IPC-1791B

2021 - August

Trusted Electronic Designer, Manufacturer and Assembler Requirements

Supersedes IPC-1791A
January 2020

An international standard developed by IPC

BUILD ELECTRONICS BETTER

The Principles of Standardization

In May 1995 the IPC's Technical Activities Executive Committee (TAEC) adopted Principles of Standardization as a guiding principle of IPC's standardization efforts.

Standards Should:

- 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

Standards Should Not:

- Inhibit innovation
- Increase time-to-market
- Keep people out
- Increase cycle time
- Tell you how to make something
- Contain anything that cannot be defended with data

Notice

IPC Standards and Publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards and Publications shall not in any respect preclude any member or nonmember of IPC from manufacturing or selling products not conforming to such Standards and Publication, nor shall the existence of such Standards and Publications preclude their voluntary use by those other than IPC members, whether the standard is to be used either domestically or internationally.

Recommended Standards and Publications are adopted by IPC without regard to whether their adoption may involve patents on articles, materials, or processes. By such action, IPC does not assume any liability to any patent owner, nor do they assume any obligation whatever to parties adopting the Recommended Standard or Publication. Users are also wholly responsible for protecting themselves against all claims of liabilities for patent infringement.

IPC Position Statement on Specification Revision Change

It is the position of IPC's Technical Activities Executive Committee that the use and implementation of IPC publications is voluntary and is part of a relationship entered into by customer and supplier. When an IPC publication is updated and a new revision is published, it is the opinion of the TAEC that the use of the new revision as part of an existing relationship is not automatic unless required by the contract. The TAEC recommends the use of the latest revision. Adopted October 6, 1998

Why is there a charge for this document?

Your purchase of this document contributes to the ongoing development of new and updated industry standards and publications. Standards allow manufacturers, customers, and suppliers to understand one another better. Standards allow manufacturers greater efficiencies when they can set up their processes to meet industry standards, allowing them to offer their customers lower costs.

IPC spends hundreds of thousands of dollars annually to support IPC's volunteers in the standards and publications development process. There are many rounds of drafts sent out for review and the committees spend hundreds of hours in review and development. IPC's staff attends and participates in committee activities, typesets and circulates document drafts, and follows all necessary procedures to qualify for ANSI approval.

IPC's membership dues have been kept low to allow as many companies as possible to participate. Therefore, the standards and publications revenue is necessary to complement dues revenue. The price schedule offers a 50% discount to IPC members. If your company buys IPC standards and publications, why not take advantage of this and the many other benefits of IPC membership as well? For more information on membership in IPC, please visit www.ipc.org or call 847/597-2872.

Thank you for your continued support.

IPC-1791B

Trusted Electronic Designer, Manufacturer and Assembler Requirements

Developed by the Trusted Supplier Task Group (2-19b) of the Electronic Product Data Description Committee (2-10) of IPC

Supersedes:

IPC-1791A - January 2020
IPC-1791-AM1 - March 2019
IPC-1791 - August 2018
IPC-1071B - April 2016
IPC-1071A - August 2014
IPC-1071 - December 2010
IPC-1072-AM1 - March 2017
IPC-1072 - December 2015

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

Contact:

IPC
3000 Lakeside Drive, Suite 105N
Bannockburn, Illinois
60015-1249
Tel 847 615.7100
Fax 847 615.7105

This Page Intentionally Left Blank

Acknowledgment

Any document involving a complex technology draws material from a vast number of sources across many continents. While the principal members of the Trusted Supplier Task Group (2-19b) of the Electronic Product Data Description Committee (2-10) 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.

Electronic Product Data Description Committee

Chair
Michael Ford
Aegis Software

Trusted Supplier Task Group

Chair
Richard Snogren
Bristlecone LLC

Vice Chair
William May
Naval Surface Warfare Center

Technical Liaison of the IPC Board of Directors

Bob Neves
Microtek (Changzhou) Laboratories

Trusted Supplier Task Group

Didrik Bech
Elmatica AS

Peter Bigelow
IMI Inc.

Marc Carter
Aeromarc, LLC

Zhiman Chen
Zhuzhou CRRC Times Electric Co., Ltd.

Michael Collier
Teledyne Leeman Labs

Jon Duong
Pana-Pacific

Don Dupriest
Lockheed Martin Missiles & Fire Control

Michael Ford
Aegis Software

Dennis Fritz
MacDermid Enthone Electronics Solutions

Ife Hsu
Intel Corporation

Mark Kirkman
SAIC

Suriyakan Kleitz
Schlumberger Well Services

Nick Koop
TTM Technologies

Kevin Kusiak
Lockheed Martin Corporation

Meredith LaBeau
Calumet Electronics Corp.

William May
NSWC Crane

Karen McConnell
Northrop Grumman Corporation

Kathy Nargi-Toth
Bowhead

Chris Peters
U.S. Partnership for Assured Electronics (USPAE)

Stephen Redington
US Army ARDEC Fuze Development Center

Randy Reed
R. Reed Consultancy LLC

David Reichert
DuPont

Douglas Schueller
AbelConn, LLC

Tim Scott
DowDupont

Roger Smith
NSWC Crane

Herb Snogren
Bristlecone LLC

Richard Snogren
Bristlecone LLC

Bhanu Sood
NASA Goddard Space Flight Center

Stephen Tisdale
Tisdale Environmental Consulting LLC

Matt Turpin
U.S. Partnership for Assured Electronics (USPAE)

This Page Intentionally Left Blank

Table of Contents

Figures

Tables

Trusted Electronic Designer, Fabricator and Assembler Requirements

1 SCOPE

This standard provides minimum requirements, policies and procedures for printed board design, fabrication, assembly, and cable and wire harness assembly organizations and/or companies to become trusted sources for markets requiring high levels of confidence in the integrity of delivered products. These trusted sources **shall** ensure quality, supply chain risk management (SCRM), security and chain of custody (ChoC).

Trusted source certification of non-U.S. printed board design, fabrication, assembly, and cable and wire harness assembly organizations requires a sponsor and to meet the requirements in Section 6, in lieu of section 3.3 and Section 4.

Cybersecurity Maturity Model Certification (CMMC) is scheduled to be fully implemented by the end of Fiscal Year 2025. The rollout starts gradually, accelerating in Fiscal Year 2023. During this period there will be instances in which a U.S. Department of Defense (DoD) supplier may not be required to meet CMMC but may be required to meet NIST SP 800-171 compliance. Therefore, this revision of IPC-1791 contains reference to CMMC, and Section 5 provides clarification on the relationship between CMMC and NIST SP 800-171.

Demonstration of the ability to meet and maintain the requirements of this standard as trusted design, fabrication, assembly, or cable and wire harness assembly organizations benefits customers that provide end-products for markets desiring a high level of integrity assurance (e.g., commercial, industrial, military, aerospace, automotive and medical).

In the context of this standard, the terms trust and trusted are used to reflect a commitment to product and process integrity assurance by printed board designers, fabricators, assemblers, and cable and wire harness assemblers. The user should not confuse this certification with defense-microelectronics-specific “Trusted Supplier” accreditation administered by the Defense Microelectronics Activity (DMEA) Trusted Access Program Office. IPC-1791 certification does not include DoD facility clearance unless compelled by customer-specific requirements and pursued independent of this standard.

1.1 Purpose and Background

1.1.1 Source Technology and Capability Design, fabrication, assembly, and cable and wire harness assembly organizations have different levels of capability in terms of technology, materials, product complexity, capacity and lead times. This standard assumes the customer has certified the capability of their chosen supplier.

1.1.2 Interpretation of Requirements for the Purposes of this Standard This standard covers requirements for quality, SCRM, security and ChoC:

- Quality and performance requirements (e.g., IPC-2200 series, IPC-6010 series, IPC-A-600, IPC-A-610, MIL-PRF-31032, AS9100, National Aerospace and Defense Contractors Accreditation Program Nadcap) **shall** be as defined in this standard for the type of organization.
- Requirements for SCRM **shall** be as defined in this standard for the type of organization.
- Security requirements **shall** be the same for all types of organizations.
- The requirements for ChoC **shall** be the same for all types of organizations.

1.1.3 Benefits of Using Organizations Certified to this Standard By using designers, printed board fabricators, printed board assemblers, and cable and wire harness assemblers that are certified to this standard, customers will be assured that their supplier(s):

- Maintains a quality system
- Maintains a SCRM system to ensure any threats related to disruption in supply are understood and managed
- Manages a security system to protect products and services from unauthorized access, particularly in support of export control
- Provides an ensured ChoC system for electronic and physical materials

1.1.4 Additional Detail See Appendix A for additional explanatory material.