

## Installation Instruction

### Health and Safety Precautions

Observe all cautions and warnings listed in this section



A High leakage current ground (earth) connection to the Power Supply Subrack is essential before connecting the supply.



Laser radiation. Risk of eye injury in operation. Do not stare into the laser beam; do not view the laser beam directly or with optical instruments.



High frequency radiation in operation. Risk of health hazards associated with radiation from the antenna(s) connected to the unit. Implement prevention measures to avoid the possibility of close proximity to the antenna(s) while in operation.

### Property Damage Warnings



Due to power dissipation, the power supply units may reach a very high temperature if not properly ventilated. Do not operate this equipment on or close to flammable materials.



ESD precautions must be observed. Before commencing maintenance work, use the available grounding (earthing) methodology to connect ESD protection measures.



Keep operating instructions within easy reach and make them available to all users.



Only license holders for the respective frequency range are allowed to operate this unit.



Read and obey all the warning labels attached to the unit. Make sure that all warning labels are kept in a legible condition. Replace any missing or damaged labels.



Make sure the unit's settings are correct for the intended use (refer to the manufacturer product information) and regulatory requirements are met. Do not carry out any modifications or fit any spare parts, which are not sold or recommended by the manufacturer.

### Equipment Symbols with CE Compliance

Table 2-2 identifies the CE markings used on ION-E hardware and defines what these markings mean, including required user compliance.

Table 2-2. CE Compliance Labels

| Symbol   | Meaning                                                                                                                                                                                        |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①        | Alert sign to R&TTE<br>To be sold exclusively to mobile operators or authorized installers - no harmonised frequency bands, operation requires license.<br>Intended use: EU and EFTA countries |
| C € 0700 | Indicates conformity with the R&TTE directive 1999/5/EC certified by the notified body no. 0700.                                                                                               |

## FCC and IC Standards

Notice: For installations that have to comply with FCC/Industry Canada requirements:

### English

This device complies with FCC Part 15. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of the Health Canada's requirement. Information can be obtained at [http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio\\_guide-lignes\\_direct-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct-eng.php).

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

### French

Cet appareil est conforme à FCC Partie 15. Son utilisation est soumise à Les deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

Cet appareil est conforme avec Santé Canada Code de sécurité 6. Le programme d'installation de cet appareil doit s'assurer que les rayonnements RF n'est pas émis au-delà de l'exigence de Santé Canada. Les informations peuvent être obtenues:

[http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio\\_guide-lignes\\_direct-fra.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct-fra.php)

Les changements ou modifications non expressément approuvés par la partie responsable de la conformité pourraient annuler l'autorité de l'utilisateur à utiliser cet équipement.

La ou les antennes utilisées avec cet émetteur doivent être installées avec une séparation d'au minimum 20cm avec toute personne et ne doivent pas être co-localisées ou utilisées avec toute autre antenne ou tout autre émetteur.

### For a Class A digital device or peripheral.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to EN55022 and part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



This is class A equipment. This equipment can cause radio interference in domestic areas. In this case the operator can be asked to start preventive action.

## FCC RF Exposure Requirements

For installations, which have to comply with FCC RF exposure requirements, the antenna selection and installation must be completed in a way to ensure compliance with those FCC requirements. Depending on the RF frequency, rated output power, antenna gain, and the loss between the repeater and antenna, the minimum distance D to be maintained between the antenna location and human beings is calculated according to this formula:

$$D_{[cm]} = \sqrt{\frac{P_{[mW]}}{4 * \pi * PD_{[mW/cm^2]}}}$$

where

- P (mW) is the radiated power at the antenna, i.e. the max. rated repeater output power in addition to the antenna gain minus the loss between the repeater and the antenna.
- PD (mW/cm<sup>2</sup>) is the allowed Power Density limit acc. to 47 CFR 1.1310 (B) for general population / uncontrolled exposures which is
  - f (MHz) / 1500 for frequencies from 300MHz to 1500MHz
  - 1 for frequencies from 1500MHz to 100,000MHz

RF exposure compliance may need to be addressed at the time of licensing, as required by the responsible FCC Bureau(s), including antenna co-location requirements of 1.1307(b)(3).

## EMC Standards

- For installations that have to comply with European EN50385 exposure compliance requirements, the following Power Density limits/guidelines (W/m<sup>2</sup>) according to ICNIRP are valid:
  - 2 for frequencies from 10 MHz to 400 MHz
  - f (MHz) / 200 for frequencies from 400 MHz to 2 GHz
  - 10 for frequencies from 2 GHz to 300 GHz
- This unit complies with European standard EN60950.



This is NOT a CONSUMER device. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.



This is NOT a CONSUMER device. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. You MUST register Class B signal boosters (as defined in 47 CFR 90.219) online at [www.fcc.gov/signal-boosters/registration](http://www.fcc.gov/signal-boosters/registration). Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

## Mounting Cautions



Attach all CAP Ls securely to a stationary object as described in this installation guide.



Do not mount a passive-cooled CAP L (that is, does not have a Fan Kit) in a wall-mounted orientation with the fins running horizontally; this results in a reduced maximum operating temperature of 35°C (95°F).



Only a CAP L with a Fan Kit can be ceiling mounted. A CAP L without a Fan Kit cannot be ceiling mounted due to thermal constraints when the fins are pointed downward.



To maintain proper ventilation, keep at least 76 mm (3-inch) clearance around the CAP L. Do not stack CAP Ls on top of each other. Always mount the CAP L with the face containing the mounting holes against the mounting surface.



If a passive-cooled CAP L is floor mounted, the CAP L requires a minimum 203.2 mm (8-inch) clearance above the unit.



The installation site must be able to bear the weight of the CAP L; see [Table 7-5 on page 90](#).

## General Installation Safety Requirements

Follow all of the installation cautions listed below and in ["Mounting Cautions" on page 95](#).



Wet conditions increase the potential for receiving an electrical shock when installing or using electrically powered equipment. To prevent electrical shock, never install or use electrical equipment in a wet location or during a lightning storm.



This system is a RF Transmitter and continuously emits RF energy. Maintain a minimum 8-inch (20 cm) clearance from the antenna while the system is operating. Whenever possible, shut down the RAN before servicing the antenna.



Do not remove caps from any of the connectors until instructed to do so.



A CAP L with a Copper Interface and External DC Power and a CAP L with a Copper Interface and Power Cat 6A Cable are not designed for outdoor installations. However, the antenna to which the Copper Interface units attach can be outdoors as long as suitable lightning-protection devices are used at the antenna site.

## Guard Against Damage from Electro-Static Discharge



Electro-Static Discharge (ESD) can damage electronic components. To prevent ESD damage, always wear an ESD wrist strap when working with the CAP L and when handling any of its components. Connect the ground wire on the ESD wrist strap to an earth ground source before touching the CAP L or any of its components. Wear the wrist strap the entire time that you work with the CAP L and its components.

*Table 7-5. Maximum CAP L Installation Weights\**

| CAP L Configuration                                                                                                                                                                                                                                                | No Fan Kit |       | With Fan Kit |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|--------------|-------|
|                                                                                                                                                                                                                                                                    | kg         | lbs.  | kg           | lbs.  |
| with Flat Mounting Bracket                                                                                                                                                                                                                                         | 10.98      | 24.20 | 11.47        | 25.28 |
| with 240W AC/DC Power Supply Kit                                                                                                                                                                                                                                   | 13.95      | 30.75 | 14.44        | 31.83 |
| with Power Supply / Hybrid Fiber Mounting Kit                                                                                                                                                                                                                      | TBD        | TBD   | TBD          | TBD   |
| <p>* This is the maximum weight that must be supported when lifting a CAP L for installation. It is also the maximum weight that the installation site must be able to support. This weight does not include the weight of the external cables and connectors.</p> |            |       |              |       |