Section 7

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**LASER CLASSIFICATION**

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7.1 Laser Classification

Lasers are classified based on their potential hazard. The greater the hazard, the higher the classification number, and the more controls are required in order to provide a safe environment for laser uses. The classification definitions are based on ANSI Z136.1-2007 Safe Use of Lasers.

|  |  |
| --- | --- |
| **Class 1** | Considered to be incapable of producing damaging laser exposure during operation and is, therefore exempt from any control measures or other forms of surveillance. |
| **Class 1M** | Considered to be incapable of producing damaging laser exposure during operation unless the beam is viewed with an optical instrument such as an eye-loupe (diverging beam) or telescope (collimated beam) and is, therefore exempt from any control measures other than to prevent potentially hazardous optically aided viewing, and is exempt from other forms of control measures. |
| **Class 2** | Emits in the visible portion of the electromagnetic spectrum (0.4 to 0.7 um) and eye protection is normally afforded by the aversion response. |
| **Class 2M** | Emits in the visible portion of the electromagnetic spectrum (0.4 to 0.7 um) and eye protection is normally afforded by the aversion response for unaided viewing, but is potentially hazardous if viewed with certain optical aids. |
| **Class 3R** | May be hazardous under direct and specular reflection viewing conditions, but is not normally diffuse reflections or fire hazard. Potentially hazardous under some direct and specular reflection viewing condition if the eye is appropriately focused and stable, but the probability of an actual injury is small; will not pose either a fire or diffuse-reflection hazard. |
| **Class 3B** | May be hazardous under direct and specular reflection viewing conditions, but is not normally diffuse reflections or fire hazard. |
| **Class 4** | Is a hazard to the eye or the skin from the direct beam; may pose a diffuse reflection or fire hazard; May also produce laser generated air contaminants (LGAC) and hazardous plasma radiation |

Section 7

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**LASER CLASSIFICATION**

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7.2 Embedded Lasers

Embedded lasers are those lasers that are embedded in laser products or laser systems assigned a lower hazard class because of engineering features which limit accessible laser emissions. Thus, an embedded laser may be exempt from many control measures. However, the Approved Laser User must assure that:

* Only properly trained individuals service the laser system.
* A temporary laser controlled area is established and posted during service.

7.3 Laser Classes Regulated by This Laser Safety Program

Only Class 3B and Class 4 lasers and laser systems are regulated by this Laser Safety Program. Only intra beam hazards are covered by this program. Non-beam hazards are not monitored under this program.