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# IPC/WHMA-A-620A

## Requirements and Acceptance for Cable and Wire Harness Assemblies

**IPC/WHMA-A-620A**

July 2006

A standard developed by IPC

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Developed by the IPC Task Group (7-31f) of the Product Assurance Subcommittee (7-30) and the WHMA Industry Technical Guidelines Committee (ITGC)

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## Foreword

If a conflict occurs between the English and translated versions of this document, the English version will take precedence.

**1.1 Scope** This standard is a collection of visual, electrical and mechanical quality acceptability requirements for Cable, Wire and Harness Assemblies. It was prepared by the Industry Technical Guidelines Committee of the Wire Harness Manufacturers Association and the Product Assurance Committee of IPC - Association Connecting Electronic Industries. IPC/WHMA-A-620 can be used as a stand-alone document for purchasing products; however it does not specify frequency of in-process inspection or frequency of end product inspection. No limit is placed on the number of process indicators or the number of allowable repair/rework of defects. Such information should be developed with a statistical process control plan (see IPC-9191).

**1.2 Purpose** This publication describes tests and acceptability criteria for producing crimped, mechanically secured, or soldered interconnections and the associated lacing/restraining criteria associated with cable and harness assemblies. Any method that produces an assembly conforming to the acceptability requirements described in this standard may be used.

**1.3 Approach to This Document** The illustrations in this document portray specific points noted in the title of each section. A brief description follows each illustration. The development committee recognizes that different parts of the industry have different definitions for some terms used herein. For the purposes of this document, the terms cable and wire harness are used interchangeably.

Class 3 **shall**<sup>1</sup> develop and implement a documented process control system. A documented process control system, if established, **shall**<sup>2</sup> define process control and corrective action limits. This may or may not be a "statistical process control" system. The use of "statistical process control" (SPC) is optional and should be based on factors such as design stability, lot size, production quantities, and the needs of the company.

Process control methodologies **shall**<sup>2</sup> be used in the planning, implementation and evaluation of the manufacturing processes used to produce cables and wire harness assemblies. The philosophy, implementation strategies, tools and techniques may be applied in differ-

- (1) Class 1-Not Est  
Class 2-Not Est  
Class 3-Defect
- (2) Class 1-Not Est  
Class 2-Defect  
Class 3-Defect

ent sequences depending on the specific company, operation, or variable under consideration to relate process control and capability to end product requirements.

**1.4 Shall or Should** The word "**shall**" is used in the text of this document wherever a requirement is mandatory.

Where the word "**shall**" leads to a hardware defect for at least one class, the requirements for each class are annotated in text boxes located adjacent to that occurrence in the text. When this standard doesn't provide acceptance criteria for a specific class, the text box will note "Not Est" for that class (see 1.5).

The word "should" reflects recommendations and is used to reflect general industry practices and procedures for guidance only.

**1.5 Uncommon or Specialized Designs** IPC/WHMA-A-620, as an industry consensus document, cannot address all of the possible product design combinations. However, the standard does provide criteria for commonly used technologies. Where uncommon or specialized technologies are used, it may be necessary to develop unique acceptance criteria. The development of unique criteria should include user involvement or consent and the criteria developed should include an agreed upon definition for acceptance of each characteristic.

Whenever possible, new criteria or criteria on specialized products should be submitted, using the Standard Improvement Form included in this standard, to the IPC Technical Committee to be considered for inclusion in upcoming revisions of this standard.

**1.6 Terms and Definitions** Terms are consistent with the definitions provided by IPC-T-50. For the understanding of this document, selected definitions pertaining specifically to cable and wire harness manufacturing are listed below and in Appendix A.

**Manufacturer (Assembler)** – The individual, organization, or company responsible for the assembly process and verification operations necessary to ensure full compliance of assemblies to this standard.

**Objective Evidence** – Documentation in the form of hard copy, computer data, video, or other media.

**Process Control** – A system or method to continually steer an operation in reducing variation in the processes or products to meet or exceed the goal in quality and performance.

**Supplier** – The individual, organization or company which provides to the manufacturer (assembler) components (cables,