

SITE SURVEY CHECKLIST FOR RADAR INSTALLATION

The following items are considered by Baron Services representative during the conduct of a site survey.

1. Real-estate to locate the radar, best radar location if multiple candidate sites are available
2. Prime power availability
3. Communications availability
4. Investigation of man-made structures and local terrain that may screen the radar signals
5. Determination of radar tower height to allow the radar beam to clear obstructions in item 4 above
6. Determine if there will be any other transmitters located on the radar tower or in the near vicinity that could experience or cause interference
7. Review the area for power transmission lines and other hazardous obstructions that require strict attention during tower construction and radar antenna installation
8. Determine radiation hazard zone in accordance with FCC OET Bulletin 65, taking into account in particular (see attached information):
 - a. The total number of emitters
 - b. The specific RF Exposure Limits for the Radar (check Equipment authorization file for copy of RF exposure calculations)
9. Plot Radar screening angles
10. Deliver a written report to the customer with these findings, including recommendations regarding warning signs for RF Hazards
11. Follow-up answers to any questions the customer may ask
12. Brief the Baron Services Installation Team on the site survey and the potential safety hazards related to the selected radar site.

CONTROLLING EXPOSURE TO RF FIELDS

Public Exposure: Compliance with General Population/Uncontrolled MPE Limits

Studies have indicated that the majority of the United States population is normally exposed to insignificant levels of RF radiation in the ambient environment. However, there are some situations in which RF levels may be considerable higher than the median background, and in those cases preventive measures may have to be taken to control exposure levels.

The FCC's guidelines for exposure incorporate two tiers of limits, one for the conditions under which the public may be exposed ("general population/uncontrolled" exposure) and the other for exposure situations usually involving workers ("occupational/controlled" exposure). Exposure problems involving members of the general public are generally less common than those involving persons who may be exposed at their place of employment, due to the fact that workers may be more likely to be in close proximity to an RF source as part of their job. However, if potential exposure of the general public is a problem there are several options available for ensuring compliance with the FCC RF guidelines.

In general, in order for a transmitting facility or operation to be out of compliance with the FCC's RF guidelines as area or areas where levels exceed the MPE limits must, first of all, be in some way **accessible** to the public or to workers. This should be obvious, but there is often confusion over an **emission** limit, e.g., a limit on field strength or power density at a specified distance from a radiator that always applies, and an **exposure** limit, that applies anywhere people may be located. The FCC guidelines specify exposure limits not emission limits, and that distinction must be emphasized. This is why the accessibility issue is key to determining compliance. The MPE limits indicate levels above which people may not be safely exposed regardless of the location where those levels occur. When accessibility to an area where excessive levels is appropriately restricted, the facility or operation can certify that it complies with the FCC requirements.

Restricting access is usually the simplest means of controlling exposure to areas where high RF levels may be present. Methods of doing this include fencing and posting such areas or locking out unauthorized persons in areas, such as rooftop locations, where this is practical. There may be situations where RF levels may exceed the MPE limits for the general public in remote areas that could conceivably be accessible but are not likely to be visited by the public. In such cases, common sense should dictate how compliance is to be achieved. If the area of concern is properly marked by appropriate warning signs, fencing or the erection of other permanent barriers may not be necessary.

In some cases, the time-averaging aspects of the exposure limits may be used by placing appropriate restrictions on occupancy in high-field areas. However, such restrictions are often not possible where continuous exposure of the public may occur. In general, time averaging of exposures is usually more practical in controlled situations where occupational exposure is the only issue.

Although restricting access may be the simplest and most cost-effective solution for reducing public exposure, other methods are also available. Such methods may be relevant for reducing exposure for both the general public and for workers. For example, modifications to antennas, elevating antennas or incorporation of appropriate shielding can reduce RF fields in locations accessible to the public or to workers.

Occupational Exposure: Compliance with Occupational/Controlled MPE Limits

Exposure to RF fields in the workplace or in other controlled environments usually presents different problems than does exposure of the general public. For example, with respect to a given RF transmitting facility, a worker at that facility would be more likely to be close to the radiating source than would a person who happens to live nearby. Although restricting access to high RF field areas is also a way to control exposures in such situations, this may not always be possible. In some cases a person's job may require him or her to be near an RF source for some part of the workday. Depending on the level and time exposure this may present a problem with respect to compliance with the MPE limits.

In general, a locked rooftop, tower or other appropriately restricted area is only accessible to workers who are "aware of" and "exercise control over" their exposure would meet the criteria for occupational/controlled exposure, and protection would be required at the applicable occupational/controlled MPE limits for those individuals who have access to the rooftop or tower. Persons who are only "transient" visitors to the rooftop or tower, could also be considered to fall within the occupational/controlled criteria as long as they also are "made aware" of their exposure and exercise control over their exposure.

The MPE limits adopted by the FCC are **time-averaged** exposure limits. This means that the exposure duration should be taken into account when evaluating a given exposure situation, and this is especially relevant for cases of occupational/controlled exposure. For example, a person walking into an area where RF fields exceed the **absolute** MPE limit (in terms of field strength or power density) might not exceed the **time-averaged** MPE limit as long as the exposure was for an appropriately short period of time (relative to the time-averaging interval). However, if that person were to remain in the area for an extended period it is more probable that the time-averaging limit would be exceeded. Therefore, in order to comply with the FCC's guidelines, in some situations it may be necessary to limit exposure in certain areas to specified periods of time. For example, in workplace situations where extended maintenance tasks must be performed in areas where RF fields exceed MPE limits, the work may have to be divided up and carried out during several intervals of time so that the time-averaged exposure during each interval is acceptable. The actual exposure time allowed during any given interval would have to be determined by use of the appropriate averaging time specified in the guidelines (six minutes for occupational exposure).

In addition to time-averaging, other means are available for controlling exposures in occupational or controlled environments. These include reducing or shutting off power when work is required in a high RF area.

RECOMMENDED SIGNS FOR EXPOSURE AREAS

Standard radiofrequency hazard warning signs are commercially available from several vendors. They incorporate the format recommended by the American National Standards Institute (ANSI). U.S. vendors of RF warning signs and hazard signs include:

National Association of Broadcasters (800-368-5644)

EMED Co., Inc. (800-442-3633)

Richard Tell Associates (702-645-3338)

