hardware degradation caused by aging/use. Use of these criteria for acceptance of "In Service" hardware conditions **shall [N1D2D3]** be as agreed between the Manufacturer and the User.

b. Metallic Whisker Control. It is not the intent of this document to be used as a stand-alone document for the control and mitigation of performance and/or reliability concerns related to metallic whiskers.

Note: *Users of this document are encouraged to review GEIA-STD-0005-1, GEIA-STD-0005-2 or IPC-AJ-820 for additional information pertaining to control of metallic whiskers.*

c. Alternate/Proprietary Documents or Processes. It is not the intent of this document to exclude any alternate or manufacturer-proprietary documents or processes that meet or exceed the baseline of requirements established by this document. Use of alternate or manufacturer-proprietary documents or processes that tailor (e.g., change, increase, reduce, delete) any of the mandatory requirements of this document **shall [N1D2D3]** require review and prior approval of the User.

d. For purposes of this document:

1) The Designer is the design agent for the User.

2) The User is the individual, organization, company, contractually designated authority or agency responsible for the procurement or design of electrical/electronic/electromechanical (EEE) hardware and having the authority to define the class of equipment and any variation or restrictions to the requirements of this document (e.g., the originator/custodian of the contract detailing these requirements).

3) The Supplier is considered the individual, organization or company which provides the Manufacturer (Assembler) components (e.g., electrical, electronic, electromechanical, mechanical, printed boards) and/or materials (e.g., solder, flux, cleaning agents).

4) The Manufacturer is considered the entity that provides a service or product to the User.

e. The acceptability of the use of polymerics with no-clean flux chemistries **shall [N1D2D3]** be as agreed between the Manufacturer and the User.