

Before the Federal Communications Commission
Washington, D.C. 20554

In re the petition of)
)
Wireless Communications Association) RM-11104
International, Inc.)

VIA the ECFS

Comments of IEEE 802

IEEE 802¹ hereby respectfully offers its Opposition to the Petition for Rulemaking (the “Petition”) in the above-captioned Proceeding.²

The members of the IEEE 802 that participate in the IEEE 802 standards process are interested parties in this proceeding. IEEE 802, as a leading consensus-based industry standards body, produces standards for wireless networking devices, including wireless local area networks (“WLANs”), wireless personal area networks (“WPANs”), and wireless metropolitan area networks (“Wireless MANs”).

IEEE 802 is an interested party in this Proceeding and we appreciate the opportunity to provide these comments to the Commission. The 802.15.3c (“the Standard”) is a project that was formed in March 2005 and has the charter of developing a 60 GHz Wireless Personal Area Network (“PAN”) alternate Physical Layer standard-based on the IEEE Std 802.15.3-2003.

As we stated in our previous correspondence, dated August 5, 2005 regarding this petition, the past decade has seen considerable success in increasing the bandwidth from the core of a network to the home and the enterprise. However, the bandwidth in the home and the enterprise is inadequate or non-existent to support the new generation of applications such as high definition television (“HDTV”) connectivity, video gaming and file transfer. These applications will require data rate from 500 Mbps to over 2 Gbps. The Standard, which will be in full compliance with the Part 15.255 rules, will foster the development of semiconductor devices, software and equipment to fill this need.

¹ The IEEE Local and Metropolitan Area Networks Standards Committee (“IEEE 802” or the “LMSC”)

² This document represents the views of the IEEE 802. It does not necessarily represent the views of the IEEE as a whole or the IEEE Standards Association as a whole.

In that previous correspondence we indicated that we were having discussions with the Wireless Communications Association International (WCAI) and other parties in regard to the WCAI's petition for rulemaking. As a result we requested that the FCC hold in abeyance action on WCAI's petition pending the outcome of those discussions. Those discussions have concluded and IEEE 802 would like to report on the outcome. The WCAI proposal (RM-11104, filed September 30, 2004) comprised three parts:

1. Change the method of specification for the maximum radiated power to append a paragraph to Part 15.255(b)(1) to include the following in bold type below:

”(1) For products other than fixed field disturbance sensors, at least one of the following limits must be met:

- (i) The average power density of any emission, measured during the normal transmit interval, shall not exceed 9 uW/cm^2 , as measured 3 meters from the radiating structure, and the peak power density of any emission shall not exceed 18 uW/cm^2 , as measured 3 meters from the radiating structure.
- (ii) **The average EIRP of any transmitter, measured during the transmit interval, shall be limited to the value of 82 dBm reduced by a factor of 2 dB for every dB that the transmit antenna far field gain is less than 51 dBi.”**

This language would allow the use of EIRP as an additional method of measuring power radiated. This change in measurement methodology is unnecessary, but IEEE 802 understands that it is meant to insure that any power density measurement be made in the far field radiation path of an antenna. To make such a measurement in the near or transitional field would produce inconclusive, un-repeatable and probably incorrect results. Therefore, a consensual conclusion was reached that if any change were made to the language it should embrace the notion of far field measurement. IEEE 802 has no views on in this matter about EIRP vs. power density, so long as the far field condition is met.

Conclusion: IEEE 802 can agree on this point: measurements need to be specified in the far field.

2. The second part of the changes suggested by WCAI's petition is the increase in allowed power:

“(ii) The average EIRP of any transmitter, measured during the transmit interval, shall be limited to the value of 82 dBm reduced by a factor of 2 dB for every dB that the transmit antenna far field gain is less than 51 dBi.”

IEEE 802 has strong objections to this portion of the petition. IEEE 802 was able to show from first principles that the possibility of severe interference in low-power, indoor wireless PAN links could result from the large increase in the amount of power requested in this part of the proposal.

After much discussion, and several presentations to IEEE 802.15.3c, as well as presentations to the WCAI Subcommittee on Spectra Above 40 GHz, the WCAI agreed to modify the language in this second part of its proposal to the following:

“(ii) The average EIRP of any *outdoor* transmitter with a *directional antenna directed towards an outdoor receiver*, measured during the transmit interval, shall be limited to the value of 82 dBm reduced by a factor of 2 dB for every dB that the transmit antenna far field gain is less than 51 dBi. *Equipment vendors shall supply installation guidelines to installers, that installers shall be responsible for following, that would typically limit the resulting power densities at the surfaces of all nearby window surfaces to be no more than 150 nW/cm².*”

The concession on the part of the WCAI to limit such transmitters to outdoor installations and to take into consideration the power densities that fall on exterior window surfaces was a significant step in the right direction. However, IEEE 802’s calculations led to the conclusion that 150 nW/cm² was still a sufficiently amount of power to exceed noise floors being build into systems that are being designed for indoor use. A PAN received in the field of view of a LOS transmission would cause enough additional noise as to be troublesome to most systems. Therefore, IEEE 802 proposes to modify the text as follows;

“(ii) The average EIRP of any outdoor transmitter with a directional antenna directed towards an outdoor receiver, measured during the transmit interval, shall be limited to the value of 82 dBm reduced by a factor of 2 dB for every dB that the transmit antenna far field gain is less than 51 dBi. *However, in no case shall the signal received inside a building, resulting from an outdoor transmitter closer than 200 meters, be greater than 15 nW/cm².*”

IEEE 802 felt that the burden placed on installers was not impractical and simply further complicates an already complicated specification. We were unable to reach agreement on this final modification. WCAI felt that they needed the higher levels of power in order to insure operation of their system; IEEE 802 felt that this level was at least high by an order of magnitude.

Conclusion: the parties involved have not reached agreement on this part of the petition.

3. The petition requested the deletion of Part 15.255(i)(3) (see bold type below).

(i) For all transmissions that emanate from inside a building, within any one second interval of signal transmission, each transmitter with a peak output power equal to or greater than 0.1 mW or a peak power density equal to or greater than 3 nW/cm², as measured 3 meters from the radiating structure, must transmit a transmitter identification at least once. Each application for equipment authorization must declare that the equipment that will be used inside a building contains the required transmitter identification features and must specify a method whereby interested parties can obtain sufficient information, at no cost, to enable them to fully detect and decode this transmitter identification information. Upon completion of decoding, the transmitter identification data block must provide the following fields:

1. FCC Identifier, which shall be programmed at the factory.
2. Manufacturer's serial number, which shall be programmed at the factory.
3. **Provision for at least 24 bytes of data relevant to the specific device, which shall be field programmable. The grantee must implement a method that makes it possible for users to specify and update this data. The recommended contents of this field is information to assist in contacting the operator.**

Conclusion: IEEE 802 is in agreement on this part of the WCAI petition. Field programmability, especially for consumer devices that might operate in this portion of the spectrum, would place an onerous burden on the untrained consumer.

In conclusion, IEEE 802 believes that we have discussed this issue to a point of reaching some common ground, with one issue still the subject of disagreement. IEEE 802 does not believe further discussions would be productive. Moreover, IEEE 802 remains convinced that the approach endorsed by IEEE 802.18 in their comments filed with the Commission on August 5, 2005, is the correct approach.

Respectfully submitted,

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