1. **Revision Log**

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| Revision Log | | | | | |
| Revision Level | Revision Date | Section | Description | | Revised By |
| REL | ---- | ---- | Initial Release | | ---- |
| A | 5/17/2017 | \_\_\_ | Added Sections 5.3.2 Vision System Validation and Audit and Section 6.1 Data storage and 6.2.Image Storage. Questions added to document | | MJG |
| B | 4/17/19 |  | Mass update, complete re-write to standard | | NT |
| C | 04/06/2020 | 5.1.1 | \*add Teledyne Dalsa (BOA) | | DS |
| D | 12/1/2023 | Header | Replaced GHSP logo with newer version | | BB |
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| Approval: | | CN: RS,FS | | MX: JH | |
| US: JA | | Other (as req’d): DRW | |

1. **Purpose:** 
   1. To define the global standard for the use of Vision Systems within GHSP manufacturing facilities.
2. **Scope:** 
   1. This global standard applies to all GHSP manufacturing facilities.
3. **Definitions:** N/A

1. **References:**
   1. CP-WI-MFG-X301 Global Standard Production Equipment Safety, Ergonomic, and Delivery Checklist
   2. CP-WI-MFG-X327 Global Standard Assembly Equipment Manual
   3. Job Aids (Operating Standards 🡪 Job Aids 🡪8.5-Job-Aids-prod-service 🡪 Global Standards)
2. **Method:**
   1. **Vision System Selection**
      1. Preferred Camera Brands

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

* GVI (Cognex)
* Keyence
* Banner
* SensoPart
* Teledyne Dalsa (BOA)
* MicroMatch
  + Note: These vision systems cannot be used as a light intensity check to a customer spec. The lab camera must be used to identify min and max samples that the production camera system can be taught with.
    1. Vision system limitations for product light evaluation.
* Product Lighting requirements shall be defined in Product Design
* Validation of Design shall be confirmed in Design Validation Testing
* Production Validation shall be confirmed using PPAP intent components, covering the full capability of the design
* Engineering to provide min/max sample parts to APE for Production Equipment setup (i.e. high/low, daytime/nighttime)
  + Samples are to be just within the spec and just out of the spec, for both min and max requirements.
  1. **Lighting Selection**
     1. Preferred Lighting Brands

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

* + - * Banner
      * Keyence
      * Smart Vision Lights
      * V-light
    1. It is recommended to use the same brand of lighting as the vision system, as they are best matched for that specific vision system.
    2. During the design and build phases, lighting application and plant location shall be considered.
    3. If it is determined that masking of ambient light is needed, use of Infrared light is recommended.
       - Visible Red lighting or strobing of any light is not allowed.
    4. Black out of application will only be required when masking of ambient light cannot be achieved.
       - LED (i.e. PRND displays) evaluations may require the use of black out
    5. Light settings and positions need to be fixed.
    6. Camera triggering with integrated lights need to fire at different times.
    7. Filters
       - Electronic filter built in unit
       - Physical filter attached to lens
  1. **Len’s Selection**
     1. Lens calculation should be used to determine the correct lens.
     2. There shall only be 1 focal point per camera.

1. **Records:** 
   1. Vision programs to be included in the Assembly Equipment Manual.
      1. Anytime a change to the vision program is made, a PCR must be written and approved.
   2. All vision programs must be stored on the facility server.