Engineering Analysis MPE for 2.4 GHz Transceiver

FCC ID: RAR20000001
BelAir Networks

This analysis was performed as part of the FCC certification requirements for spread spectrum devices, according to the requirements of: FCC part 15.247 (b) (4), and FCC OET Bulletin 65 "Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields".

The measured transmit power values and worst-case maximum antenna gain for the bottom, middle, and highest transmit channel were used for the MPE calculations. Calculations were performed based on FCC OET Bulletin 65. The calculations are performed based on the following formula provided in OET 65:

$S = EIRP / (4\pi R^2)$.

For R = 20 cm (8 inches)

Channel	Transmit Power [dBm]	Maximum antenna gain [dBi]	Maximum EIRP [dBm]	Maximum EIRP [mW]	Calculated worst-case Power Density [mW/cm^2]
1	24.4	8.5	32.9	1949.9	0.39
6	25.5	8.5	34.0	2511.9	0.50
11	26.5	8.5	35.0	3162.3	0.63

This calculation is a worst-case analysis since it assumes the device is continuously transmitting. The device utilizes the 802.11 WLAN protocol which operates in time-division duplex (TDD) mode, so the transmit duty cycle can never be 100% in normal operation.

Based on these calculations and using the limit for general population/uncontrolled environment of 1.0 mW/cm^2 at 2.4 GHz, the BelAir Networks DSSS transceiver does not exceed the MPE requirements set forth in documents above, with a minimum safety distance between antenna and operator of 20 cm (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.

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