

# iDirect Cosmetic Acceptance Criteria

Document #: Q000181



# Revision History

The following table shows all revisions for this document. Please always go to Agile “iDirect TL9000 Quality System” to receive and download the latest version of this document.

<b>Revision</b>	<b>Date Released</b>	<b>Reason for Change(s)</b>	<b>Who Updated?</b>
A	12/28/2011	First release	Ken Tennyson
B	09/10/2013	Updates to Appendix B	Ken Tennyson

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## 1.0 Purpose

This standard provides the cosmetic acceptance requirements for iDirect products purchased from a supplier or contract manufacturer. It defines common defects and establishes the acceptance criteria.

1.1. Related Documents

1.2. Related Records

## 2.0 General

2.1. Scope

2.1.1. This standard applies to all parts, surface finishes, and labels used in iDirect products unless otherwise stated in the engineering drawings and/or shown on an iDirect Engineering approved sample. If there is a conflict between this standard and the engineering drawing and/or iDirect Engineering approved sample, the engineering drawing and/or iDirect Engineering approved sample will supersede.

2.1.2. PCB and cables are not covered by this document; refer to IPC standards IPC-A-610 and IPC-A-620.

2.1.3. Customer Returned Goods (CRG) cosmetic acceptance requirements are defined separately in the CM RMA Procedure – Q0000014.

2.2. Purpose

2.2.1. This document is to be used by contract manufacturers and suppliers to ensure cosmetic acceptability iDirect product both as part of incoming quality control from 2nd tier supplies and final QA inspection of iDirect finished goods.

2.3. Responsibility

2.3.1. iDirect Quality and sourcing are responsible for working with suppliers to ensure products meet cosmetic acceptance requirements as defined in this document.

2.4. Related Documents

2.5. Agile released drawings

2.6. Definition of Terms

## 3.0 Cosmetic Criteria

3.1. Surface Classifications

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Class	Definition
A	This is the area that is directly exposed to the view of customer. Examples are: Front bezel and top of remote, line card front panel, front of hub. The class A surface is most critical for cosmetic requirements.
B	This is the area that is normally facing away from the customer's direct view. Examples are: Sides and back panel of remote, back of a hub.
C	This is the area that is normally out of view in the finished product. Examples are: Bottom cover of hub chassis, bottom cover of remote.
D	This is the area that is out of view in the finished product. Examples are: All interior surfaces.

3.1.1. Outdoor products do not have a Class A surface. Class B requirements are applied to surfaces defined as Class A in table above.

### 3.2. Viewing Distance and Time

3.2.1. Personnel: The parts shall be inspected by trained inspectors with normal 20/20 vision or corrected vision to 20/20 with appropriate lenses.

3.2.2. Lighting: The parts shall be viewed in normal glare free fluorescent shop lighting. The minimum illumination of 100 foot candles is required to detect the cosmetic defects.

3.2.3. Viewing Angle: The parts shall be inspected with a viewing angle between 40 degrees and 50 degrees

3.2.4. The viewing distance and viewing time will be as follows.

Viewing Surface	Class A / 7 sec.	Class B / 5 sec.	Class C / 3 sec.	Class D / 3 sec.
<12 in. Sq.	12 in. (300 mm)	24 in. (600 mm)	36 in. (900 mm)	48 in. (900 mm)
>12 in. Sq. <30 in. Sq.	18 in. (450 mm)	30 in. (750 mm)	48 in. (1200 mm)	60 in. (1200 mm)
>30 in. Sq.	24 in. (600 mm)	48 in. (1200 mm)	60 in. (1500 mm)	72 in. (1800 mm)

### 3.3. Acceptance Criteria

3.3.1. All parts, products and systems shall meet the cosmetic requirements defined in this standard.

3.3.2. If the product does not meet the cosmetic workmanship requirements defined in this standard, a formal documented deviation must be requested from iDirect Quality Assurance Department, before shipping the product.

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- 3.3.3. During the visual inspection, a judgment must be made as to whether or not the customer (END USER) would consider the flaw(s) objectionable. During this inspection, only visual qualities are considered.
- 3.3.4. The acceptable limit of flaw(s) has a significant relationship to the type of area (surface) on which they are found. Flaws on a simple surface are more easily noticed and objectionable as compared to when they occur on a complicated surface. Therefore, each judgment of acceptability must be made in relation to the configuration of the surface in its final assembled form.
- 3.3.5. When a borderline flaw is found within the specified time and distance, but decision whether to reject is difficult to make due to the subjective nature of some cosmetic defects, the issue should be communicated to iDirect Quality Assurance Department for final decision.

#### 3.4. General Requirements

- 3.4.1. Cleanliness: The parts shall be free from dirt, grime, grease, oil and other contaminants.
- 3.4.2. Cosmetic Paint Color and Texture: All painted surfaces shall meet the color requirements as specified in the product specification and drawings. All surfaces shall be uniform in color and texture and free of streaks, runs, chips, bubbles, sink marks or any other molding defects. No manual touch-up of class A painted surfaces are allowed without approval by iDirect Quality Assurance.
- 3.4.3. Cosmetic Assembly: The assembled parts shall be free from scratches, gouges, dents, dings, cracks, stress marks, abrasions, excessive gaps, or any other defects caused by improper assembly. Dents shall not expose any base metal or causing a critical dimension to be out of tolerance.
- 3.4.4. Labels: Labels should be legible and straight with no smearing or printer defects.
- 3.4.5. Sheet-Metal Formed: There shall be no defects outside of rejection criteria below, no sharp edges, die marks or press marks. No rust is allowed on any surfaces with the exception of untreated cutting edges.
- 3.4.6. Screws and rivets: Should be fully seated and flush with the surrounding surface, see defect table below. Screws should not be excessively marred or stripped. Standoff & Nut riveting tolerance should be  $\pm 0.004$ " ( protruding or sink from surface 0.1mm )

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## Appendix A - COSMETIC SURFACE DEFECTS

<b>Defect</b>	<b>Description</b>
<b>Abrasion</b>	Surface imperfection, scuff or change in surface texture that does not remove or displace material.
<b>Blister</b>	The raised bumps in the surface, caused by air or solvent vapors forming within or under the coating.
<b>Burr</b>	This defect appears as a rough or sharp edge on metal after it has been cast, cut, drilled, stamped, and so forth. Burrs will usually snag or tear a cleaning cloth.
<b>Contamination</b>	Foreign material on surface.
<b>Crack</b>	A narrow break or split in the base material, plating, or paint.
<b>Dent</b>	Any depression on a surface caused by handling damage. Note: Tooling Marks are not dents.
<b>Discoloration/Stain</b>	Unintended color change, which is not consistent with the normal part color. A cosmetic defect is a visible difference when compared to requirements.
<b>Flaking/Chipping/Peeling</b>	Areas of poor adhesion between the paint and the surface, causing the paint to come off with light rubbing.
<b>Gaps</b>	Any space between two or more normally adjacent surfaces.
<b>Gouge/Nick/Pit/Scratch</b>	A surface imperfection in which small amounts of surface material have been removed.
<b>Label Print Defects</b>	Print defects on the text of the label, smearing, marring, or other cosmetic defect.
<b>Label Poor Registration</b>	Label is not placed in correct location
<b>Label Slant</b>	Label is crooked
<b>Paint Runs</b>	Areas of excess paint that are noticeably thicker.
<b>Rust/Oxidation</b>	Rust is the visible manifestation of corrosion of metal surfaces, usually as result of exposure to humid surroundings.
<b>Step</b>	The difference in surface alignment between two metal parts.
<b>Tooling Marks</b>	This type of defect is an indentation, depression, or line that occurs in the same location of every part due to damaged tool.
<b>Warpage</b>	Distortion of a part characterized by a bowing or twisted condition.

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## Appendix B - ACCEPT/REJECT CRITERIA FOR VISIBLE SURFACES

	Defects Allowed by Class (dimensions in inches)			
Defect	Class A	Class B	Class C	Class D
<b>Abrasion</b>	None	2 <= .060 long edge	4 <= .130 long edge	No exposed Base metal No oxidation of metal
<b>Blister</b>	None	2 <= .060 area	4 <= .130 area	8 <= .130 area
<b>Burr</b>	None	None	<10% of material thickness, no sharp edges	<10% of material thickness, no sharp edges
<b>Contamination</b>	None	None	Acceptable <=.040	Acceptable <=.20
<b>Crack</b>	None	None	None	None
<b>Dent/Pit</b>	None	2 <= .080 square	4 <= .120 square	No exposed Base metal No oxidation of metal
<b>Discoloration/ Stain</b>	None	None	None color difference should specify measurable criteria	No quantity restriction
<b>Flaking/Chipping/Peeling</b>	None	2 <= .060	4 <= .130	No exposed Base metal No oxidation of metal
<b>Gaps</b>	Must meet print requirements	Must meet print requirements	Must meet print requirements	No quantity restriction
<b>Gouge/Nick/Scratch</b>	2 <= .010 x .030	4 <= .020 x .090	4 <= .020 x .25	No quantity restriction
<b>Label Print Defects</b>	None	None	None	Must be legible
<b>Label Misregistration</b>	.020	.125	.25	No restriction
<b>Label Slant</b>	.017 in. Per Inch	.035 in. Per Inch	N/A	No quantity restriction
<b>Paint Runs</b>	None	None	None	None
<b>Rust/Oxidation</b>	None	None	None	None
<b>Screw/Rivet Not Flush</b>	+/-0.004"	+/-0.004"	+/-0.004"	+/-0.004"
<b>Step</b>	None	2 <= .060 (maybe 0.08)	4 <= .130	No quantity restriction
<b>Tooling Marks</b>	None	None	Minor imprint of text	No quantity

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			punching / rivet mark is permissible	restriction
<b>Warpage</b>	None	< 0.5%	< 0.5%	< 1%

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