

Exposure to Radio Frequency Electromagnetic Fields

STANDARD



Contents

1	Introduction	3
2	Requirements	3
3	RF EMF Procedure	4
4	Training	5
5	Personal Protective Equipment	5
6	Medical Fitness and Response	6
6.1	Medical Implants.....	6
6.2	Suspected Overexposures.....	6
7	Local Risk Assessment and Planning	7
8	Monitoring and Review	7
9	References	7
10	Change information	8

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1 Introduction

This standard describes the minimum requirements for working in areas where exposure to Radio Frequency (“RF”) Electro Magnetic Field (“EMF”) may occur on Ericsson contracted business to ensure that the Health and Safety aspects are properly managed.

2 Requirements

The following requirements shall apply:

- the limits in applicable national regulations on occupational exposure to RF EMF shall be applied (“Exposure Limits”). If no specific national limits exist, the International Commission on Non-Ionizing Radiation (ICNIRP) guidelines shall be used;
- if the RF EMF exposure is exceeding the relevant Exposure Limits, relevant antennas shall be switched off or the power shall be reduced, as deemed necessary;
- relevant project managers, employees and contractors (“Employees”) shall be familiar with the applicable safety requirements including relevant customer and/or network provider information;
- work with defective cabling and connectors associated with a transmitter in operation shall never be performed as these may lead to excessive exposure levels;
- RF cables or connectors associated with a transmitter in operation shall never be disconnected;
- Employees shall follow the specific rules dealing with optical emissions;
- Employees shall avoid having their eyes near un-terminated or damaged waveguides;
- warning signs and instructions on site shall be followed;
- only trained Employees shall carry out RF EMF exposure measurements; and
- all RF EMF measurement instruments used shall have a current certificate of calibration available with the unit.





3 RF EMF Procedure

During the planning phase and before commencement of any work on site:

- project managers, engineers or other contractors engaged to conduct site surveys must identify any instance where it is necessary to have an assessment of RF EMF exposure carried out in advance of work commencing;
- in situations where information about the boundary within which the Exposure Limits may be exceeded (“Compliance Boundary”) is not available, every effort shall be made to obtain such information from the network operator, if not forthcoming then an RF EMF survey shall be made before any work commences; and
- the site owner, network provider, operator and/or Ericsson shall provide all other relevant local safety requirements.

Before entering a base station or antenna site, Employees shall

- review the local risk assessment;
- ensure they acquaint themselves with the up-to-date technical and safety information.

When accessing and while being present on a site, the following shall apply:

- all relevant RF EMF sources in the immediate vicinity of the work location and access routes, and their Compliance Boundaries, shall be identified;
- no work shall be carried out within the Compliance Boundary (exclusion zone) of a live antenna transmitting at full or unknown power levels. When work has to be performed in this zone, e.g. directly in front of a directional antenna, the power shall be reduced or relevant transmitter(s) shall be switched off as per local network operator’s outage procedure;
- no waveguide or feeder to any antenna shall be opened while the relevant transmitter is powered-on; and



- if RF EMF exposure level and Compliance Boundary information is not available, a field monitor shall be used which covers the frequency range of the radio services at the visited site. In such cases, the following shall apply:
 - where a personal monitor alarm has been triggered or a meter shows a value exceeding the exposure limits, work shall be suspended until the actual RF field strength can be confirmed by a more accurate measurement survey;
 - as RF EMF exposure levels from base station antennas vary in time, the field shall be constantly monitored, unless the measured levels are significantly below the limits (e.g. more than 10 dB) at the work location.

4 Training

Employees involved in radio work such as management, installation, commissioning, maintenance operations and rigging shall have received training in the area of RF EMF. Such training shall include but not be limited to:

- Exposure Limits and guidelines;
- how to determine the exposure levels and interpret available Compliance Boundary information;
- relevant equipment training; and
- actions to be taken in case of suspected overexposure.

The training provided shall validate the knowledge of the course participants at the end of the training.

5 Personal Protective Equipment

Handheld or body worn personal monitors (e.g. NARDA Nardalert Personal Monitor) shall be used to ensure that the RF EMF exposure is not exceeding the Exposure Limits in the following cases:

- when information about RF EMF exposure levels and compliance boundaries are not available;
- for situations of uncertainty such as for borderline cases; or
- when other measures can not be applied to ensure that the RF EMF exposure is not exceeding the safety limits.



Personal monitors should be re-calibrated according to intervals specified by the manufacturer. Evidence of such calibration shall, when used, always be available with the monitor.

The manufacturer's instructions supplied with a monitor shall be followed at all times during the site visit.

6 Medical Fitness and Response

6.1 Medical Implants

Employees with active medical implants, as per examples below, shall seek medical advice from their doctor prior to work in areas with RF exposure levels exceeding general public RF EMF exposure limits:

- heart pacemakers;
- insulin pumps;
- passive metal plates such as those used to repair broken bones

If needed, the responsible manager shall make sure that specific safety arrangements are made. Without the above analysis, Employees with active medical devices shall not enter areas above general public exposure limits.

6.2 Suspected Overexposures

In case of suspected exposure above the Exposure Limit, Ericsson shall be notified and the incident shall be investigated by the responsible manager.

Since the Exposure Limits include wide safety margins (typically a factor of 10 for occupational exposure), and the exposure levels shall be determined over a specified time (typically six minutes), very high RF EMF levels for longer periods are needed to cause any health effects and symptoms.

If symptoms are present, a medical doctor shall be consulted to determine the reasons and relevant treatment.



7 Local Risk Assessment and Planning

A site risk assessment shall be conducted on all sites to identify if RF EMF levels may exceed Exposure Limits. The local risk assessment shall form part of the standard site survey.

The following people may be at risk for RF EMF exposure exceeding Exposure Limits:

- employees involved in installation and maintenance of radio equipment;
- rigging staff who carry out work at microwave and (RF) sites;
- general staff in the close vicinity of live antennas.

8 Monitoring and Review

The responsible manager shall monitor adherence to this standard by reviewing and keeping:

- incident statistics;
- records of all Employees who have received RF EMF training;
- records of RF EMF assessments; and
- records of calibration of RF EMF monitors and meters.

9 References

- [1] [ICNIRP Guidelines](http://www.icnirp.de/documents/emfgdl.pdf) -
<http://www.icnirp.de/documents/emfgdl.pdf>
- [2] [General information on Radio Waves and Health](http://www.ericsson.com/pl/thecompany/sustainability_corporateresponsibility/conducting_business_responsibly/health) -
http://www.ericsson.com/pl/thecompany/sustainability_corporateresponsibility/conducting_business_responsibly/health



10 Change information

Revision	Description
A	Initial release