

## 8.5 Operational Microwave / RF Safety

The following safety precautions and procedures must be taken when working near mw / rf equipment:

- A. Standard Operating Procedures (SOPs) must be posted near all operational equipment (where possible, otherwise available when requested). The SOP will outline radiation protection procedures for the equipment in use. The SOP will be reviewed and approved by the RFSO.
- B. Only individuals who have been instructed in the potential hazards of mw / rf radiation and in safe procedures will be permitted to work in the vicinity of the equipment.
- C. Microwave / rf warning signs must be posted, as applicable.
- D. Personnel must be restricted from the area immediately in front of any radiating antenna.
- E. Transmissions with an unterminated wave guide must be avoided.
- F. Free space transmission within buildings must be avoided. During those test procedures where such transmissions are required, make certain that personnel are not being exposed to the radiated beam.

## 8.6 Measurement and Evaluation of Radiofrequency (rf) Fields

- A. Evaluation of rf hazards should be done using the measurement procedures and techniques recommended in IEEE C95.3-1991, as basic guidance. That requirement does not preclude using other rf measuring and evaluation methodologies.
- B. Records of surveys, reports, calculations, and control measures imposed will be maintained for each fielded rf emitter that is capable of exceeding the exposure limits in Table 1.
- C. Where multiple rf emitters may be collocated in fixed arrangements, such as on roof tops or at communication sites, rf evaluation data should include a determination of the weighted contribution from expected simultaneously-operated emitters to ensure that personnel are not exposed to effective rf levels above the exposure limit.
- D. A rule of thumb is that the predominant electric and magnetic fields around an object exist independently at distances less than about one wavelength from the source. This is called the "near field." The combination of electromagnetic radiation predominates at distances greater than about one wavelength. This is called the "far field."
- E. For both pulsed and non-pulsed fields, the power density, the squares of the field strengths, and values of specific absorption rates (SARs) or input power as applicable, are averaged over any 0.1 hr period.

Before use, check the Master List to verify that this is the current version.

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- F. Measurements to determine adherence to the recommended protection guides will be made at distances 5 cm. or greater from any object (refer to ANSI / IEEE C95.3.)

### 8.7 RF Safety Categories

Radiofrequency sources and systems should be categorized according to their potential for producing exposures in accessible areas above established conservative action levels or exposure limits. This allows appropriate controls to be established for each category. The controls may be engineered or administrative. The categories are given in Table 8.

RF Category	Exposure Condition	Control Actions Required
1	Operational characteristics of sources would not cause the action level to be exceeded	None, unless maintenance or other conditions alter the category
2	Operational characteristics of sources could cause the action level to be exceeded, but would not cause the exposure limit to be exceeded in accessible areas.	Time and spatial averaging should be used to properly evaluate exposure.
3	Potential to exceed the controlled area exposure limit in accessible areas, if mitigating controls are not applied.	
4	Exposure will exceed the controlled area exposure limit in accessible areas.	Restrict source output or prevent personnel access.

## 9.0 TRAINING & CERTIFICATION

- A. Class 2 and 3a laser training – Orientation training is recommended for persons working with or around Class 2 or 3a lasers.
- B. Class 3b and Class 4 laser training – Training is required for all employees working with or around Class 3b and 4 lasers. Only trained individuals will be considered certified and permitted to operate Class 3b and Class 4 lasers.
- C. Personnel who routinely work directly with equipment that emits mw / rf levels in excess of the exposure limits in Table 1 or whose work environment contains equipment that routinely emits levels in excess of the exposure limits, are required to receive training so that they are aware of the potential hazards of rf.

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