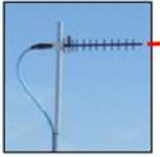


Types of Antenna and Beam Patterns



Yagi

- Narrow beam in one direction
- Never walk in front – Walk under or behind antenna



Panel

- Pie-sliced RF pattern from face
- Walk behind or under
- Obey signage, maximize distance



Whip

- Emits RF in all directions
- Obey signage, maximize distance



Microwave

- Concentrated beam of RF energy
- NEVER walk in front
- Walk under or behind antenna



Can Enclosure

- Contains whip or panel antennas
- Maintain distance when possible

General RF Safety Practices

When working in an area with antennas:

- Read and obey ALL signs
- Never enter into areas where signage, barriers, or demarcation indicates that RF levels are above the MPE for general population without a RF monitor.
- Maximize distance from antenna.
- Minimize time near antennas. If you must pass close, keep moving!
- Stay above, below, or behind main beam of directional antennas.
- Never touch any metallic object in the direct vicinity of an active antenna.
- Personnel with medical devices (such as pacemakers) must not work near antennas without first consulting personal physician.
- Maintain appropriate clearance from roof edge.
- Contact carriers to shut down antenna if your work is within a posted RF area.
- Permission from carrier must be received to power down any antenna. Verizon Wireline personnel are not permitted to power down any antenna directly; the carrier is to do this.



Employee Job Aid

RF Safety When Working Near Transmitting Antennas

Use this Job Aid to refresh your understanding the Verizon safety practices to be used to minimize personal exposure when working near transmitting antennas.

verizon✓

BE SAFE
SMART • AWARE • FOCUSED • EQUIPPED

RF Safety Practices

Without RF Monitor

- Uncertain level of exposure
- Use general RF safety practices
- Obey all signage
- Maintain exposure below FCC General Population Exposure Levels

With RF Monitor

- Precisely monitor RF exposure
- Can control exposure levels by backing away
- Maintain exposure below FCC Occupational Exposure Levels (MPE)

Signage

Hazard Severity



Notice

RF energy may exceed General Population Exposure Levels



Caution

RF energy may exceed Occupational Exposure Levels



Warning

RF energy may exceed 10 X Occupational Exposure Levels

Informational



RF General Safety Guidelines

General practices when working around RF transmitting equipment



NOC Information

Contact information of NOC or carrier for information or to shut down antenna

Operating Narda S3 RF Monitor

- Depress On/Off Button
- Unit goes through self-check
- Ready to use!

Wear the S3 on the upper body, with the black sensor facing outwards. Attach to shirt pocket, lanyard, or harness.

RF Safety Procedures with a Monitor

1. **Approach work area near antenna slowly**
2. **Monitor Alarm 1 may go off as RF exceeds 20%**
3. **When Alarm 2 begins to sound, slow approach further and monitor not only the current RF levels, but the %MPE (your exposure level)**
4. **If the %MPE exceeds 80%, back away immediately from the RF source**
5. **You may attempt to approach the antenna again after 10 minutes**
6. **If levels exceed 80% on the second attempt, the antenna must be shut down before proceeding with work.**

Contact NOC to arrange for shut down

For Verizon antennas, contact the

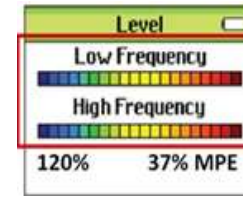
VZW NOC: 1-800-264-6620

For other carriers, contact the NOC or antenna owner as posted at the site.

Note: Verizon Wireline personnel are not to power down any antennas directly.

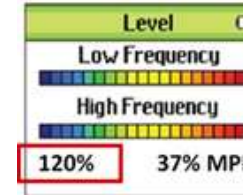
Monitor Display

Visual indicator of the RF field strength



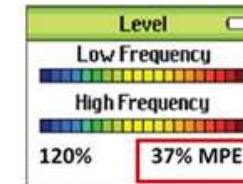
- Low - 50 kHz to < 1 GHz
- High – RF fields >1 GHz

Current strength of RF field



- % of Occ. Exposure Limit
- Updated every second
- Activates alarms

Average RF exposure - last 6 minutes



- % Of Occ. Exposure Limit
- Is what you base decisions on to back away from RF source

Alarms

Different audible alarms activate according to the current RF level

Alarm 1 – sounds at 20% of the FCC Occupational Limit

- Equal to General Population Limit

Alarm 2 - sounds at 100% of the FCC Occupational Limit

Monitor Notes

- Measures RF fields from 100 kHz to 50 GHz
- Keep 8 inches away from conductors
- Displays “Out of Calibration” during start-up if past calibration date. Notify your management when recalibration date is approaching.