Title:

Hand Soldering Operation

Revision	Description of Change	Date Effective	Author
A	Initial Release	06/04/99	Dior Wu
B	Added 6.6 and 8.3, Revised 9.2.1	03/01/17	Kiet Pham

N/A

Originator

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Hand Soldering Operation

1.0 Purpose

1.1 The purpose of this document is to provide a uniform guideline for hand soldering operations.

2.0 Scope

2.1 This procedure applies to all hand soldering operations at Meritronics.

3.0 References

3.1 Electrostatic Discharge Control (ESD) Procedure - SOP22

3.2 Control of Non-Conforming Materials Procedure - SOP23

3.3 Acceptability of Electronic Assemblies - IPC-A-610

3.4 Suggested Guidelines for Modification, Rework & Repair of Printed Circuit Board Assembly - IPC-R-700

4.0 Definitions

4.1 SMT: Surface Mount Technology

4.2 PCA: Printed Circuit Assembly

4.3 MSDS: Material Safety Data Sheet

5.0 Responsibilities

5.1 Engineering will ensure that the requirements of this specification are incorporated in the documentation, equipment and design of the workstation and methods. Engineering will also resolve technical issues relating to hand soldering.

5.2 All personnel performing hand soldering processes shall be knowledgeable in and will comply with these requirements.

5.3 Line supervisors will ensure that operators are trained to this procedure.

6.0 Equipment

6.1 Soldering irons with power levels and tips to provide tip temperatures from 600 - 900 degrees F

6.2 Cleaning equipment

6.2.1 Hand cleaning equipment: brushes, disposable wipes, and water

6.2.2 In-Line Aqueous Cleaning equipment per MEP004

6.3 Heat Gun (Ungar model 1095 or engineering approved equivalent)

6.4 Hot element style solder reflow stations with appropriate tips

6.5 Solder sucker - manual type

6.6 Ohm meter for soldering tip gounding check.

7.0 Materials

7.1 Solder Wire

7.2 Water Soluble Core Solder: Kester Organic Core 331 Flux

7.3 No-Clean Core Solder: Cleanline 7000.

7.4 Kester 2331ZX (Water Soluble Wash Flux)

7.5 Kester 951 (No Clean Flux)

7.6 PCAs requiring modification

7.7 Components and wire per customer requirements

8.0 Records

8.1 2nd Operation Procedure - MFG004

8.2 Aqueous Cleaner Operation - MEP004

8.3 Soldering Iron tip grounding monthly audit report – PQAP189

9.0 Procedure

9.1 Safety

9.1.1 Soldering equipment operates at high temperatures. Use appropriate safety practices.

9.1.2 Follow safety procedures outlined in the MSDS and any warning labels on material used.

9.1.3 Wash hands after work and prior to eating to remove any chemicals and lead.

9.1.4 Organize your equipment and work to prevent damage and safety hazards.

9.2 Hand Solder Components

9.2.1 Solder stations shall be equipped with sponge style tip cleaners. Soldering tips shall be in good condition and free from oxidation.The soldering tip grounding need to be checked once a month, use form pqap189, acceptance criteria : 5 – 20 Ohm.

9.2.2 All flux and water containers at the soldering work station shall be clearly marked with the contents.

9.2.3 Hand solder components per visual aid and/or customer documentation using the correct flux and cored solder.

9.2.3.1 The maximum temperature and time any part of the product can be exposed to during hand solder is unique for each component type. Neither the PCB or component shall be over heated. The criteria to be monitored is discoloration of the PCB or component, lifted pads, or traces caused by heat. If damage is encountered, the effected part(s) shall be processed according to Control of Non-Conforming Materials Procedure SOP23.

9.2.4 If replacement of a component and removal of solder is necessary use a solder sucker. Re-solder the component using the correct flux and cored solder. If realignment of a component is required, reflow the solder using a heat gun or hot element style solder reflow tool.

9.2.5 All workmanship shall meet IPC-A-610, IPC-R-700 and customer requirements.

9.2.6 Wash the PCA in an in-line aqueous cleaner within two hours if aqueous flux is used per MEP004 or if necessary, remove water soluble flux residues manually from the PCA using a brush, water, and disposable wipes. Thoroughly dry the board.