

MPE (Maximum Permissible Exposure)
Engineering analysis of a low power WLAN Transceiver,

Equipment description: 2.4GHz / 5GHz WLAN miniPCI card
Brand name: Intersil
Model number: ISL39000M
FCC ID: OSZ39000M1

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Introduction

This engineering analysis was done according to FCC part 15.247 (b) (4) as part of the FCC certification requirements for spread spectrum devices.

The measured EIRP values for the lowest, middle and highest TX channel were used for the MPE calculations based on FCC OET Bulletin 65 and supplements A, B, and C. These calculations were done in worst case mode, assuming 100% reflection of incoming radiation, resulting in a potential doubling of predicted field strength and a four-fold increase in (far-field equivalent) power density (S).

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

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

with R = 20 cm (8 inches)

Calculation results

Table 1 below shows the Power density (S) results for the lowest, middle and highest TX channel:

2.4 GHz mode					
Measured EIRP (mW) Incl. antenna gain (1dBi)			Calculated worst case Power Density S (mW/cm ²)		
Ch 1	Ch 6	Ch 11	Ch 1	Ch 6	Ch 11
169.8	169.8	134.9	0.14	0.14	0.11

5 GHz mode					
Measured EIRP (mW) Incl. antenna gain (1dBi)			Calculated worst case Power Density S (mW/cm ²)		
Ch 36	Ch 52	Ch 64	Ch 36	Ch 52	Ch 64
61.7	70.8	72.4	0.05	0.06	0.06

Table 1: Power density (S) calculations

Conclusion

Based on these calculations and using the limits of the general population / uncontrolled environment (which is 1.0 mW/cm² at 2.4 GHz and 5 GHz), the Intersil low power spread spectrum transceiver does not exceed the MPE requirements set forth in documents above, with a minimum safe distance between antenna and operator of 20 centimeters (8 inches).

The equipment therefore fulfills the requirements on power density for general population / uncontrolled exposure and therefore complies with the requirements of FCC Part 15.247(b)(4) and FCC OET Bulletin 65 incl. supplements A, B, and C.