

IEEE 802.18

Radio Regulatory Technical Advisory Group
Homepage at <http://www.ieee802.org/Regulatory/>

August 13, 2002

To: Ms. Marlene H. Dortch, Esq.
Secretary
Federal Communications Commission
236 Massachusetts Ave., NE, Suite 110
Washington, DC 20002

From: Carl R. Stevenson
Chair, IEEE 802.18 Radio Regulatory Technical Advisory Group
4991 Shimerville Road
Emmaus, PA 18049
(610) 965-8799
carl.stevenson@ieee.org

Dear Ms. Dortch:

Please find attached the *Reply Comments of IEEE 802.18 in ET Docket No. 02-98*.

Should you have any questions regarding this filing, please feel free to contact me.

Respectfully submitted,

/s/

Carl R. Stevenson
Chair, IEEE 802.18 Radio Regulatory TAG
4991 Shimerville Road
Emmaus, PA 18049
(610) 965-8799 (Home Office)
(610) 570-6168 (Cellphone)
carl.stevenson@ieee.org

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of)	
)	
Amendment of Parts 2 and 97 of the)	ET Docket No. 02-98
Commission's Rules to Create a Low)	RM-9404
Frequency allocation for the Amateur Radio)	
Service)	
)	
Amendment of Parts 2 and 97 of the)	RM-10209
Commission's Rules Regarding an Allocation)	
of a Band near 5 MHz for the Amateur Radio)	
Service)	
)	
Amendment of Parts 2 and 97 of the)	RM-9949
Commission's Rules Concerning the Use)	
Of the 2400-2402 MHz Band by the)	
Amateur and Amateur-Satellite Services)	

To the Commission:

REPLY COMMENTS OF IEEE 802.18 IN ET DOCKET NO. 02-98

IEEE 802.18¹ hereby offers its reply comments on the Notice of Proposed Rulemaking ("the NPRM") in the above-captioned Proceeding. IEEE 802² and its members that participate in the IEEE 802 standards process are interested parties in this proceeding for two principal reasons:

- ?? 1) The NPRM proposes to elevate the Amateur Radio Service from a Secondary allocation status to Primary status in the 2400-2402 MHz band and also to establish a Primary allocation for the Amateur Satellite Service in the same band.
- ?? 2) The band in question is also widely utilized by rapidly increasing millions of devices, based on a number of IEEE 802 standards³, that are authorized under Part 15 of the Commission's rules.

These reply comments are timely filed and we appreciate the opportunity to offer them.

¹ The IEEE 802.18 Radio Regulatory Technical Advisory Group

² The IEEE 802 Local and Metropolitan Area Network Standards Committee ("IEEE 802" or the "LMSC")

³ The IEEE 802.11b, 802.11g, 802.15.1, 802.15.3, and 802.15.4 standards all currently use, or are targeted to soon use, the 2.4 GHz Part 15 bands.

INTRODUCTION

1. In the NPRM, the Commission, in response to a Petition for Rulemaking (“the Petition”) from the American Radio Relay League (“ARRL”), proposes to upgrade the allocation for the Amateur Radio Service from Secondary status to Primary status and to add a Primary allocation to the Amateur Satellite Service in the 2400-2402 MHz band in Parts 2 and 97 of its rules.⁴

2. IEEE 802.18 reiterates the concerns and recommendations previously expressed in the Comments of IEEE 802 in this Proceeding⁵ and expands thereon in response to the Comments of others.

THE COMMISSION HAS AN OBLIGATION TO BALANCE THE PUBLIC INTEREST VALUE OF PART 15 DEVICES TO MANY TENS OF MILLIONS OF USERS AND THE ECONOMY AS A WHOLE AGAINST THE INTERESTS OF A DISPROPORTIONATE MINORITY OF AMATEUR RADIO USERS OF THE 2.4 GHz BAND

3. We note that at least two of the principal commenters question the propriety of the Commission’s recognition, in the NPRM, this band is important to unlicensed applications, that there is widespread deployment of Part 15 devices, and that the removal of such devices would not be feasible. The Commission’s request for comment on whether the proposed primary amateur and amateur-satellite service allocations would conflict with unlicensed use of the band has also been questioned.^{6,7,8}

⁴ See the NPRM, at 49.

⁵ See the Comments of IEEE 802 in ET Docket No. 02-98

⁶ See the NPRM, at 50.

⁷ See the Comments of the ARRL, at 24.

⁸ See the Comments of CQ Communications, Inc., at 25-27.

4. Without presuming to lecture the Commission, our understanding is that the Commission's first mandate is to regulate the use of the radio frequency spectrum "*in the public interest, convenience, and necessity.*" We believe that this mandate should be, and most often is, the primary driving force behind the Commission's rules and actions. Ultimately, it points beyond the current status quo of what is "licensed" vs. "unlicensed," and "who has what allocation status at the moment." The Commission's present rules and the present domestic table of allocations derive from the Commission's view at some time in the (perhaps relatively distant) past as to what use of the spectrum best served the public interest, convenience, and necessity *for the foreseeable future at that time.*

5. As the Commission is well aware, with technology advancing rapidly, new services and types of communications devices have emerged. This has changed the "landscape" of which uses of the spectrum provide the most public interest value. The result requires re-evaluation of spectrum usage and, often, more consideration of spectrum sharing, or the relative priorities of sharing amongst, services and/or applications.⁹

THE PUBLIC INTEREST BALANCE BETWEEN PART 15 USAGE AND AMATEUR USAGE IN THE 2.4 GHz BAND, AND OTHER BANDS SHARED BETWEEN PART 15 USERS AND AMATEUR USERS, IS CLEAR AND UNDENIABLE

6. We find it significant that, of the approximately 234 Comments filed in this Proceeding as of the filing deadline, most of those from the amateur community appear to focus entirely on either the proposed low frequency allocation to the Amateur Radio Service (at approximately 135 kHz) or the proposed high frequency allocation (near 5 MHz), or both, with only a small fraction of amateurs and amateur organizations specifically and substantively addressing the proposed allocations at 2.4 GHz.

⁹ To that end, the Commission has recently established a Spectrum Policy Task Force tasked with exploring new spectrum policy alternatives.

7. We believe that this is noteworthy as an indicator of the relatively low percentage of the amateur population that actually uses the 2.4 GHz band (*or even has equipment capable of operating in that band*),¹⁰ something we believe the Commission must consider in balancing the interests of Part 15 users against those of amateur users and in evaluating the public interest balance between the two communities' interests and uses of the band.

8. We are confident that the Commission is aware of the emerging proliferation of “freenets” or “community networks” in the 2.4 GHz band that employ equipment operating in accordance with the increasingly ubiquitous IEEE 802.11b standard. We would observe, both from casual study of relevant internet websites and from the personal observations of individual licensed amateurs within the IEEE 802 standards community, that amateur licensees are often the technical force behind many of these networks, but that the networks themselves, *virtually without exception*, operate under Part 15 of the Commission's rules, not under the Commission's Part 97 rules for the Amateur Radio Service.¹¹

9. Furthermore, the IEEE 802.15.1 standard (also known as Bluetooth™)¹² has begun to proliferate, with the expectation that several billion devices built according to that standard will be fielded in the next few years.

¹⁰ As the Commission knows, the number of licensees in the Amateur Radio Service in the United States is slightly more than 650,000, whereas business, industrial, educational, health care, government, and home users of Part 15 devices numbers well into the tens of millions of devices and this number is growing almost exponentially. Because only a small percentage of amateur licensees use the 2.4 GHz band under Part 97 of the Commission's rules, amateur use of this band represents a very disproportionate minority compared to Part 15 use.

¹¹ There are several reasons for this. First, under Part 97, only licensed amateurs could legally use such networks. Additionally, under Part 15, three non-overlapping channels are available, while in the portion of the band available under Part 97 only one usable non-overlapping channel would be available. Additionally, operation under Part 97 imposes content restrictions and prohibitions on using encryption techniques to secure computer-computer communications that do not apply to Part 15 operations. These factors make operation under Part 15 much more attractive and useful than operation under Part 97.

¹² “Bluetooth” is a Trademark of the Bluetooth Special Interest Group, Inc.

10. Additionally, impending IEEE 802 standards such as 802.11g, 802.15.3, and 802.15.4 are targeted to use the 2.4 GHz band and will add significantly to the number of Part 15 devices operating in that band in the coming years.

11. Historical usage patterns, spectrum requirements studies, and market projections all clearly indicate that there will be a similar imbalance between Part 15 uses and amateur uses of all of the shared bands above 902 MHz. This is only logical given the limited number of amateurs, relative to society as a whole,¹³ compared to the huge numbers of members of society that are or will be users of Part 15 devices.

12. Thus, we believe that a reasonable evaluation of the public interest value of Part 15 devices, coupled with a reasonable evaluation of actual amateur use of the bands that are shared with Part 15 devices above 902 MHz, will clearly demonstrate that the public interest would best be served by recognizing the importance of Part 15 operations in the bands above 902 MHz, compared with the relative lack of use of those shared bands by the amateur community, and accordingly justifies providing protection to Part 15 devices commensurate with their relative value to society as a whole.

13. We therefore reiterate our recommendation that the Commission establish a “Safe Harbor” provision for Part 15 devices in the 2.4 GHz band and all bands above 902 MHz that are shared between Part 15 devices, the Amateur Radio Service, and the Amateur Satellite Service.¹⁴ If this recommendation exceeds the scope of the instant NPRM, we again urge the Commission to expeditiously issue a Further Notice of Proposed Rulemaking in the Proceeding, seeking further comment thereon.

¹³ The number of licenses amateurs in the US constitutes a small fraction of a percent of the total population.

¹⁴ See the Comments of IEEE 802 in ET Docket No. 02-98, at 19-22.

WE DO NOT SUGGEST THAT THE COMMISSION SHOULD WITHDRAW THE AMATEUR ALLOCATIONS ABOVE 902 MHz THAT ARE SHARED WITH PART 15

14. Despite the overwhelming public interest benefits of Part 15 devices, we are not suggesting, nor have we ever suggested, that any amateur allocations in shared bands above 902 MHz should be withdrawn.

15. On the contrary, we believe that sharing between the amateur community and the Part 15 community is eminently technically feasible given technically and operationally realistic usage plans for those shared bands in light of the realities of current and expected Part 15 uses.

16. Finally, with respect to any potential impact of sharing between Part 15 devices and amateur uses in shared bands, we would observe that the public safety aspects of the Amateur Radio Service would not be compromised because the vast majority of such amateur operations are conducted in the bands below 450 MHz, where a much higher percentage of amateurs actually operate.

AGAIN, SHARING BETWEEN THE AMATEUR COMMUNITY AND THE PART 15 COMMUNITY IN THE 2.4 GHZ BAND COULD BE GREATLY ENHANCED BY SIMPLY LIMITING AMATEUR SATELLITE USE OF THE BAND TO DOWNLINK OPERATION

17. We also reiterate our recommendation that, should a formal allocation to the Amateur Satellite Service be established, it should be limited to the use of the subject band in the Space-Earth (“downlink”) direction only.¹⁵ As pointed out in our Comments, this would result in a much more favorable sharing scenario between the amateur satellite use of the band because it would preclude a sensitive amateur satellite uplink receiver from being subjected to the aggregate energy from the total population of Part 15 devices, which the Commission acknowledges already are deployed in large numbers and cannot be feasibly removed.¹⁶

¹⁵ See the Comments of IEEE 802 in ET Docket No. 02-98, at 13-18

¹⁶ See the NPRM, at 50.

18. If the subject band were restricted to use only for downlinks, the potential for interference between amateur satellite operations and Part 15 devices would be greatly reduced, since, because of the low transmit powers of Part 15 devices and the propagation characteristics in the subject band, only Part 15 devices located in very close proximity to the limited number of amateur earth stations would present any realistic possibility of interference. Furthermore, due to amateur earth stations' use of directional antennas aimed at the satellite, in the vast majority of operational situations Part 15 devices will be in the sidelobes of such amateur receiving stations' antennae patterns, even further reducing the probability of interference from Part 15 devices to amateur satellite earth station receivers.

SUMMARY AND CONCLUSIONS

19. Amateur use of the bands shared with Part 15 uses above 902 MHz is very sparse, whereas Part 15 users number in the tens of millions and Part 15 use is growing almost exponentially.

20. We believe that the Commission has an obligation to re-evaluate and balance the public interest value of Part 15 devices against the that of the disproportionate minority of amateur users in the 2.4 GHz band (and, more broadly, in all of the bands above 902 MHz that are shared between Part 15 devices, the Amateur Radio Service, and the Amateur Satellite Service), in the context of the realities of today and the foreseeable future, rather than on the basis of decisions made in the past, due to dramatic changes in the usage of these bands.

21. We believe that the public interest balance between Part 15 usage and amateur usage in the 2.4 GHz band, and other bands above 902 MHz that are shared between Part 15 users and amateur users, is clear and undeniable and justifies a "Safe Harbor" provision for Part 15 devices.

22. We **do not** suggest that amateur allocations in the shared bands above 902 MHz should be withdrawn because we believe that sharing between Part 15 uses and amateur uses is quite feasible, as long as the amateur community adopts technically and operationally realistic usage plans for those shared bands in light of the realities of current and expected Part 15 uses, which the Commission itself accepts cannot feasibly be removed.

23. Sharing between Part 15 uses and the Amateur Satellite Service could be greatly facilitated if amateur satellite use of the 2.4 GHz band were restricted to the Space-Earth (“downlink”) direction only.

Respectfully submitted,

/s/

Carl R. Stevenson
Chair, IEEE 802.18 Radio Regulatory TAG
4991 Shimerville Road
Emmaus, PA 18049
(610) 965-8799 (Home Office)
(610) 570-6168 (Cellphone)
carl.stevenson@ieee.org