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MPE Calculation for Sonata NP30 - OET Bulletin 65

FCC ID: YKBNP3001

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from a device to the body of a user.

The transmitter operation for the Sonata NP30 covers the 2.4GHz WIFI operating band.

The following FCC Rule Parts are applicable:

Part 1.1310 – Radiofrequency radiation exposure limits
Part 2.1091(c) – Radiofrequency radiation exposure evaluation: mobile devices

The MPE calculation as given in FCC OET Bulletin 65, page 19 is used to calculate the safe operating distance for the user.

$$S = EIRP/4 \pi R^2$$

Where S = Power density

EIRP = Effective Isotropic Radiated Power (EIRP = P x G)

P = Conducted Transmitter Power

G = Antenna Gain (relative to an isotropic radiator)

R = distance to the centre of radiation of the antenna

Transmitter frequency range = 2402MHz to 2480MHz

Max. measured conducted transmitter power (802.11b) = 17.2dBm (52.5mW)

Specified antenna gain = +3dBi (x2)

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MPE Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of FCC Rule Part 1.1310 for 2402 – 2480MHz

S = 1.0 mW/cm^2

Calculation for 20cm safe distance with 3dBi stated antenna gain

Values:

P = 52.5mW

G = 2.0

R = 20cm

S = PxG/4 π R^2

S = 52.5x 2/(12.56 x 20^2) mW/cm^2

= 105/ 5024

S = 0.021 mW/cm^2

Conclusion

The MPE value of the Sonata NP30 at 20 cm meets the 1.0 mW/cm^2 RF exposure limit.