ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES

IPC-A-600G

Acceptability of Printed Boards

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

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

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Table of Contents

Acknowledgement i

1.0 Introduction 1

1.1 Scope 1

1.2 Purpose 1

1.3 Approach To This Document 1

1.4 Classification 1

1.5 Acceptance Criteria 2

1.6 Applicable Documents 3

1.7 Dimensions And Tolerances 3

1.8 Terms And Definitions 3

1.9 Workmanship 3

2.0 Externally Observable Characteristics 4

2.1 Board Edges 4

2.1.1 Burrs 4
2.1.1.1 Nonmetallic Burrs 5
2.1.1.2 Metallic Burrs 6
2.1.2 Nicks 7
2.1.3 Haloing 8

2.2 Base Material 9

2.2.1 Weave Exposure 10
2.2.2 Weave Texture 11
2.2.3 Exposed/Disrupted Fibers 12
2.2.4 Pits and Voids 13

2.3 Base Material Subsurface 14

2.3.1 Measling 17
2.3.2 Crazing 18
2.3.3 Delamination/Blister 19
2.3.4 Foreign Inclusions 20

2.4 Solder Coatings and Fused Tin Lead 21

2.4.1 Nonwetting 21
2.4.2 Dewetting 22

2.5 Holes – Plated-Through – General 23

2.5.1 Nodules/Burrs 23
2.5.2 Pink Ring 24
2.5.3 Voids - Copper Plating 25
2.5.4 Voids - Finished Coating 26
2.5.5 Lifted Lands - (Visual) 27

2.6 Holes – Unsupported 28

2.6.1 Haloing 28

2.7 Printed Contacts 29

2.7.1 Surface Plating - General 29
2.7.1.1 Surface Plating - Wire Bond Pads ... 30
2.7.2 Burrs on Edge-Board Contacts 31
2.7.3 Adhesion of Overplate 32

2.8 Marking 33

2.8.1 Etched Marking 34
2.8.2 Screened or Ink Stamped Marking 35

2.9 Solder Resist (Solder Mask) 36

2.9.1 Coverage Over Conductors (Skip Coverage) 37
2.9.2 Registration to Holes (All Finishes) ... 38
2.9.3 Registration to Other Conductive Patterns 39
2.9.3.1 Ball Grid Array (Solder Resist-Defined Lands) 40
2.9.3.2 Ball Grid Array (Copper-Defined Lands) 41
2.9.3.3 Ball Grid Array (Solder Dam) 42
2.9.4 Blisters/Delamination 43
2.9.5 Adhesion (Flaking or Peeling) 44
2.9.6 Waves/Wrinkles/Ripples 45
2.9.7 Tenting (Via Holes) 46
2.9.8 Soda Strawing 47

2.10 Pattern Definition - Dimensional 48

2.10.1 Conductor Width and Spacing 48
2.10.1.1 Conductor Width 49
2.10.1.2 Conductor Spacing 50
2.10.2 External Annular Ring - Measurement 51
2.10.3 External Annular Ring - Supported Holes 52
2.10.4 External Annular Ring - Unsupported Holes 53

2.11 Flatness 54

3.0 Internally Observable Characteristics 55

3.1 Dielectric Materials 56

3.1.1 Laminate Voids (Outside Thermal Zone) 56
3.1.2 Registration/Conductors to Holes 58
3.1.3 Clearance Hole, Unsupported, to Power/Ground Planes 59
3.1.4 Delamination/Blister 60
3.1.5 Etchback 61

Table of Contents

3.1.5.1 Etchback 62
3.1.5.2 Negative Etchback 63
3.1.6 Smear Removal 64
3.1.7 Dielectric Material, Clearance, Metal Plane for Supported Holes 65
3.1.8 Layer-to-Layer Spacing 66
3.1.9 Resin Recession 67

3.2 Conductive Patterns - General 68
3.2.1 Etching Characteristics 69
3.2.2 Print and Etch 71
3.2.3 Surface Conductor Thickness (Foil Plus Plating) 72
3.2.4 Foil Thickness - Internal Layers 72

3.3 Plated-Through Holes - General 73
3.3.1 Annular Ring - Internal Layers 75
3.3.2 Lifted Lands - (Cross-Sections) 77
3.3.3 Foil Crack - (Internal Foil) ''C'' Crack 78
3.3.4 Foil Crack - (External Foil) 79
3.3.5 Plating Crack - (Barrel) ''E'' Crack 80
3.3.6 Plating Crack - (Corner) ''F'' Crack 81
3.3.7 Plating Nodules 82
3.3.8 Copper Plating Thickness - Hole Wall 83
3.3.9 Plating Voids 84
3.3.10 Solder Coating Thickness (Only When Specified) 85
3.3.11 Solder Resist Thickness 86
3.3.12 Wicking 87
3.3.12.1 Wicking, Clearance Holes 88
3.3.13 Innerlayer Separation - Vertical (Axial) Microsection 89
3.3.14 Innerlayer Separation - Horizontal (Transverse) Microsection 90
3.3.15 Material Fill of Blind and Buried Vias 91

3.4 Plated-Through Holes - Drilled 92
3.4.1 Burrs 93
3.4.2 Nailheading 94

3.5 Plated-Through Holes - Punched 95
3.5.1 Roughness and Nodules 96
3.5.2 Flare 97

4.0 Miscellaneous 98

4.1 Flexible And Rigid-Flex Printed Wiring 98
4.1.1 Coverlayer Coverage - Coverfilm Separations 99
4.1.2 Coverlayer/Cover Coat Coverage Adhesives 100
4.1.2.1 Adhesive Squeeze-Out - Land Area 100
4.1.2.2 Adhesive Squeeze-Out - Foil Surface 101
4.1.3 Access Hole Registration for Coverlayer and Stiffeners 102
4.1.4 Plating Defects 103
4.1.5 Stiffener Bonding 104
4.1.6 Transition Zone, Rigid Area to Flexible Area 105
4.1.7 Solder Wicking/Plating Migration Under Coverlayer 106
4.1.8 Laminate Integrity 107
4.1.8.1 Laminate Integrity - Flexible Printed Wiring 108
4.1.8.2 Laminate Integrity - Rigid-Flex Printed Wiring 109
4.1.9 Etchback (Type 3 and Type 4 Only) 110
4.1.10 Smear Removal (Type 3 and 4 Only) 111
4.1.11 Trimmed Edges/Edge Delamination 112

4.2 Metal Core Printed Boards 113
4.2.1 Type Classifications 114
4.2.2 Spacing Laminated Type 115
4.2.3 Insulation Thickness, Insulated Metal Substrate 116
4.2.4 Insulation Material Fill, Laminated Type Metal Core 117
4.2.5 Cracks in Insulation Material Fill, Laminated Type 118
4.2.6 Core Bond to Plated-Through Hole Wall 119

4.3 Flush Printed Boards 120
4.3.1 Flushness of Surface Conductor ... 120

5.0 Cleanliness Testing 121

5.1 Solderability Testing 122
5.1.1 Plated-Through Holes 123

5.2 Electrical Integrity 124

Introduction

1.1 SCOPE

This document describes the preferred, 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, i.e.; IPC-6010 series, ANSI/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 wiring product 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 wiring product does not comply with these or equivalent requirements, then the acceptance criteria should be as defined between a user and supplier agreement as part of the procurement documentation.

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 Classification.) 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 agreed upon between user and supplier. 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.

This is a document for minimum acceptability requirements and is not intended to be used as a performance specification for printed board manufacture or procurement.

In the event of a conflict between the requirements of this document and the applicable product performance specification, the following precedence **shall** be used:

a) Approved Printed Board Procurement Document

b) Generic Specifications

c) Applicable Performance Specification

d) Acceptability of Printed Boards (IPC-A-600)

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 interpretating Automated Inspection Technology (AIT) results. AIT may be applicable to the evaluation of many of the dimensional characteristics illustrated in this document.

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.

1.4 CLASSIFICATION

This document recognizes that the acceptable extent of imperfection for specific characteristics of printed boards may be determined by the intended end use. For this reason, three general classes have been established based on functional reliability and performance requirements.

Class 1 — General Electronic products: Includes consumer products, some computer and computer peripherals suitable for applications where cosmetic imperfections are not important, and the major requirement is function of the completed printed board.

Class 2 — Dedicated Service Electronic Products: Includes communications equipment, sophisticated business machines, and instruments where high performance and