1. **Revision Log**

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| Revision Log |
| Revision Level | Revision Date | Section | Description | Revised By |
| REL | 05312016 | ---- | Initial Release | BS |
| A | 3/15/19 |  | Mass updates, complete re-write to standard | NT |
| B | 9/19/22 | 5.2.1 5.3.1 5.4.1 5.7.1 | Added new preferred brands for equipment | O. Cutchall |
| C | 12/1/2023 | Header | Replaced GHSP logo with newer version | BB |
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| Approval: | CN: RS | MX: BA |
| US: JA | Other (as req’d): |

1. **Purpose:**
	1. To define the global standard for the use of Electronics PCBA Manufacturing Equipment within GHSP manufacturing facilities.
2. **Scope:**
	1. This global standard applies to all GHSP manufacturing facilities.
3. **Definitions:**
	1. PCBA - Printed Circuit Board Assembly
	2. ESD - Electrostatic Discharge
	3. SMT - Surface Mount Technology
	4. IPC - Association Connecting Electronics Industries.
		1. IPC standards are used by the electronics manufacturing industry. IPC-A-610, Acceptability of Electronic Assemblies, is used worldwide by original equipment manufacturers and EMS companies.
4. **References:**
	1. IPC-A-610, Acceptability of Electronic Assemblies
	2. CP-WI-MFG-X301 Global Standard Production Equipment Safety, Ergonomic, and Delivery Checklist
	3. CP-WI-MFG-X334 Global Standard Strain Guage
5. **Method:**
	1. **IPC Classification**
		1. Product design and/or customer requirements determines the level of assembly standard used during the manufacturing process (IPC Class 1, 2, or 3).
	2. **Surface Mount Technology**
		1. Preferred Brands

*Selection outside the preferred brand requires approval by the Advanced Process Engineer and Global Standards Team*

* Board Conveyance
	+ CTI
	+ ASYS
	+ Simplimatic
* Solder Paste Application
	+ Preferred Machine Brands
		- DEK Screen Printers
		- Speed Print Screen Printers
	+ Preferred Stencil House
		- Microscreen
		- Blue Mountain
	+ Preferred Stencil Cleaning
		- Austin American Technologies
		- DCT
* Automated Optical Inspection (AOI)
	+ Omron
	+ Koh Young
	+ Nordson AOI
* Placement Machines
	+ Universal Instruments Company (UIC)
	+ Fuji
* Reflow Ovens
	+ BTU
	+ Vitronics
* Thermal Profiling
	+ KIC Thermal Profiling
	1. **Through Hole Technology**
		1. Preferred Brands

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* Board Conveyance
	+ CTI
	+ ASYS
	+ Simplimatic
* Assembly Equipment
	+ Universal Instruments Company (UIC)
	+ UMG Technologies
	+ Fuji
	+ Panasonic
	1. **Soldering Equipment**
		1. Preferred Brands

*Selection outside the preferred brand requires approval by the Advanced Process Engineer and Global Standards Team*

* Board Conveyance
	+ CTI
	+ ASYS
	+ Simplimatic
* Wave Soldering
	+ ERSA
	+ Electrovert Speedline
	+ SEHO
* Selective Soldering Equipment
	+ ERSA
	+ Apollo Seika
	+ Nordson Select Soldering Equipment
* Wave/Selective Tooling
	+ Insulfab
	+ AGI
	+ Garland Service Company
* Hand Soldering Equipment
	+ HAKKO
* Thermal Profiling
	+ KIC Thermal Profiling
	+ Solder Star Thermal Profiling
	1. **Test Equipment**
		1. Preferred Brands

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* In-Circuit Testing
	+ Keysight
	+ CheckSum
* Final Testing
	+ Keysight
	+ National Instruments
* Labeling
	+ Zebra
	1. **Conformal Coat Equipment**
		1. Preferred Brands

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* Board Conveyance
	+ CTI
	+ ASYS
	+ Simplimatic
* Coating Equipment
	+ PVA
	+ Nordson
* Conformal Coat Tooling
	+ Pentagon EMS
	+ Insulfab PCB Tooling
	+ AGI
	+ Garland Service Company
	1. **De-panel/Router Equipment**
		1. Preferred Brands

*Selection outside the preferred brand requires approval by the Advanced Process Engineer and Global Standards Team*

* De-panel/Router Equipment
	+ Automated
		- Sayaka
		- ASYS
		- CTI
	+ Manual
		- Fancort industries
* De-panel/Router Tooling
	+ Insulfab PCB Tooling
	+ Garland Service Company
1. **Records:** N/A