NO:	**MCD-123**	**PRODUCT:**	**LVS-9580/9585 DPM**
DATE:	**July 2018**	**TYPE:**	**FAQ**

LVS-9580/9585 DPM FAQ's

1. **What changes have been made to LVS-9580 DPM in the upcoming release of v. 4.4.0 software?**
   a. Additional GS1 application identifiers have been added to comply with the latest GS1 2018 General Specifications
   b. Support for the new high definition version LVS-9585 DPM HD and LVS-9580 DPM HS is provided.
   c. The historical ANSI "letter grade" has been added to the grading report.
   d. Enhancements to the grading report including displaying the minimum passing grade and clarification of the GS1 pass/fail criteria.

2. **What are the differences between LVS-9580 and LVS-9585?**
   LVS-9585 includes the capability of using red dome, white dome, and 30 degree angle white lighting all in one model #. LVS-9580 is available in red dome only. When a DPM standard is being used LVS-9585 automatically uses the lighting mode that provides the best grading result. Note that for non-DPM standards such as ISO 15415/15416 only the red dome lighting selection is available.

3. **What types of DPM applications benefit from using LVS-9585 instead of LVS-9580 DPM?**
   DPM applications can be very challenging due to the range of materials being marked, and the different marking methods. Our internal testing shows that 30 degree angle lighting often outperforms other lighting methods for dot peen marks. For customers who have a broad variety of marks having the ability to cycle between dome and angle lighting provides the most flexible solution.

4. **Why is use of Direct Part Marking increasing?**
   The FDA Unique Device Identification (UDI) requirement for medical devices has increased the use of DPM marking in medical device applications. The device itself must be marked if the device is intended to be used more than once, being intended to be reprocessed (cleaned/sterilized) before each use. Implantable/life sustaining devices require UDI on packaging by September 24, 2015, Class 3 devices by September 24, 2016, and Class 2 devices by September 24, 2018. Similar regulations will be impacting the European Medical Device market in the next few years.

5. **Are LVS-9585 and LVS-9580-DPM compliant with GS1?**

Yes. Table 7 is added to the list of available GS1 General Certifications when the 1D/2D/DPM software version is selected. However, GS1 does not currently certify DPM verifiers due to the lack of "reference DPM parts" that would be used to confirm defects and grading scores.

6. **Can LVS-9585 and LVS-9580-DPM be used to verify both DPM and printed labels?**
Yes. Both LVS-9585 and LVS-9580-DPM can grade to the same standards as the 1D and 2D version of LVS-9580. Note that when being used to grade DPM the field of view is reduced to 1.75" x 1.75" (44mm x 44mm). Additionally, one LVS-9510 can be connected to LVS-9585 or LVS-9580-DPM for grading of printed labels that require a larger field of view.

7. **What are differences between ISO/IEC 29158 TR and ISO 15415 2D bar grading?**
Different methods are employed to define the threshold used to judge whether a cell is black or white, and certain grading parameters are different, including symbol contrast and modulation.

8. **Why do we have three separate categories for MIL-STD-130 in the LVS-9585 and LVS-9580 Application Standard menu?**
MIL-STD-130 provides for both printed labels as well as direct part marks. There are different requirements in the grading of linear or 2D printed bar codes, and therefore there is a different category for each. Further, some applications require the UII (unique item identifier, also referred to as UID) while others do not, therefore a separate standard that includes DPM with UII is available.

9. **What is a "passing grade" for MIL-STD-130?**
For 2D symbols per ISO/IEC 15415 "3.0 or better is required to be compliant with MIL-STD-130. As an exception, the ISO/IEC 15415 parameters for modulation (MOD), symbol contrast (SC), or both, may measure as low as 2.0, providing the overall ISO/IEC 15415 grade would be 3.0 if the MOD and SC grades were 3.0 or higher. Additional requirements such as symbol size, calibration requirements, etc. can be found within MIL-STD-130N.

10. **How is ISO/IEC 29158 TR different than the previous AIM DPM 2006?**
There is no significant difference between these two standards, and ISO/IEC 29158 TR has replaced AIM DPM 2006. Most customers will accept verification equipment that is certified to either standard.

11. **What are the differences in the Categories for ISO/IEC 29158 TR, and which categories are LVS-9585 and LVS-9580-DPM suitable for?**
There are three categories that generally describe direct part marked properties. LVS-9585 and LVS-9580-DPM is suitable for all three of these categories.
- Category 0 parts are those that can be read by a typical bar code scanner.
- Category 1 parts require a specialized DPM type scanner, commonly found at facilities such as supply depots are maintenance facilities.
- Category 2 parts typically require specialized lighting and may have curved surfaces, low contrast, or high texture. Those parts are not typically read in "typical field repair facilities".

12. **What are some important considerations of use for LVS-9580 and LVS-9585 when using DPM standards?**
- Maximum distance of 0.75" (19mm) from the LVS-9580/9585 window to the mark
- Smaller field of view than LVS-9580/9585 used for printed label applications

- An upside down red T visible in the software grading screen must be aligned over the mark while holding the trigger to allow the software to locate the mark within the field of view.
- Some changes to grading parameters compared with ISO 15415/15416
    - Cell Contrast replaces Symbol Contrast
    - Cell Modulation replaces Modulation
    - Distributed Damage Grade replaces Average Grade
    - New parameter for Minimum Reflectance

13. **What is the standard AS9132 and is it relevant for a verifier?**
AS9132 is an SAE International specification that defines Data Matrix Quality Requirements for Parts Marking. It is used by aerospace and defense industries to provide guidance on making high quality DataMatrix marks. While there is reference to using a camera and software for testing of symbol parameters, it is not a standard that verifiers are certified against or "compliant to". Verifiers are a tool that help those making marks confirm that they are making good quality marks as defined in the AS9132 standard.

14. **What types of DPM parts are most problematic when attempting to grade marks?**
Parts where the mark cannot be positioned within 19mm/0.75" of the lens, and some dot peen marks with faint indentation, such as in hard materials like stainless steel can be difficult to read.

15. **What are considerations for a manufacturer to select the type of DPM technology to use in their applications?**
Several factors are important when considering the marking technology to use. For applications where physically altering the surface could compromise the part performance, such as aerospace or high stress applications, a label that does not alter the surface is preferred. Surface texture/gloss, mark size, and part geometry can impact the what marking method will result in optimal readability of a direct part mark.

16. **Is it possible to upgrade an existing LVS-9580 to include DPM functionality?**
Yes. A software activation key may be ordered using part # 98-SOF0095. The PC software will need to be upgraded to version 4.1.0j or newer. It is now possible to upgrade an LVS-9580 to LVS-9585.

17. **Is there a HIBC application standard for DPM Symbols?**
No. However, HIBC data structure will be checked when grading to the ISO/IEC TR 29158 standard, so if that standard is selected and the HIBC structure is incorrect an error under structure will be indicated in the grading result.