



technology that matters

Groenlo, 13 September 2015

Declaration on radiation safety standard conformance

Return address: PO Box 6, 7140 AA Groenlo, The Netherlands

American Certification Body
Certification Department
6731 Whittier Avenue, Suite C110
McLean, Virginia 22101
USA

We, N.V. Nederlandsche Apparatenfabriek "Nedap", declare that the following product:

Description : Long-range vehicle and driver identification tag operating on 433 MHz and 13.56 MHz
This calculation is for the 433 MHz part.
FCC ID : CGDBOOSTER10
Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand : Nedap
Model : SMARTCARD BOOSTER ULTIMATE

The measured field strength at 433 MHz is 72.59 dBµV/m @ 3 m distance.

$$E_{lim} = 20 \times \log_{10}\left(\frac{\sqrt{30P_{lim}}}{d}\right) + 120$$

Where:

E_{lim} = electric field strength limit, in dB (µV/m)

P_{lim} = EIRP limit, in watts

d = measurement distance, in meters

$$72.59 = 20 \log_{10}\left(\frac{\sqrt{30P_{lim}}}{3}\right) + 120 \gggg - 47.41 = 20 \log_{10}\left(\frac{\sqrt{30P_{lim}}}{3}\right) \gggg - 2.371 = \log_{10}\left(\frac{\sqrt{30P_{lim}}}{3}\right)$$

$$0.0043 = \frac{\sqrt{30P_{lim}}}{3} \gggg P_{lim} = 6 \mu W$$

has a rated RF power of 6 µW, which means that the worst case prediction of power density (100% reflection) at 20 cm distance (worst case) can be calculated as follows:

$$S = \frac{EIRP}{4 * \pi * R^2} \quad (\text{power density without reflection})$$

$$S = \frac{2^2 * EIRP}{4 * \pi * R^2} \quad (\text{power density with 100\% reflection})$$

$$S = \frac{2^2 * EIRP}{4 * \pi * R^2} = \frac{0.006mW}{\pi * (20cm)^2} = 0.005 \mu W/cm^2 \quad (\text{Limit} = 457 \mu W/cm^2)$$

Yours Sincerely

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