LETTER TO
IEEE 802 Sponsor Executive Committee (SEC)

Letter of Concern to the

IEEE 802 Sponsor Executive Committee (SEC)

Date: September 30, 1999

From:

The undersigned, all members of the HomeRF Consortium

Summary

This letter is in response to one of two letters, currently being considered by the IEEE 802 SEC (Sponsor Executive Committee), from IEEE 802.11 to the FCC regarding FCC NPRM 99-231. The comments apply equally to another letter already written by 802.11b and sent to the FCC as representing the 325,000 members of the IEEE.

This letter suggests that the proposed letters regarding wide channel bandwidth frequency hopping are both procedurally and technically flawed and should not be filed with the FCC.

IEEE 802.11 in its PAR (Project Authorization) is not authorized to develop positions or lobby the FCC on matters which affect all users of the 2.4 GHz ISM band in question. The issues being commented upon have wide implications for a variety of equipment types. Within the IEEE there is a range of opinion on the issues raised in FCC NPRM 99-231. The letters for 802.11 represent the concerns of one commercial interest. By supporting these letters the IEEE lends its aid to one commercial interest over other competing interests.

The balloting on the letters violates the balance requirements of the IEEE-SA By-Laws and Operations Manual. These letters were approved by a working group created for a different purpose. When this new work item was raised there was not review of balance amoung interested and materially affected parties. Moreover, when additional parties requested participation it was denied them. Thus a balloting group created for a different purpose was used to approve these letters. The balloting group did not solicit participation from interested and materially affected parties or make the process available to them in violation of IEEE-SA By-Laws and the Operations Manual.

Further, the subject letters violate the scope of the IEEE EMC Society. The IEEE EMC Society is the subject expert on interference issues. There has been no coordination or review with the IEEE EMC Society on the issues raised. The core issue raised in these letters postulates that the FCC NPRM will create an inordinate interference issue. That issue should be dealt with within the IEEE EMC Society, which is the center of competence within the IEEE on interference issues.

The subject letters are technically flawed both in their premises and their analysis. The subject letters contain a great deal of technical detail. However, all of the analysis rests on hypothetical user scenarios and wide channel frequency hopping protocols of which neither is correct. Furthermore, the desciption of the equipment which is being proposed for market under the NPRM is an imaginary implementation by those that oppose the NPRM for commercial reasons and thus all analysis from this premise is irrelevant. In addition, the analysis itself if flawed in several points. Primarily the analysis fails to properly evaluate the relative merits of the factors that will determine the mutual interference between equipment types in actual field deployment. These technical shortcomings only serve to underscore that these position have been developed without the benefit of council from the IEEE's own subject matter experts.

The primary appeal of this letter is that the IEEE not file any comments in FCC NPRM, but rather remain neutral and allow the various commercial interests to debate the issue directly.

Note that the IEEE's prudent decision to avoid filing these comments will in no way prevent these comments from reaching the FCC. The individual companies that dominate the 802.11b PAR can file and are filing the same substantial comments. Many of these same companies have formed a commercial industry association, the Wireless Ethernet Compatibility Alliance, which can and will also file these comments to the FCC as a collective entity of experts. The FCC will have full disclosure of the technical merits pro and con on this issue from two commercially-motivated sides without having one side co-opting the IEEE to enhance their credibility.

Recognize also that one letter of opposition on this subject has already been sent to the FCC under sanction of the IEEE 802. This letter contained, amongst other distortions, the blatantly commercial recommendation that the proposed rules were unnecessary because the IEEE802.11b protocol could already satisfy all wireless home networking needs (in their unbiased opinion).

Furthermore, an additional letter is recommended. By this additional letter the full range of opinion within the ranks of the IEEE will be documented for the FCC. There is a range of valid technical opinion within the IEEE and it is unrealistic to expect members of the IEEE to ignore the commercial interests of their companies. At a minimum the IEEE should equally recognize that there are multiple valid technical opinions and not misrepresent the letters to the FCC as those of a completely neutral technical body.

The proposed additional letter allows the IEEE to give equal recognition to all valid views. In addition only an action such as this allows the possibility for the IEEE to lead the important dialogue in the coming years regarding how the increasingly crowded 2.4 GHz ISM band should best be managed. Without recognizing this valid range of opinion, the IEEE exposes itself to criticism as an organization that protects the interests of active members in one narrow field rather than a neutral technical body.

Recommendations

By this letter the HomeRF consortium and the undersigned recommend that the newest letter opposing wide channel frequency hopping to the FCC, currently being considered by the IEEE 802 SEC (Sponsor Executive Committee) not be filed.

We further request at a minimum that the attached additional letter be simultaneously submitted, in order to properly document the range of valid technical opinion within the IEEE.

Procedural Flaws

The proposed letters have been developed in a manner that is procedurally flawed and in violation of IEEE SA By-Laws.

I. The Proposed Letters Exceed the Scope and Authorization of 802.11

IEEE By-Laws call for open process and the opportunity for inclusion of all materially affected and interested parties. In order to facilitate this fundamental doctrine of fairness and also aid the orderly work of the IEEE SA committees are given specific scopes when their projects are authorized. Project task groups are carefully reminded not to exceed the scope of their project authorization. IEEE 802.11 current has 3 open PARs. Most relevant to this issue are the PARs for .11b and .11d. The PAR for .11b states:

> To develop a higher speed PHY extension to 802.11 operating in the 2.4 GHz band.

In the attached addendum is the statement:

> Radio Spectrum Availability
>
> The proposed extensions will operate in the already allocated 2.4 GHz ISM band, in which 802.11 is already defined.
>
> IEEE P802.11 will correspond with regulatory bodies worldwide in order to try to assure that the proposed extension will be applicable geographically as widely as possible.

Clearly the only contact with regulatory bodies sanctioned is for the purpose of assuring that the proposed extension will be applicable. From this PAR there is no reason for those interested in other equipment types operating in the band to believe that they should participate in this activity.

The .11d PAR gives as its scope:

> This supplement will define the physical layer requirements (channelization, hopping patterns, new values for current MIB attributes, and other requirements to extend the operation of 802.11 WLANs to new regulatory domains (countries).

It further states under purpose:

> The current 802.11 standard defines operation in only a few regulatory domains (countries). This supplement will add the requirements and definitions necessary to allow 802.11 WLAN equipment to operate in markets not served by the current standard.

Again nothing in the .11d PAR would alert others to the kind of action represented in these letters.

The final active PAR is for the 5 GHz band and clearly does not apply to the current letters.

Thus the letters under consideration exceed the project authorization for 802.11 and thus should not be accepted.

II. Balance Requirements of the IEEE-SA By-Laws and Operations Manual were violated

The IEEE-SA By-Laws state in their scope:

> When appropriate, the IEEE-SA will cooperate with standardizing groups throughout the world in t he preparation of standards involving an area of interest within the scope of the IEEE. Approval of a standard by the IEEE-SA signifies that the IEEE believes the document to be consistent with good engineering practice and that it represents a consensus of representatives from materially affected industries, governments, or public interests.

The subject letters were developed in a hasty and prejudicial manner and failed to address the requirements for balance amoung "materially affected" parties.

The IEEE-SA Standards Board Operations Manual states in section 5.4.1:

> The balloting group shall provide for the development of consensus by all interests significantly affected by the scope of the standard. This is achieved through a balance of such interests in the balloting group membership. Balance is defined as the avoidance of dominance by any single interest category.

The same section later reads:

> Sponsors are required to classify the relationship of each member of the balloting group relative to the scope of standards activity (for example, producer, user, and general interest). Where appropriate, additional classifications, such as "public safety" or "academic," should be considered. This decision should be based on the effect the standard may have on participants not already recognized by the primary classifications. ORs are classified in relation to the interests of their organization. IEEE-SA members who are individuals are classified based on their technical background, which may be related to their employment, job functions, or experience. Except for the general-interest category, no group (classification) may constitute 50% or more of the balloting group membership. Care shall be taken to assure that all classes of interest are represented to the extent possible.

These letters were produced and approved by a group which violates these requirements for balance. Furthermore, there is no balloting level provided in which all parties can participate and voice their opinion.

The operating procedures of 802 require attendance at two of the last four plenary meetings in order to have voting rights. No letters to the FCC on this issue where introduced until the July plenary meeting. The letters were then approved at the next meeting, in September. No effort was made to include other material affected parties. When some parties expressed interest in participating in this process they were denied voting rights.

These letters were first introduced in July. At the September interim meeting a delegation from HomeRF came to discuss their concerns. They were denied the right to vote on the first day of these meetings. Based on this action others interested in these issues cancelled plans to come to the 802.11 interim meeting.

On the last day of the 802.11 interim meeting the Chair of the IEEE EMC Society Standards Development Committee requested that this committee be allowed to participate in the deliberations on these letters. He was told that the balloting group was closed and no new additions would be made. Thus the current letters have been introduced in such a way as to prevent materially affected and interested parties from participating in the process. Not only was HomeRF denied participation but the IEEE's own EMC Society was denied involvement.

III. The Current FCC Letters are Unlike Previous Letters

It has been said that 802.11 has a history of submitting letters to the FCC. This allegation only partially presents the case. Under its original PARs 802.11 was required to coordinate its standards and other products with a number of other IEEE Societies and entities. Most, if not all, previous letters were developed in this period of wider distribution and review. When the new PAR was submitted in 1997 802.11 removed most of the required coordination, having found it burdensome. This removal was not challenged in the approval process. Thus the degree of review and coordination is fundamentally different today than that which existed in the past.

The IEEE has an EMC Society with a very active membership of experts in the area of interference and Electromagnetic Compatibility. In these letters 802.11 is dealing in an area which clearly is the technical center of the EMC Society. The current letters primarily deal with topics concerning electromagnetic compatibility of devices operating in the 2.4 GHz band. This topic should properly be refered to the EMC Society for disposition.

IV. Summary

In summary the current letters are procedurally flawed because:

- they exceed the project authorization of 802.11,
- they violate the balance requirements of the IEEE-SA By-Laws and Operations Manual,
- they were developed in haste and in a manner which prevented involvement by other interested parties, even when those parties sought to cooperate in the 802.11 process they were denied access,
- they infringe the jurisdiction of the IEEE EMC Society.

ANNEX - Technical Flaws

This annex is provided to give an overview of the technical criticism of the subject letters. It is not a complete or detailed review but an overview only. The proposed letters have technical flaws and should not be filed because they are technically inaccurate.

I. Presuppositions Flawed

The analysis developed in these letters rests on certain suppositions. However, these suppositions do not reflect the proposal of HomeRF for equipment to be marketed under the proposed wider bandwidths of the FCC NPRM. The detailed analysis which follows from these flawed suppositions is not so much wrong as irrelevant.

The analysis fails to acknowledge any fall-back modes. However, HomeRF, like IEEE 802.11, requires that equipment fall-back in the face of interference. However, the HomeRF fall-back requirement results in reduced specral density. The IEEE 802.11b method, by contrast does not reduce spectral density.

The analysis assumes that equipment built by wideband frequency hopping manufacturers will behave in a certain manner and have certain implementation characteristics. But the specific people making these suppositions are fundamentally opposed to wideband frequency hopping in advance for commercial reasons. The many equipment manufacturers who do plan to build wideband frequency hopping equipment will be using different techniques than assumed by 802.11.

Additional technical items were presented to 802.11 by HomeRF and have not been technically addressed. The HomeRF presentation is attached with this letter and is also available at the IEEE 802.11 WEB site.

No analysis is valid if it begins from flawed premises. The analysis underlying these letters is errant on several significant points and thus analyzes a situation which will not exist.

II. The Need for Relevant Comparison

The analysis underlying these letters is flawed in that it fails to provide relevant comparisons in order to provide context. Overcrowding of any equipment type in any frequency band will eventually cause mutual interference. Indeed only a limited number of IEEE 802.11 systems, or any other equipment types, can interoperate within a small area. The question should not be will increased spectral utilization result in mutual interference. The question should be does the proposal of the NPRM create an inordinate interference scenario relative to other alternatives. In failing to provide comparitive data the analysis makes itself irrelevant.

For example, in the 802.11's analysis of a 5 MHz wide, 10 Mb/s, 200 mW FSK interferer on existing frequency hopping devices, a relevant comparison point would be the interference of a 20 MHz wide, 11 Mb/s, 1000 mW 802.11b interferer which is legal under existing FCC regulations. A neutral technical evaluation body may well find that the FCC's initiative for wideband frequency hopping is not the key interference concern for existing users of the band.

III. Boundaries are Not Logically Established

In any EMC problem there is a shared responsibility between the emitter and the receptor. Repeatedly, through history, EMC problems have been solved by limiting radiators within certain limits and then requiring potential victim equipment to maintain a corresponding degree of immunity to interference. EMC problems are regularly resolved by the proper alignment of emissions and immunity.

Another approach commonly applied is the use of a shared spectrum etiquette. In some frequency bands sharing of the spectrum is provided by a mutually implemented system of frequency sharing.

These classic methods of dealing with interference issues are not explored in the IEEE 802.11 letters. These failures in the analysis bring into serious question the conclusions reached.

Conclusions

For the reasons cited, both procedural and technical the HomeRF consortium and the supporters of this letter request that the IEEE 802.11 letters opposing wide channel bandwidth frequency hopping not be submitted to the FCC. We believe the IEEE serves an extrodinarily valuable role as a neutral technical body when solutions beneficial to all parties can be developed.

However, while we find the reasons presented here to be compeling, we recognize the SEC may take a different view. Furthermore one letter of opposition with blatant commercial bias has already been filed with the FCC. Thus, we request that at a minimum the attached letter be additionally sent. This letter merely documents the range of opinion within the IEEE and that the letters sent previously were written by one finite set of opinions. This simple public acknowledgement allows the IEEE to remain neutral and not be used by any side as they pursue their proprietary commercial interests regarding this proposed rulemaking.

Respectfully Submitted by the following Members of HomeRF:

Breezecom
Intel
Micrilor
Motorola
Proxim
Siemens ICP

September 29, 1999

Magalie R. Salas, Esquire
Secretary
Federal Communications Commission
445 12th St. SW
Washington DC 20554

Re: ET Docket No. 99-231

Dear Ms. Salas:

IEEE 802, the LAN/MAN Standards Committee ("the Committee"), is writing in regard to ET Docket No. 99-231: Amendment of Part 15 of the Commission's Rules for Spread Spectrum Devices. On August 19, 1999, the IEEE 802.11 Committee submitted comments in this proceeding expressing opposition to the proposed rules changes that would allow wider channels for FHSS systems as described in the Notice of Proposed Rule Making (the "Notice") in this proceeding. Since that time IEEE 802 has become aware of a wider range of technical opinion on the issues at hand both within its own ranks and in the IEEE in general. IEEE 802 accordingly files this letter to notify the FCC of the full range of valid technical opinion within the IEEE.

The Institute of Electrical and Electronics Engineers, Inc. (IEEE) is a USA-based international professional organization with more than 325,000 members representing a broad segment of the computer and communications industries. The members of the IEEE represent a very broad range of technical and commercial interest. Accordingly, in a matter such as that represented in FCC ET Docket No. 99-231, there is a range of professional opinion within the ranks of the IEEE membership. The earlier letter represents the views of those that wrote it but not necessarily the consensus view of the entire IEEE.

During the meetings in which IEEE 802.11 developed its letters on this subject there were technical presentations that arrived at conclusions contrary to the majority of that committee and were in fact generally in support of the proposed rulemaking. In the dialogue which has followed it has become evident that there exist a respected body of technical experts who generally support the NPRM as well as oppose it. In some cases the reasons for these difference are that time has not allowed for experimental verification of the competing theoretical analyses. In addition, some of the standards which will govern equipment marketed under the new rules have not been finalized. The IEEE plans to actively support the technical investigation into all important issues surrounding spectral management in the 2.4 GHz ISM band. Those deliberations will continue by the IEEE's open process and the results will certainly be made available to the Commission, as they become available. However, the IEEE recognizes that the FCC will ultimately use its own good judgement to decide on the merits of each side of these issues and the IEEE encourages the FCC to rule on the matter in a timely manner.

Respectfully,

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cc:

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