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Acceptability of Electronic Assemblies

Developed by

participants from **31** countries contributed to this standard

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IPC-A-610J

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Developed by the IPC-A-610 Task Group (7-31b), IPC-A-610 Task Group – Europe (7-31b-EU) and IPC-A-610 Task Group – China (7-31b-CN) of the Product Assurance Committee (7-30) of IPC

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Contact:

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

Adoption Notices

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Product Assurance Committee

Chair
Robert Cooke
NASA Johnson Space Center

Vice Chair
Debbie Wade
Advanced Rework Technology Ltd.

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Robert (Bob) Neves
Microtek Laboratories China

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IPC-A-610 Task Group – Europe (7-31b-EU)

Chair
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Advanced Rework Technology

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Jiangsu Simand Electronic Co., Ltd
Yabing Zou
5th Electronic Institute of MIIT

5-22A/7-31B Looks Like a Hangover A-Team

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Debbie Wade
Advanced Rework Technology

Jonathon Vermillion
Ball Aerospace & Technologies Corp.*

Scott Meyer
Collins Aerospace

Timothy Pearson
Collins Aerospace

Symon Franklin
Custom Interconnect Ltd*

Tiberiu Baranyi
Flextronics Romania SRL*

Christina Rutherford
Honeywell Aerospace

Milea Kammer
Honeywell International*

Josh Goolsby
Lockheed Martin Missiles & Fire Control

Kyle Johnson
Lockheed Martin Missiles & Fire Control

Jarrod Webb
Lockheed Martin Missiles & Fire Control*

Ekaterina Stees
Lockheed Martin-Missiles & Fire Control*

Robert Cooke
NASA Johnson Space Center

Garry McGuire
NASA Marshall Space Flight Center

Randy Bremner
Northrop Grumman

Thank you to the 7-31N-AT1 Sticky Squad for their efforts addressing the staking requirements.

Joseph E. Kane
BAE Systems

Tiberiu Baranyi
Flextronics Romania SRL

Tony Feldmeier
Honeywell Aerospace Minneapolis*

Paul Zutter
U.S. Army Aviation & Missile Command

Members of the IPC-A-610 Task Group

Alejandro Alvarado Castaneda
Moriah Bischann
Charles Daniel
Jeremy Hamilton
Kohei Hayashi
Kurt McLain
Sean McNair
Lynn Rozanski
Akio Saito
Christian Schellenschlager
Kevin Schuld
Hank Stetter
Lorna Stoddart
Toshiyuki Sugiyama
Chester Terrill
Teagan Brendlinger
    3DFortify Inc
Neil Wolford
    AbelConn, LLC
Constantino Gonzalez
    ACME Training & Consulting
Pietro Vergine
    Advanced Rework Technology
John Vickers
    Advanced Rework Technology
Debbie Wade
    Advanced Rework Technology
Annemarie Popik
    AFRL
Yuji Kondo
    Aisin Seiki Co.
    Ltd.
Gail Fukumoto
    Amazon Lab126
Joseph Stanley
    Amazon Project Kuiper
Leo Huang
    APCB Electronics (KunShan) Co., Ltd.
Sean Keating
    Amphenol Ltd (UK)
Stefan Hanigk
    Ariane Group GmbH
Battal Acar
    Aselsan Electronic Ind. Inc.
Sertac Caglarca
    Aselsan Electronic Ind. Inc.
Serkan Ozturk
    Aselsan Electronic Ind. Inc.
Zehra Ceren Tunal
    Aselsan Electronic Ind. Inc.
Yelda Yucel
    Aselsan Electronic Ind. Inc.
Robert Courtenay
    Astranis Space Technologies Corp.
Rob Mullane
    Atek Training Services Ltd.
Paul Klein
    ATRON Group LLC
Steve Wright
    ATRON Group LLC
Kang Ren
    AVIC Xi'an Aeronautics Computing Technique Research Institute
Jia Liang
    AVIC TaiYuan Aero-Instruments Co., Ltd.
Mathew Williams
    Axis Electronics Ltd.
Erik Bjerke
    BAE Systems
David Fellows
    BAE Systems
Tim Gallagher
    BAE Systems
Joseph Kane
    BAE Systems
Maan Kokash
    BAE Systems
Agnieszka Ozarowski
    BAE Systems
Marie Parliman
    BAE Systems
Paul Sargent
    BAE Systems
Logan Johnson
    BAE Systems, Inc.
Tyler Schlueter
    BAE Systems, Inc.
Dan White
    BAE Systems, Inc.
George Tristan
    Ball Aerospace & Technologies Corp.
Jonathon Vermillion
    Ball Aerospace & Technologies Corp.
Gerald Bogert
    Bechtel Plant Machinery, Inc.
Jenny Lee
    Beijing Hangxing Technology Development Co.
Jodi Johnson
    BEST Inc.
Norman Mier
    BEST Inc.
Kris Roberson
    BEST Inc.
Samuel Sorto
    Blue Origin, LLC
David Lee
    BMK Professional Electronics GmbH
Kevin Caruso
    Boeing
Chris Bender
    Boeing – Integrated Defense Systems
Eric Harenburg
    Boeing Company
Wang Yueyin
    BSH Electrical Appliances (Jiangsu) Co., Ltd
Johnson Muriel
    BTE Training & Electronics PLT
Jason Fullerton
    CAES
Angel Deluna
    Circuit Technology Inc.
Robert Priore
    Cisco Systems Inc.
Colette Anctil
    Collins Aerospace
Wendell Brockman
    Collins Aerospace
William Cardinal
    Collins Aerospace
Dan Ezenekwe
    Collins Aerospace
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    Collins Aerospace
Jason Nipper
    Collins Aerospace
Douglas Pauls
    Collins Aerospace
Timothy Pearson
    Collins Aerospace
Titus Rumph
    Collins Aerospace
Debie Vorwald
    Collins Aerospace
Andrew Giamis
    Commscope
Marilyn Lawrence
    Conformance Technologies, Inc.

Miguel Dominguez
Continental Automotive

Ignacio Gaeta
Continental Automotive Guadalajara Mexico S.A. de C.V.

Sabin Mihai Ciucean
Continental Automotive Systems, S.R.L.

Guangxiang Lu
Continental Holding China

Danqing Wen
CSIC Xian Dong Yi Science Technology & Industry Group Co., Ltd

Symon Franklin
Custom Interconnect Ltd

Ryder Gao
CVTE

Irene Romero
Delta Group Electronics Inc.

James Sinclair
Dexta Moors LTD

Cengiz Oztunc
DNZ Ltd.

Blake Singh
Druck Limited

Adam Fidura
Dyson Technology Limited

Constantin Hudon
East West Quebec

Mark Hood
EEI Manufacturing Services

Karen Smalls
EEI Manufacturing Services

Yaakov Zissman
Elta Systems Ltd.

Emma Hudson
Emma Hudson Technical Consultancy Ltd

Leo Lambert
EPTAC LLC

Marcia McLaughlin
EPTAC LLC

Helena Pasquito
EPTAC LLC

Ramon Essers
ETECH Training

John O'Neill
ETECH Training

Iain McMillan
Exmel Solutions Ltd

John Thuss
Faber Electronics BV

Jorien van Ommen
Faber Electronics BV

Hongfei Zhou
Flextronics Power Systems (Dongguan) Co., Ltd.

Tiberiu Baranyi
Flextronics Romania SRL

Dan Mihai Dita
Flextronics Romania SRL

Harald Olsen
FMC Technologies AS

Eric Camden
Foresite, Inc.

Deogenes Papelera
Fresenius Kabi

Henrik Blegvad Jensen
Gaasdal Bygningsindustri A/S

Jodie Fallen
GE Aviation Systems

Karen Perry
GE Aviation Systems, Ltd.

Christopher Hunt
GEN3

Olivia Leija
Gentherm Texas

Michele Campi
GESTLABS S.r.l.

Francesco Di Maio
GESTLABS S.r.l.

Adam Bland
Globalstar

Michael Ceraso
Globalstar

Claus Molgaard
GN Hearing A/S

Young Ho Hwang
Guru E&E Inc.

Torsten Schmidt
HELLA GmbH & Co. KGaA

David Hillman
Hillman Electronic Assembly Solutions LLC

Paul Gough
Honeywell Aerospace

John Mastorides
Honeywell Aerospace

Christina Rutherford
Honeywell Aerospace

Keith Walker
Honeywell Aerospace

Tony Feldmeier
Honeywell Aerospace Minneapolis

Richard Rumas
Honeywell Canada

Ryan Eatinger
Honeywell FM&T

Louis Diamond
Honeywell FM&T

Milea Kammer
Honeywell International

Jennie Hwang
H-Technologies Group

Poul Juul
HYTEK

Daniel Versluis
HYTEK

Lorraine Spencer
i3 Electronics, Inc.

Sarah Kolak
IBM Corporation

Abby Wise
IBM Corporation

Jonathan Albrieux
IFTEC

Robert Bowden
Impact Centre for Training & Staffing

Richard Josselyn
Impact Centre for Training & Staffing

Benoit Dagenais
Innovative Vehicle Institute

Ife Hsu
Intel Corporation

Jeffrey Black
Intervala, LLC

Jeffrey Lee
iST – Integrated Service Technology

Mirko Giannecchini
Istituto Italiano della Saldatura – Legnano

Stefano Barbiere
Istituto Italiano della Saldatura – ROME

Matteo Senzioni
Istituto Italiano della Saldatura – ROME

Arphitha Namchoksamrit
Jabil Circuit (Shanghai) Ltd.

Kimura Akinori
Japan Aviation Electronics Industry, Limited

Hideyuki Arakane
Japan Unix Co., Ltd.

Mitsuhiro Asaka
Japan Unix Co., Ltd.

Tatsuya Chiba
Japan Unix Co., Ltd.

Toshiyasu Takei
Japan Unix Co., Ltd.

Tsutomu Suzuki
Japan Unix Co., Ltd.

Minako Takahashi
Japan Unix Co., Ltd.

Oscar Alcala
Jet Propulsion Laboratory

Katina Celio
Jet Propulsion Laboratory

Rachel Hartig
Johns Hopkins University

Matthew Krok
Johns Hopkins University

Mingye Wang
Junfeng Electronics Control Technology Dalian Co., Ltd.

Kevin Boblits
K&M Manufacturing Solutions, LLC

Latha M.S
Kaynes Technology India Pvt. Ltd

Kim Souva
Kearfott Corporation

Stephanie Bren
Killdeer Mountain Manufacturing, Inc.

Aaron Zhou
Kitron Electronics Manufacturing (Ningbo) Co.

Jasbir Bath
Koki Solder America

Minsu Lee
Korea Packaging Integration Association

Ji Hun Park
Kyungshin Cable Co., Ltd.

Sea June O
Kyungshin Cable Co., Ltd.

Jae Mo Lee
Kyungshin Cable Co., Ltd.

Mike Bixenman
Kyzen Corporation

Augustin Stan
L&G Advice Serv SRL

William Fish
L3 Harris Technologies Communication Systems – West

Shelley Holt
L3 Harris Technologies Communication Systems – West

Jefferson Thomas
L3 Harris Technologies Communication Systems – West

Bradley Toone
L3 Harris Technologies Communication Systems – West

Jared Spencer
L3 Harris Technologies Communication Systems – West

Greg Number
L3Harris

Corey Hinninger
L3Harris Technologies, Inc.

Jamie Zhou
LCFC (HeFei) Electronics Technology Co., Ltd.

Keld Maaloee
LEGO Systems A/S

Antonio Perna
Leonardo

Rebekah Kovarik
Lockheed Martin

Mark Duncan
Lockheed Martin Corporation

Haberly Kahn
Lockheed Martin Corporation

David Caputa
Lockheed Martin Corporation

Jacynth Anderson
Lockheed Martin Missiles & Fire Control

Javier Caraccioli
Lockheed Martin Missiles & Fire Control

Diana Dunman
Lockheed Martin Missiles & Fire Control

Josh Goolsby
Lockheed Martin Missiles & Fire Control

Ben Gumpert
Lockheed Martin Missiles & Fire Control

Joshua Hudson
Lockheed Martin Missiles & Fire Control

Sharissa Johns
Lockheed Martin Missiles & Fire Control

Kyle Johnson
Lockheed Martin Missiles & Fire Control

Nathan Knipe
Lockheed Martin Missiles & Fire Control

Vijay Kumar
Lockheed Martin Missiles & Fire Control

Matthew Millican
Lockheed Martin Missiles & Fire Control

Sean Mullen
Lockheed Martin Missiles & Fire Control

Owen Reid
Lockheed Martin Missiles & Fire Control

Daniel Schultz
Lockheed Martin Missiles & Fire Control

Tyler Siebert
Lockheed Martin Missiles & Fire Control

Ekaterina Stees
Lockheed Martin Missiles & Fire Control

Danielle Thompson
Lockheed Martin Missiles & Fire Control

Ann Marie Tully
Lockheed Martin Missiles & Fire Control

Lucas Walsh Cochran
Lockheed Martin Missiles & Fire Control

Andrew Wancheck
Lockheed Martin Missiles & Fire Control

Jarrod Webb
Lockheed Martin Missiles & Fire Control

Oscar Vera
Lockheed Martin Missiles & Fire Control

Elizabeth Yount
Lockheed Martin Missiles & Fire Control

Maya Chiesa
Lockheed Martin Mission Systems & Training

David Mitchell
Lockheed Martin Mission Systems & Training

Tom Rovere
Lockheed Martin Mission Systems & Training

Kimberly Shields
Lockheed Martin Rotary and Mission Systems

Chad Derrick
Lockheed Martin Space Systems Company

Mary Phillips
Lockheed Martin Space Systems Company

Paul Kirpes
Los Alamos National Laboratory

Linda Woody
LWC Consulting

Mary Muller
MK Muller Consulting LLC

David Torp
Mechnano

Olaf Nennewitz
Mercedes-Benz AG

Robert (Bob) Neves
Microtek Laboratories China

William Pfingston
Miraco, Inc.

Fernando Haller
Mirgor Group

Daniel Foster
Missile Defense Agency (MDA)

Keith Peterson
Missile Defense Agency (MDA)

Matthew Thomas
Missile Defense Agency (MDA)

Dominic Field
Moog Inc.

Michael Cochran
Moog Inc.

Edward Rios
Motorola Solutions

Eric Borrero
NASA Goddard Space Flight Center

Alvin Boutte
NASA Goddard Space Flight Center

Chris Fitzgerald
NASA Goddard Space Flight Center

Bhanu Sood
NASA Goddard Space Flight Center

Robert Cooke
NASA Johnson Space Center

Diego Gomez Ruiz
NASA Marshall Space Flight Center

Adam Gowan
NASA Marshall Space Flight Center

Garry McGuire
NASA Marshall Space Flight Center

Christina Landon
Naval Surface Warfare Ctr

Hiroaki Kondo
NEC Platforms Ltd.

Tsuyoshi Nagasawa
NEC Platforms Ltd.

Satish V P
Neuro Technology Middle East Fze

Randy Bremner
Northrop Grumman

Jeff Cutter
Northrop Grumman

Steven Davis
Northrop Grumman

Claire Dvorak
Northrop Grumman

Connor Meeds
Northrop Grumman

Stephanie Stork
Northrop Grumman

James Windgassen
Northrop Grumman

Matthew Edwards
Northrop Grumman Corp.

Alexa Fisher
Northrop Grumman Corporation

Mike Morris
Northrop Grumman Corporation

Kevin Mull
Northrop Grumman Corporation

Carlo Viola
Northrop Grumman Corporation

Colin Williams
Northrop Grumman Corporation

Nicholas Wilson
Northrop Grumman Corporation

Steven Pieszala
Northrop Grumman ESSD

Benjamin Hall
Northrop Grumman Innovation Systems

Patrick Phillips
Northrop Grumman Innovation Systems

Ceferino Reyes
Northrop Grumman Innovation Systems

Mark Terranova
Northrop Grumman Innovation Systems

Robert Barnes
Northrop Grumman North Dakota

Amanda VanHoesen
Northrop Grumman North Dakota

Brandon Davis
Northrop Grumman Space Systems

Mahendra Gandhi
Northrop Grumman Space Systems

Callie Olague
Northrop Grumman Systems Corporation

William Graver
NTS – Baltimore

Ken Moore
Omni Training Corp.

Hans Shin
Pacific Testing Laboratories, Inc.

Hisao Iburi
Panasonic

Hiroyuki Akiyama
Panasonic Corporation

Gustavo Arredondo
PARA TECH Parylene Services

Wim Bodelier
PIEK International Education Centre (I.E.C.) BV

Ron Fonsaer
PIEK International Education Centre (I.E.C.) BV

Frank Huijsmans
PIEK International Education Centre (I.E.C.) BV

Kirk Van Dreel
Plexus Corporation

Zachary Quick
Quick Turn Training and Consulting LLC

William Beair
Raytheon Company

James Daggett
Raytheon Company

Shawn Downey
Raytheon Company

Lisa Maciolek
Raytheon Company

Fonda Wu
Raytheon Company

Lance Brack
Raytheon Missile Systems

Maria Colon
Raytheon Missile Systems

Cathi Miles
Raytheon Missile Systems

George Millman
Raytheon Missile Systems

Andrew Rodack
Raytheon Missile Systems

Nichole C. Thilges
Raytheon Missile Systems

Alfonso Bartee
Raytheon Systems Company

Pascal Dumontet
Renault

Marcin Sudomir
Renex Electronics Education Center

Lothar Henneken
Robert Bosch GmbH

Udo Welzel
Robert Bosch GmbH

James Jones
Rocket Lab USA Inc

Jessica Jacobs
Rockwell Collins

Christina Badour
Ross Video Ltd.

Steven Roy
Roy Design and Manufacturing Service

Casimir Budzinski
Safari Circuits Inc.

Laura Budzinski
Safari Circuits Inc.

John Tickle
Safran Electronics & Defense Canada Inc.

Gary Latta
SAIC

Ryan Clark
Samsung Austin Semiconductor

Rodney Doss
Samtec, Inc.

Teddy Vigil
Sandia National Labs Albuquerque

Ross Dillman
Sechan Electronics Inc.

Lin Cao
Shenyang Railway Signal Co., Ltd.

Jeremy Lakoskey
Sierra Space

Makoto Aitani
SIIX Electronics Co., Ltd.

Gerard O'Brien
Solderability Testing & Solutions, Inc.

Scott Vorhies
Space Exploration Technologies

Nicholas Hudson
Spartronics

Marcus Richardson
Spartronics

Jeffery Smith
Spartronics

Lamar Young
Specialty Coating Systems Inc.

Robert Fornefeld
STI Electronics, Inc.

Frank Honyotski
STI Electronics, Inc.

Mark McMeen
STI Electronics, Inc.

Patricia Scott
STI Electronics, Inc.

Meagen Stone
STI Electronics, Inc.

Elena Yosifova
Straschu Industrie-Elektronik GmbH

Kevin Tlaxcalteca
Summit Interconnect – Orange

Alex Johnston
Sundown Aerospace, LLC

Chen Qin
Suzhou Eunow Company Limited

Daigo Ichikawa
Tamura Kaken Co. Ltd.

Harlan Wu
TE Connectivity

Arbi Zaied
TEAM Partner

Brian Crowell
Tech-Etch Inc.

Tracy Clancy Vecchiolli
Technical Training Center

Marino Verderio
Technoprobe S.p.A.

Michael Collier
Teledyne Advanced Electronic Solutions

Donald Tyler
Ten Eyck Group, LLC

Hannah Nelson
Texas Instruments

Steven Neff
Textron Systems (AAI)

James Parke
The Aerospace Corporation

Amber Perez
The Aerospace Corporation

Claire French
The Electronics Group Ltd.

Malcolm Longley
The Electronics Group Ltd.

Christopher Meyers
Tobyhanna Army Depot

Michael Rosencranz
Tobyhanna Army Depot

Norihito Suzuki
Tokai Rika Co., Ltd.

Hisao Nishimori
Toyota Motor Corporation

Fuji Jun Wu
Toyota Motor Corporation

Gaston Hidalgo
Toyota Motor North America

Thomas Ahrens
Trainalytics GmbH

Gary DiBlanda
Triumph Engine Control Systems

Cherry Yin
TT electronic integrated manufacturing services (Suzhou) Limited

Joshua Keene
TTM – Denver East

Gerald Palmer
TTM – Denver East

Nick Koop
TTM Technologies

Paige Fiet
TTM Technologies – Logan Division

Harry Craft
TTM Technologies, Inc.

Daniel Koss
TTM Technologies, Inc.

Vicki Hilliard
U.S. Army Aviation & Missile Command

Paul Zutter
U.S. Army Aviation & Missile Command

Steven Dirkes-Gomez
U.S. Army Sustainment Command

Crystal Vanderpan
UL LLC

Barrie Dunn
University of Portsmouth

Rachel Grinvalds
UTC Aerospace

Luis Soto
UTC Aerospace Systems

Jack (Jian) Zhu
Veoneer China Co., Ltd

Kaan Garpli
Vestel Elektronik A.S.

Dave Harrell
Viasat Inc.

Jose Servin Olivares
Vitesco Technologies

Hans-Otto Fickenscher
Vitesco Technologies Germany GmbH

Luis Dias
West Control Solutions

Scott Raszeja
Z Engineering

Michael Seltzer
Zentech Manufacturing

Zhiman Chen
ZhuZhou CRRC Times Electric Co., Ltd.

Renee Hallahan
Zoll Medical Corp.

Fugang Nie
ZTE Corporation

REGIONAL GROUPS

Members of IPC-A-610 Task Group – Europe (7-31b-EU)

Debbie Wade
Advanced Rework Technology**

John Vickers
Advanced Rework Technology

Pietro Vergine
Advanced Rework Technology

Stefan Hanigk
Ariane Group GmbH

Rob Mullane
Atek Training Services Ltd.

Gianluca Parodi
Cistelaier SpA

Andreas Gregor
Consultronica, S.L.

Sabin Mihai Ciucean
Continental Automotive Systems, S.R.L.

Symon Franklin
Custom Interconnect Ltd

Adam Fidura
Dyson Technology Limited

John O’Neill
ETECH Training

Iain McMillan
Exmel Solutions Ltd

Tiberiu Baranyi
Flextronics Romania SRL**

Harald Olsen
FMC Technologies AS

Henrik Blegvad Jensen
Gaasdal Bygningsindustri A/S

Francesco Di Maio
GESTLABS S.r.l.

Claus Molgaard
GN Hearing A/S

Alex Christensen
HYTEK

Jonathan Albrieux
IFTEC

Mirko Giannecchini
Istituto Italiano della Saldatura – Legnano

Matteo Senzioni
Istituto Italiano della Saldatura – ROME

Stefano Barbiere
Istituto Italiano della Saldatura – ROME

Augustin Stan
L&G Advice Serv SRL

Keld Maaloee
LEGO Systems A/S

Antonio Perna
Leonardo

Piotr Armata
Murata Power Solutions

Torgrim Nordhus
Norautron AS

Rob Walls
PIEK International Education Centre (I.E.C.) BV

Pascal Dumontet
Renault

Elena Yosifova
Straschu Industrie-Elektronik GmbH

Marino Verderio
Technoprobe S.p.A.

Thomas Ahrens
Trainalytics GmbH

Luis Dias
West Control Solutions

Members of IPC-A-610 Task Group – China (7-31b-CN)

Shun Zhang

David Yao

Chen Peng

June Xu

Zhaozhan Qiu

Yuqing Yao

Nancy Lu

Pinghua Duan

Shuai Yin
Amazon Lab126

Leo Huang
APCB Electronics (KunShan) Co., Ltd.

Kunbin Huang
APCB Electronics (KunShan) Co., Ltd.

Weidong Yao
APTIV Electronics (Suzhou) Co., Ltd

Shanli Wang
Askey Technology (Jiangsu) Co. Ltd.

Tianxiang Wang
Askey Technology (Jiangsu) Co. Ltd.

Jacky (Chaofeng) Zhao
Autoliv Shanghai

Kang Ren
AVIC Xi’an Aeronautics Computing Technique Research Institute**

Jia Liang
AVIC TaiYuan Aero-Instruments Co., Ltd.

Ying Guo
Avic Xi’an Flight Automatic Control Research Institute

Alan (Menghua) Sun
BCS Automotive Interface Solutions (Suzhou) Co., Ltd.

Jie He
Beijing BRIO Electronic Technologies Ltd.

Jenny Lee
Beijing Hangxing Technology Development Co.

Glory (Guoliang) Yin
Beijing Hangxing Technology Development Co., Ltd.

Lixiang Lin
BizLink Holding Inc.
Xiang Yao Electronics (Shenzhen) Co., Ltd.

Wang Yueyin
BSH Electrical Appliances (Jiangsu) Co., Ltd

Xiaochun Zhou
Celestica (Suzhou) Technology Co. Ltd.

Jie Chen
Chengdu Yaguang Electronics Co., Ltd.

Meng Fei
China Aeronautical Radio Electronics Research Inst

Xue Yong Li
Computime Electronics (Shenzhen) Company Limited

Hongyun Wang
Computime Electronics (Shenzhen) Company Limited

Guangxiang Lu
Continental Holding China

Lina Zhao
CRRC Tangshan Co., LTD.

Yangchun Zhang
Dongguan Shin Tech Limited

Arlene Liu
Eolane (China) Co., Ltd.

Mei Yang
Flex

Hua Mei
Flextronics Electronics Technology (Suzhou) Co. Ltd.

Batter Shen
Flextronics Electronics Technology (Suzhou) Co. Ltd.

Yunxue Li
Geely University of China

Chengbo Zhang
ITW Specialty Materials Suzhou Co., Ltd.

Joe Zhong
Jabil Circuit (Guangzhou) Ltd.

Huifang Lan
Jabil Circuit (Guangzhou) Ltd.

Min Tang
Jabil Circuit (Shanghai) Ltd.

Xuyao Yang
JARI Electronics Co., Ltd.

Ming Geng
Jiangsu Simand Electric Co., Ltd

Eileen Xiang
Kimball Electronics (Nanjing) Co., Ltd.

Stuart Chang
Kitron Electronics Manufacturing (Ningbo) Co.

Aaron Zhou
Kitron Electronics Manufacturing (Ningbo) Co.

Vincent Lei
Lenovo ISG

Gao Hu
Lianyungang JARIE Electronics Co., Ltd

Xian Lv
Magneti Marelli Automotive Electronics (Guangzhou) Co., Ltd

Tommy Zhang
Marelli Automotive Parts Co. Ltd.

Zheng Qu
Marquardt Switches (Weihai) Co., Ltd.

Zhimin Zhang
Maxway Technology Co., Ltd

Feng Xueliang
Meixin Testing Technology Co., Ltd

Zhi Wang
Mindray Medical International Limited

Rex Chang
Molex Taiwan Ltd. Sanchong Branch

Qingguo Chen
National Center of Quality Supervision and Testing for Printed Circuit Board (AnHui)

Qiuju Yan
Ningbo CRRC Times Transducer Technology Co., Ltd

Zhu Claud
Nokia Shanghai Bell Co., Ltd.

Haixing Zhang
P.C.B.A Electronic (WuXi) Ltd.

Leijin Tao
Plastic Omnium Lighting Systems (Kunshan) Co., Ltd

Jinkui Zhu
QingDao Coreda Intelligent Electric Co., Ltd.

Hongzhou Zhou
SCUD (Fujian) Electronics Co., Ltd.

Ping Zhao
Shaanxi Fenghuo Electronics Co., Ltd

Roger Ji
Shanghai Hugong Auto-electric CO., LTD.

Jie Yuan
Shanghai Quickturn Electronics Co., Ltd.

Jiong (Crystal) Dai
Shennan Circuits Co. Ltd.

Chengyan Cui
Shenyang Railway Signal Co., Ltd.

Baidong Li
Shenyang Railway Signal Co., Ltd.

Johnson (Songtao) Zhao
ShenZhen Easyway Science & Technology Co. Ltd.

Xianhua Tang
Shenzhen HanShine Technology Co., Ltd

Li Anan
Shenzhen Kinwong Electronic Co., Ltd.

Lin Xu
Shenzhen Mindray Bio-Medical Electronics Co., LTD

Haiquan (Allan) Shi
SlON International

Kiet Le
Spitfire Controls (Vietnam) Co., Ltd.

Chen Qin
Suzhou Eunow Company Limited

Leif Xu
Suzhou Faithful Electronics Co., Ltd

David Zhang
Suzhou Inovance Automotive Co., Ltd.

Qibin Liu
TE Connectivity Sensor Solutions

Yabing Zou
The 5th Electronic Institute of MIIT**

Jack (Jian) Zhu
Veoneer China Co., Ltd***

Damny Lu
Weimeng Electronic Kunshan Co. Ltd.

Jayme Lai
Wistron InfoComm (Zhongshan) Corp.

Ricky Sun
ZF Automotive Components (Shanghai) CO., Ltd.

Feng Zhou
ZhuZhou CRRC Times Electric Co., Ltd.

Xianghu Pan
Zhuzhou CRRC Times Electric Co., LTD.

Zhongzhong Jia
ZTE Corporation

Huasheng Qium
ZTE Corporation

Yu Wang
ZTE Corporation

* Leader of the A-Team at the time this document was published.
** Cochair of the regional group at the time this document was published.
*** Vice Chair of the regional group at the time this document was published.

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In memory of Jim Blanche, NASA Marshall Space Flight Center
and Kathy L. Johnston, Raytheon Missile Systems (retired)

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1.0 General

1.1 Scope This standard is a collection of visual quality acceptability requirements for electronic assemblies. This standard does not provide criteria for cross-section evaluation or x-ray inspection. There are x-ray guidelines located in J-STD-001.

This document presents acceptance requirements for the manufacture of electrical and electronic assemblies. Historically, electronic assembly standards contained a more comprehensive tutorial addressing principles and techniques. For a more complete understanding of this document's recommendations and requirements, one may use this document in conjunction with IPC-HDBK-001 or IPC-AJ-820.

The criteria in this standard are not intended to define processes to accomplish assembly operations nor is it intended to authorize repair/modification or change of the product. For instance, the presence of criteria for adhesive bonding of components does not imply/authorize/require the use of adhesive bonding and the depiction of a leads/conductors wrapped clockwise around a terminal does not imply/authorize/require that all leads/conductors be wrapped in the clockwise direction.

Users of this standard should be knowledgeable of the applicable requirements of the document and how to apply them, see 1.3 Classification.

IPC-A-610 has criteria outside the scope of J-STD-001 defining mechanical and other workmanship requirements.Table 1-1 is a summary of related IPC documents that the user may want to be familiar with to better understand the requirements of this document. For additional referenced documents see section 2.0 Applicable Documents.

Table 1-1 Summary of Related Documents

Document Purpose	Spec.#	Definition
Design Standard	IPC-222X IPC-7351 IPC-CM-770	Design requirements reflecting three levels of complexity (Levels A, B, and C) indicating finer geometries, greater densities, more process steps to produce the product. Component and Assembly Process Guidelines to assist in the design of the bare board and the assembly where the bare board processes concentrate on land patterns for surface mount and the assembly concentrates on surface mount and through-hole principles which are usually incorporated into the design process and the documentation.
Printed Board – Requirements	IPC-601X IPC-A-600	Requirements and acceptance documentation for rigid, rigid flex, flex and other types of substrates.
Process Requirement Standard	J-STD-001	Requirements for soldered electrical and electronic assemblies depicting minimum end product acceptable characteristics as well as methods for evaluation (test methods), frequency of testing and applicable ability of process control requirements.
Acceptability Standard	IPC-A-610	Pictorial interpretive document indicating various characteristics of the board and/or assembly as appropriate relating to desirable conditions that exceed the minimum acceptable characteristics indicated by the end item performance standard and reflect various out-of-control (process indicator or defect) conditions to assist the shop process evaluators in judging need for corrective action.
Training Programs (Optional)		Documented training for process, procedures, techniques and requirements.
Rework and Repair	IPC-7711/7721	Documentation providing the procedures to accomplish conformal coating and component removal and replacement, solder resist repair, and modification/repair of laminate material, conductors, and PTHs (plated through-holes).
Assembly and Joining Handbook	IPC-AJ-820	IPC-AJ-820 is a supporting document that provides information regarding the intent of this specification content and explains or amplifies the technical rationale for transition of limits through Acceptable to Defect condition criteria. In addition, supporting information is provided to give a broader understanding of the process considerations that are related to performance but not commonly distinguishable through visual assessment methods The explanations provided in IPC-AJ-820 should be useful in determining disposition of conditions identified as Defect, processes associated with Process Indicators, as well as answering questions regarding clarification in use and application for defined content of this specification. Contractual reference to IPC-A-610 does not additionally impose the content of IPC-AJ-820 unless specifically referenced in contractual documentation.

1.2 Purpose The visual standards in this document reflect the requirements of existing IPC and other applicable specifications. For the content of this document to apply, the assembly/product should comply with other existing IPC requirements, such as IPC-7351, IPC-222X (where X is the last digit in the IPC document number), IPC-601X and IPC-A-600. If the assembly does not comply with these or with equivalent requirements, the acceptance criteria **shall** be defined between the User and Supplier.