Engineering analysis of a low power DSSS spread spectrum Transceiver,

Brand name: NoWiresNeeded,
Model numbers: WB-S1100 and WB-C1100,
FCC ID: OGD10310308

According to requirements of :

FCC part 15.247 (b) (4),

FCC OET Bulletin 65 “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields “ and supplements A, B and C.

Date: April 3, 2001
Author: D.S. Sariredjo, Intersil Corp. Netherlands

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 per antenna assembly, TX channel and bit rate combinations 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).

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

$$S = \frac{(2)^2 EIRP}{4\pi R^2}$$ (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 tested antenna assembly, TX channel and bit rate combinations:

Antenna assembly	Bit rate (Mbps)	Measured EIRP (mW)			Calculated worst case Power Density S (mW/cm^2)		
		Ch 1	Ch 6	Ch 11	Ch 1	Ch 6	Ch 11
SLH10	**1.0**	95.7	141.6	162.6	0.08	0.11	0.13
	2.0	98.0	141.6	162.6	0.08	0.11	0.13
	5.5	98.0	141.6	162.6	0.08	0.11	0.13
	11.0	98.0	141.6	166.4	0.08	0.11	0.13
SLH12	**1.0**	158.9	269.8	235.0	0.13	0.21	0.19
	2.0	162.6	269.8	235.0	0.13	0.21	0.19
	5.5	162.6	269.8	235.0	0.13	0.21	0.19
	11.0	162.6	269.8	240.5	0.13	0.21	0.19
QUAD3	**1.0**	11.2	19.5	15.9	0.01	0.02	0.01
	2.0	11.5	19.5	15.9	0.01	0.02	0.01
	5.5	11.5	19.5	15.9	0.01	0.02	0.01
	11.0	11.5	19.5	16.3	0.01	0.02	0.01

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/cm^2 at 2.4 GHz), the NoWiresNeeded low power spread spectrum transceivers do 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.