

FCC

The F3N_NF module is designed to be installed into fixed pieces of civil engineering monitoring equipment and not used as a portable device.

For the purpose of this calculation a maximum antenna power of 8 dBm is used, which exceeds that measured at the antenna port during the compliance testing, and provides an additional margin

According to FCC part 15 §1.1310 the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled Exposure from equipment operating in the frequency range 1500 – 100,000 MHz is 1.0 mW/cm².

Following installation and commissioning, the safe distance from the antenna is the greater of:

20cm

Or

r cm, where $r = \sqrt{PG/4\pi S}$

P: power input to antenna(s) in mW

G: numeric gain of antenna relative to isotropic radiator

S: power density in mW/cm² = 0.60 mW/cm² (from module calculation)

The safe distance from the antenna shall be the greater of:

20 cm or $\sqrt{PG/4\pi S}$

Worst case values are:

P = 6.3 mW (8 dBm)

G = 2.18 (3.4 dBi)

So, safe distance

$$r = \sqrt{(6.3 * 2.18) / (4 * 3.142 * 1.0)}$$

$$r = 1.04 \text{ cm}$$

So, 20 cm is a suitable safe distance

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According to clause 6.6, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

For 2400 MHz, this limit of $1.31 \times 10^{-2} f^{0.6834}$ W = 2.67W EIRP

The module has a maximum transmit power of 6.3 mW with an antenna gain of 2.18 (linear)

This maximum EIRP of 13.8 mW is << the exemption limit of 2.67 W, so the device is exempt from routine evaluation