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**May 2016**

# Acceptability of Printed Boards

*Developed by*



**BUILD ELECTRONICS BETTER**

participants from

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IPC-A-600K

# Acceptability of Printed Boards

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

Developed by the IPC-A-600 Task Group (7-31a) of the Product Assurance Committee (7-30) of IPC

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# Table of Contents

<p><b>Acknowledgment</b> ..... iii</p> <p><b>1 Introduction</b> ..... 1</p> <p>  <b>1.1 Scope</b> ..... 1</p> <p>  <b>1.2 Purpose</b> ..... 1</p> <p>  <b>1.3 Approach To This Document</b> ..... 1</p> <p>  <b>1.4 Classification</b> ..... 1</p> <p>  <b>1.5 Acceptance Criteria</b> ..... 2</p> <p>  <b>1.6 Applicable Documents</b> ..... 3</p> <p>    1.6.1 IPC ..... 3</p> <p>    1.6.2 American Society of Mechanical Engineers ..... 4</p> <p>  <b>1.7 Dimensions and Tolerances</b> ..... 4</p> <p>  <b>1.8 Terms and Definitions</b> ..... 4</p> <p>  <b>1.9 Revision Level Changes</b> ..... 4</p> <p>  <b>1.10 Workmanship</b> ..... 4</p> <p><b>2 Externally Observable Characteristics</b> ..... 5</p> <p>  <b>2.1 Printed Board Edges</b> ..... 5</p> <p>    2.1.1 Burrs ..... 5</p> <p>      2.1.1.1 Nonmetallic Burrs ..... 6</p> <p>      2.1.1.2 Metallic Burrs ..... 7</p> <p>    2.1.2 Nicks ..... 8</p> <p>    2.1.3 Haloing ..... 9</p> <p>  <b>2.2 Base Material Surface</b> ..... 10</p> <p>    2.2.1 Weave Exposure ..... 11</p> <p>    2.2.2 Weave Texture ..... 12</p> <p>    2.2.3 Mechanically Induced Disrupted Fibers ..... 13</p> <p>    2.2.4 Surface Voids ..... 14</p> <p>  <b>2.3 Base Material Subsurface</b> ..... 15</p> <p>    2.3.1 Measling ..... 20</p> <p>    2.3.2 Crazeing ..... 22</p> <p>    2.3.3 Delamination/Blister ..... 25</p> <p>    2.3.4 Foreign Inclusions ..... 28</p> <p>  <b>2.4 Solder Coatings and Fused Tin Lead</b> ..... 30</p> <p>    2.4.1 Nonwetting ..... 30</p> <p>    2.4.2 Dewetting ..... 31</p> <p>  <b>2.5 Holes – Plated-Through – General</b> ..... 33</p> <p>    2.5.1 Nodules/Rough Plating ..... 33</p> <p>    2.5.2 Pink Ring ..... 34</p> <p>    2.5.3 Voids – Copper Plating ..... 35</p> <p>    2.5.4 Voids – Finished Coating ..... 36</p> <p>    2.5.5 Lifted Lands – (Visual) ..... 37</p> <p>    2.5.6 Cap Plating of Filled Holes – (Visual) ..... 38</p> <p>    2.5.7 Back-Drilled Holes – (Visual) ..... 40</p>	<p>  <b>2.6 Holes – Unsupported</b> ..... 42</p> <p>    2.6.1 Haloing ..... 42</p> <p>  <b>2.7 Edge Board Contacts</b> ..... 43</p> <p>    2.7.1 Surface Plating – Printed Board Edge Connector Lands ..... 43</p> <p>      2.7.1.1 Surface Plating – Edge Connector Lands (Gap/Overlap Area) ..... 45</p> <p>    2.7.2 Burrs on Edge-Board Contacts ..... 46</p> <p>    2.7.3 Adhesion of Overplate ..... 47</p> <p>  <b>2.8 Marking</b> ..... 49</p> <p>    2.8.1 Etched Marking ..... 50</p> <p>    2.8.2 Ink Marking ..... 52</p> <p>  <b>2.9 Solder Mask</b> ..... 54</p> <p>    2.9.1 Coverage Over Conductors (Skip Coverage) ..... 55</p> <p>    2.9.2 Registration to Holes (All Finishes) ... 56</p> <p>    2.9.3 Registration to Rectangular Surface Mount Lands ..... 57</p> <p>      2.9.3.1 Registration to Round Surface Mount Lands (BGA) – Solder Mask-Defined Lands ..... 58</p> <p>      2.9.3.2 Registration to Round Surface Mount Lands (BGA) – Copper-Defined Lands ..... 59</p> <p>      2.9.3.3 Registration to Round Surface Mount Lands (BGA) – (Solder Dam) ..... 60</p> <p>    2.9.4 Blisters/Delamination ..... 61</p> <p>    2.9.5 Adhesion (Flaking or Peeling) ..... 63</p> <p>    2.9.6 Waves/Wrinkles/Ripples ..... 64</p> <p>    2.9.7 Tenting (Via Holes) ..... 65</p> <p>    2.9.8 Soda Strawing ..... 66</p> <p>  <b>2.10 Pattern Definition – Dimensional</b> ..... 68</p> <p>    2.10.1 Conductor Width and Spacing ..... 68</p> <p>      2.10.1.1 Conductor Width ..... 69</p> <p>      2.10.1.2 Conductor Spacing ..... 70</p> <p>    2.10.2 External Annular Ring – Measurement ..... 71</p> <p>    2.10.3 External Annular Ring – Supported Holes and Microvia Capture Land ... 72</p> <p>    2.10.4 External Annular Ring – Unsupported Holes ..... 74</p> <p>    2.10.5 Surface Plating – Rectangular Surface Mount Lands ..... 75</p> <p>    2.10.6 Surface Plating – Round Surface Mount Lands (BGA) ..... 77</p> <p>    2.10.7 Surface Plating – Wire Bond Pads .. 79</p> <p>  <b>2.11 Flatness</b> ..... 81</p>
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## Table of Contents (cont.)

<b>3 Internally Observable Characteristics</b> .....	83		
<b>3.1 Dielectric Materials</b> .....	84		
3.1.1 Laminate Voids/Cracks (Outside Thermal Zone) .....	84		
3.1.2 Registration/Conductor to Holes .....	87		
3.1.3 Clearance Hole, Unsupported, to Power/Ground Planes .....	88		
3.1.4 Dielectric Material, Clearance, Metal Plane for Supported Holes .....	89		
3.1.5 Delamination/Blister .....	90		
3.1.6 Dielectric Removal .....	91		
3.1.6.1 Etchback .....	93		
3.1.6.2 Smear Removal .....	95		
3.1.6.3 Negative Etchback .....	97		
3.1.7 Layer-to-Layer Spacing .....	99		
3.1.8 Resin Recession .....	101		
3.1.9 Hole Wall Dielectric/Plated Barrel Separation (Hole Wall Pullaway) .....	102		
<b>3.2 Conductive Patterns – General</b> .....	103		
3.2.1 Etching Characteristics .....	105		
3.2.2 Print and Etch .....	107		
3.2.2.1 Overhang .....	108		
3.2.3 External Conductor Thickness (Foil Plus Plating) .....	109		
3.2.4 Non-Plated Layer Copper Foil Thickness .....	110		
3.2.5 Solder Mask Thickness .....	111		
<b>3.3 Plated-Through Holes – General</b> .....	112		
3.3.1 Copper Plating Voids .....	114		
3.3.2 Plating Nodules .....	115		
3.3.3 Plating Folds/Inclusions .....	116		
3.3.4 Wicking .....	118		
3.3.4.1 Wicking, Clearance Holes .....	119		
3.3.5 Innerlayer Inclusions .....	120		
3.3.6 Innerlayer Separation – Vertical (Axial) Microsection .....	121		
3.3.7 Innerlayer Separation – Horizontal (Transverse) Microsection .....	123		
3.3.8 Plating Separation .....	124		
3.3.9 Foil Crack – (Internal Foil) “C” Crack .....	126		
3.3.10 Foil Crack (External Foil) “A,” “B,” “D” Cracks .....	127		
3.3.11 Plating Crack (Barrel) “E” Crack .....	128		
3.3.12 Plating Crack – (Corner) “F” Crack .....	129		
3.3.13 Plating Microanomalies .....	130		
3.3.14 Annular Ring – Internal Layers .....	131		
		3.3.15 Annular Ring – Microvia to Target Land .....	134
		3.3.16 Microvia Target Land Contact Dimension .....	136
		3.3.17 Microvia Target Land Piercing .....	139
		3.3.18 Lifted Lands – (Cross-Sections) .....	140
		3.3.19 Copper Plating Thickness – Hole Wall .....	141
		3.3.20 Copper Wrap Plating .....	142
		3.3.21 Copper Cap Plating of Filled Holes .....	145
		3.3.22 Plated Copper Filled Vias (Through, Blind, Buried and Microvia) .....	147
		3.3.23 Material Fill of Through, Blind, Buried and Microvia Structures (Other than Copper Plating) .....	149
		3.3.24 Back-Drilled Holes (Microsection Evaluation) .....	151
		3.3.25 Solder Coating Thickness (Only When Specified) .....	152
	<b>3.4 Plated-Through Holes – Drilled</b> .....		153
	3.4.1 Burrs .....		154
	3.4.2 Nailheading .....		155
	<b>3.5 Plated-Through Holes – Punched</b> .....		156
	3.5.1 Roughness and Nodules .....		157
	3.5.2 Flare .....		158
	<b>4 Miscellaneous</b> .....		159
	<b>4.1 Flexible and Rigid-Flex Printed Boards</b> .....		159
	4.1.1 Coverlay Coverage – Coverfilm Separations .....		160
	4.1.2 Coverlay/Covercoat Coverage – Adhesives .....		162
	4.1.2.1 Adhesive Squeeze-Out – Land Area .....		162
	4.1.2.2 Adhesive Squeeze-Out – Foil Surface .....		163
	4.1.3 Access Hole Registration for Coverlay and Stiffeners .....		164
	4.1.4 Plating Anomalies .....		165
	4.1.5 Stiffener Bonding .....		166
	4.1.6 Transition Zone, Rigid Area to Flexible Area .....		167
	4.1.7 Solder Wicking/Plating Penetration Under Coverlay .....		168
	4.1.8 Laminate Integrity .....		169
	4.1.8.1 Laminate Integrity – Flexible Printed Board .....		170

## Table of Contents (cont.)

4.1.8.2	Laminate Integrity – Rigid-Flex Printed Board .....	171
4.1.9	Etchback (Type 3 and Type 4 Only) .....	172
4.1.10	Smear Removal (Type 3 and 4 Only) .....	173
4.1.11	Trimmed Edges/Edge Delamination .....	174
4.1.12	Silver Film Integrity .....	176
<b>4.2</b>	<b>Metal Core Printed Boards</b> .....	<b>178</b>
4.2.1	Type Classifications .....	179
4.2.2	Spacing Laminated Type .....	180
4.2.3	Insulation Thickness, Insulated Metal Substrate .....	181
4.2.4	Insulation Material Fill, Laminated Type Metal Core .....	182
4.2.5	Cracks in Insulation Material Fill, Laminated Type .....	183
4.2.6	Core Bond to Plated-Through Hole Wall .....	184
<b>4.3</b>	<b>Flush Printed Boards</b> .....	<b>185</b>
4.3.1	Flushness of Surface Conductor .....	185
<b>5</b>	<b>Cleanliness Testing</b> .....	<b>186</b>
<b>5.1</b>	<b>Solderability Testing</b> .....	<b>187</b>
5.1.1	Plated-Through Holes (Applicable to Solder Float Test) .....	188
<b>5.2</b>	<b>Electrical Integrity</b> .....	<b>190</b>

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# 1 INTRODUCTION

## Introduction

### 1.1 SCOPE

This document describes the target, acceptable, and nonconforming conditions that are either externally or internally observable on printed boards. It represents the visual interpretation of minimum requirements set forth in various printed board specifications, e.g.; IPC-6010 series, J-STD-003, etc.

### 1.2 PURPOSE

The visual illustrations in this document portray specific criteria of the requirements of current IPC specifications. In order to properly apply and use the content of this document, the printed board should comply with the design requirements of the applicable IPC-2220 series document and the performance requirements of the applicable IPC-6010 series document. In the event the printed board does not comply with these or equivalent requirements, then the acceptance criteria should be as agreed between user and supplier (AABUS).

### 1.3 APPROACH TO THIS DOCUMENT

Characteristics are divided into two general groups:

- Externally Observable (section 2)
- Internally Observable (section 3)

**“Externally observable”** conditions are those features or imperfections which can be seen and evaluated on or from the exterior surface of the board. In some cases, such as voids or blisters, the actual condition is an internal phenomenon and is detectable from the exterior.

**“Internally observable”** conditions are those features or imperfections that require microsectioning of the specimen or other forms of conditioning for detection and evaluation. In some cases, these features may be visible from the exterior and require microsectioning in order to assess acceptability requirements.

Specimens should be illuminated during evaluation to the extent needed for effective examination. The illumination should be such that no shadow falls on the area of interest except those shadows caused by the specimen itself. It is recommended that polarization and/or dark field illumination be employed to prevent glare during the examination of highly reflective materials.

The illustrations in this document portray specific criteria relating to the heading and subheading of each page, with brief descriptions of the acceptable and nonconforming conditions for each product class. (See 1.4.) The visual quality acceptance criteria are intended to provide proper tools for the evaluation of visual anomalies. The illustrations and photographs in each situation are related to specific requirements. The characteristics addressed are those that can be evaluated by visual observation and/or measurement of visually observable features.

Supported by appropriate user requirements, this document should provide effective visual criteria to quality assurance and manufacturing personnel.

This document cannot cover all of the reliability concerns encountered in the printed board industry; therefore, attributes not addressed in this issue **shall** be AABUS. The value of this document lies in its use as a baseline document that may be modified by expansions, exceptions, and variations which may be appropriate for specific applications.

When making accept and/or reject decisions, the awareness of documentation precedence must be maintained.

This document is a tool for observing how a product may deviate due to variation in processes. Refer to IPC-9191.

IPC-A-600 provides a useful tool for understanding and interpreting Automated Inspection Technology (AIT) results. AIT may be applicable to the evaluation of many of the dimensional characteristics illustrated in this document.

IPC-9121 is a useful troubleshooting guideline for problems, causes and possible corrective actions related to printed board manufacturing processes.

### 1.4 CLASSIFICATION

This standard recognizes that electrical and electronic products are subject to classifications by intended end-item use. Three general end-product classes have been established to reflect differences in producibility, complexity, functional performance requirements, and verification (inspection/test) frequency. It should be recognized that there may be overlaps of product between classes.