

Maximum Permissible Exposure (MPE) Compliance Statement for SpotCell 100 (800MHz) Adaptive Repeater

The SpotCell 100 (800 MHz) A/B equipment has been tested and the performance characterized in accordance with the MPE requirements of CFR 47, Part 1.1310, RF radiation exposure limits and Industry Canada's requirement of RSS-102, Section 3, Permissible SAR (Specific Absorption Rate).

The System is a low power adaptive repeater, having integral antennas built into the SCU and DDU modules. At the maximum operating frequency of 894MHz the MPE limit for the General Population/Uncontrolled Exposure is 0.6mW/cm² as given by CFR 47, Part 1.1310, table 1. The SpotCell 100 (800MHz) complies with this limit at the following line of sight distances from the antenna element:

DDU : 11.5cm
SCU : 1.15cm

The analysis is provided below.

For the general uncontrolled population the Maximum Permissible Exposure (MPE) limit is given by $F/1500$ mW/cm², where F is the maximum operating frequency in MHz, giving a limit of 0.6mW/cm².

The prediction methods provided are based on worst-case far-field calculations;

$$S = EIRP/(4\pi R^2),$$

Where S is power density at a distance R from the radiating element, in mW/cm².

EIRP is the radiated power in mW (milliWatts).
R is the distance in cm.

Using this calculation, for the DDU of EIRP = 1000mW (30dBm)

$$S = 0.6\text{mW/cm}^2.$$



EIRP = 2000mW.

R = 11.5cm

The User Manual, which also incorporates the installation instructions includes a warning statement on page (i) of the document under the heading "Important Safety Information". The warning instructs the installer to ensure the DDU is mounted in a location where people will not approach within 1meter of the front of the unit. This distance provides additional safety margin for the product.

For the SCU

S = 0.6mW/cm²

EIRP = 10mW

R = 1.2cm

The integral radome on the SCU provides a separation of 1.37cm from the antenna at the center so that no warning statement is required for this module.

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