
IEEE P802.11
Wireless LANs

**Proposed Part 18 Language for Limit on In-band Radiated
Emissions for RF Lighting Devices**

Date: November 12, 1998

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Abstract

As a result of a motion passed in plenary session on Monday, a subcommittee was formed to review the proposed limit put forward by Part 15 interests on in-band emissions for RF lighting devices operating in the 2.45 GHz ISM band. In order to be successful, the proposed limit must strike a workable balance between the competing interests the promoters of RF lighting and Part 15 interests. The current proposal by Part 15 interests proposes a limit of 20 mV/meter, but it does not stipulate whether this is a peak or average limit. The subcommittee recommends wording which specifies the proposed limit as a peak field strength ~~power~~ limitation.

Background

Since the November meeting, several companies have submitted letters and visited the FCC expressing opposition to adoption of the Notice of Proposed Rule Making regarding *Amendment of Part 18 of the Commission's Rules to Update Regulations for RF Lighting Devices, ET Docket 98-42*. Adoption of the amendment as proposed in the Notice would have allowed the use of RF lighting devices having no limit on RF emissions in the 2.45 GHz ISM band.

These devices use the same type of magnetrons which are installed in consumer microwave ovens. These magnetrons typically produce between 1.4 kW and 5.0 kW of RF energy centered in the 2.45 GHz ISM band. Even modest leakage levels could result in significant levels of interference for WLAN's operating in this band. As written, the language in the Notice would have levied no regulatory requirement compelling manufacturers of these devices to use adequate shielding.

As a result of the efforts of many companies expressing concern over the impact of this ruling on Part 15 users, the Commission is urging interested parties to meet and attempt to work out a mutually agreeable limit on emissions. This was a significant development, since Part 18 devices (such as RF lighting) are considered the primary users of the band.

A proposal for a limit on in-band emissions for RF lighting devices has been put forward by interested parties which manufacture Part 15 equipment. The proposed limit has been endorsed by the following entities:

1. The Bluetooth Promoters (Ericsson, IBM, Nokia, Intel, and Toshiba)
2. Harris Corporation
3. Metricom, Inc.
4. Symbol Technologies, Inc.
5. 3COM
6. Part 15 Coalition

Current Proposed Regulatory Language:

Section 18.305(c) presently limits out-of-band emissions for RF lighting devices. The additional language in the current proposal on in-band emissions is marked with a double underscore.

Section 18.305 Field Strength Limits

- (a) Except as otherwise provided, ISM equipment operating on a frequency specified in Section 18.301 is permitted unlimited radiated energy in the band specified for that frequency.

[Renumber Section 18.305(c) as Section 18.305 (c)(1) and add this new Section 18.305 (c)(2)]

- (2) Within the bands specified in Section 15.247, the field strength limits for RF lighting devices, measured at 3 meters, shall not exceed 20 mV/meter.

Subcommittee Recommendation

Pursuant to the resolution adopted in plenary session on Monday, January 11, the subcommittee has reviewed the above limit. This limit corresponds to an EIRP of approximately -10 dBm. While this level of interference is significant, we feel it represents a reasonable balance of the competing interests. However, we are of the opinion that a clarification is required regarding the proposed limit. The subcommittee recommends a change to the proposed wording of Section 18.305 (c)(2) to stipulate that the 20 mV/meter limit is a peak field strength-~~power~~ limitation, rather than an average field strength-~~power~~ limitation. The recommended changes to the proposed limit are shown in *bold italics*. Recommended text reads:

- ~~(3)(2)~~ Within the bands specified in Section 15.247, the *peak* field strength limits for RF lighting devices, measured at 3 meters, shall not exceed 20 mV/meter.~~meter peak envelope power.~~