

RF Exposure / MPE Calculation

No. : 13565967H
Applicant : silex technology, Inc.
Type of Equipment : PCI Express Half mini card WLAN module
Model No. : SX-PCEAN2
FCC ID : N6C-SXPCEAN2

silex technology, Inc. declares that Model: SX-PCEAN2 complies with FCC radiation exposure requirement specified in the FCC Rule 2.1091 (for mobile).

RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided with the “SX-PCEAN2” as calculated from (B) Limits for General Population / Uncontrolled Exposure of TABLE 1- LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) of §1.1310 Radiofrequency radiation exposure limits.

[WLAN (2.4 GHz) part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P =$ 70.53 mW (Maximum average output power)

☒ Time average was used for the above value in consideration of 6-minutes time-averaging

☐ Burst power average was used for the above value in consideration of worst condition.

$G =$ 1.585 Numerical Antenna gain; equal to 2dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S =$ 0.02224 mW/cm²

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[WLAN (5 GHz) part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P =$ 50.64 mW (Maximum average output power)

☒ Time average was used for the above value in consideration of 6-minutes time-averaging

☐ Burst power average was used for the above value in consideration of worst condition.

$G =$ 2.455 Numerical Antenna gain; equal to 3.9dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S = 0.02473 \text{ mW/cm}^2$

Even taking into account the tolerance, this device can be satisfied with the limits.

The host device is equipped with two SX-PCEAN2 WLAN modules, which transmit simultaneously. There is no other simultaneous transmission.

Compliance for simultaneous transmission are shown by the following calculations.

Therefore, if WLAN 2.4 GHz and WLAN 2.4 GHz transmit simultaneously,

$$\begin{aligned} S &= 0.02224 \text{ mW/cm}^2 + 0.02224 \text{ mW/cm}^2 \\ &= 0.04448 \text{ mW/cm}^2 \end{aligned}$$

Therefore, if WLAN 2.4 GHz and WLAN 5 GHz transmit simultaneously,

$$\begin{aligned} S &= 0.02224 \text{ mW/cm}^2 + 0.02473 \text{ mW/cm}^2 \\ &= 0.04697 \text{ mW/cm}^2 \end{aligned}$$

Therefore, if WLAN 5 GHz and WLAN 5 GHz transmit simultaneously,

$$\begin{aligned} S &= 0.02473 \text{ mW/cm}^2 + 0.02473 \text{ mW/cm}^2 \\ &= 0.04946 \text{ mW/cm}^2 \end{aligned}$$

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