

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

WT Docket No. 97-12

In the Matter of )  
 )  
Amendment of the Amateur Service )  
Rules to Provide For Greater Use )  
of Spread Spectrum Communication )  
Technologies )

To: The Commission

**OPPOSITION OF ARRL, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO TO PETITION FOR RECONSIDERATION OF CLEARWIRE TECHNOLOGIES, INC.**

ARRL, The National Association For Amateur Radio, (ARRL), on behalf of its members and of the more than 650,000 licensed amateur radio operators in the United States, by counsel and pursuant to Section 1.429(f) of the Commission's Rules [47 C.F.R. §97.415(f)], hereby respectfully submits its Opposition to the October 25, 1999 Petition for Partial Reconsideration of Clearwire Technologies, Inc. to the Commission's *Report and Order*, FCC 99-234, (17 Pike & Fischer Communications Regulation 130) (The Report and Order) released in this proceeding September 3, 1999.<sup>1</sup> Clearwire seeks reconsideration of portions of that Report and Order, which authorized amateur stations to make greater use of, and to experiment with, spread spectrum (SS) emission technologies.<sup>2</sup> In opposition to Clearwire's Petition, ARRL states as follows:

<sup>1</sup> Clearwire's Petition was placed on Public Notice January 14, 2000. Therefore, this Opposition is timely filed, pursuant to Section 1.429(f) of the Commission's Rules.

<sup>2</sup> Specifically, the Report and Order: (1) amended the Part 97 rules governing the Amateur Service to remove the limitation that amateur stations transmit SS emission types using only frequency hopping and direct sequence spreading techniques; (2) adopted a requirement that amateur stations use automatic transmitter power control to limit transmitter power to the minimum power necessary to maintain communications; and (3) removed the unnecessary recordkeeping and station identification requirements that apply only to amateur stations

1. The Report and Order in this proceeding was long-awaited by the Amateur community, and was based on a Petition for Rulemaking filed by ARRL on December 12, 1995, more than four years ago. No comments or reply comments were filed by Clearwire on the ARRL's Petition. The Commission issued the Notice of Proposed Rule Making in this proceeding March 3, 1997, almost three years ago. No comments or reply comments were filed in this proceeding by Clearwire in response to the Notice, though numerous others did file comments, including some Part 15 manufacturers. Frankly, Clearwire is stating its position in this proceeding more than a bit late. Nor does it offer any reason why it could not have participated earlier in this proceeding. Finally as a procedural matter, the Commission's Notice proposed, and the Report and Order adopted, essentially each and all of the regulatory changes proposed by ARRL in its petition for rule making initially. So, Clearwire cannot claim surprise in this proceeding.

2. Clearwire, a company that provides high-speed wireless Internet and other network access using Part 15 SS technology at 2.4 GHz, disclaims any intention to alter the relationship between Part 15 devices and licensed services which operate in the same bands. It "acknowledges that it must accept interference from, and may not cause interference to, a lawfully operating Amateur station".<sup>3</sup> Nonetheless, it cloaks its request that the Amateur Service be restricted in SS operations in the amateur allocations in which Part 15 devices are permitted to operate by suggesting that the requested restrictions will "facilitate enforcement of the Amateur rules in bands shared with commercial spread spectrum".<sup>4</sup> It asks: (1) that Amateur spread spectrum

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transmitting SS emissions.

<sup>3</sup> Clearwire Petition, at 2; footnote omitted.

<sup>4</sup> *Id.*, at 2.

transmitters capable of operation at powers over one watt be certificated for compliance, particularly with regard to automatic power control under Section 97.311(d); (2) that Amateur SS equipment transmit both a call sign and the telephone number of the station location or remote control point; and (3) if, in order to read the station identification, there is required an additional algorithm or other information, then the manufacturer be required to maintain instructions for decoding the station identification on a publicly accessible Internet site identified in the certification application. Equipment constructed by individual amateurs or in small quantities would be exempt from these requirements.

3. None of these requests is reasonable, and each is antithetical to the rationale for the relief provided to amateurs in the Report and Order in the first place. First of all, each of the suggested restrictions on Amateur SS operation is aimed exclusively at allowing Part 15 users to monitor amateur operation in bands allocated to the Amateur Service, and presumably to object to any amateur SS operation which, for example, does not comply with the automatic power control rule just enacted. However, Part 15 devices are entitled to no protection from allocated services, and have no interest in the operation of amateur stations, whether those stations happen to be in compliance with Part 97 rules or not. Contrary to Clearwire's assumption, these bands are not "shared" between amateurs and Part 15 devices, and it is incumbent on Part 15 manufacturers to configure their devices to perform in the presence of services with allocations in the bands in which those devices operate at sufferance. Their further obligation is to protect those allocated services from interference *from* the Part 15 devices. 47 C.F.R. §15.5(b). The Commission cannot, consistent with present rules and policy, impose restrictions on allocated services in order to protect some unestablished, speculative interest of

Part 15 manufacturers in interference avoidance from amateur stations. If Clearwire's interest is in enforcing the Part 97 amateur rules, what is its purpose? It is not protected against any amateur operation in the 2.4 GHz band or in any other amateur allocation. It mischaracterizes the status of its devices by suggesting that Part 15 devices are protected only from "lawfully operating" Amateur stations. In fact, it is not protected from interference from any "authorized radio station". Thus, it is irrelevant whether that station is operating lawfully or otherwise, as long as it is authorized to operate by the Commission.<sup>5</sup> It is suggested, therefore, that Clearwire simply has no standing to propose new, burdensome restrictions on amateur Part 97 operation relative to the enforceability of the Part 97 SS rules.

4. Clearwire devotes much of its Petition to a recitation of the public interest benefits of its wireless Internet system, and its investment in the technology, none of which is disputed by ARRL, but none of which is at all relevant to this proceeding. It claims, however, that it configured its system to account for amateur station operation in the 2.4 GHz band as such stations were configured at the time, but suggests that subsequent rule changes might threaten its system, and that therefore it has a right to ask that the public interest be considered when admitting "new kinds of licensed equipment" to the band. The argument is not well-taken. The Part 15 status of Clearwire's technology does not magically increase to a protected status merely because it chooses to deploy certain systems on bands in which licensed services operate, if new technologies are subsequently deployed in that licensed service. Tenure is not accounted for in

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<sup>5</sup> This is not to suggest that amateur stations are unconcerned about rule compliance. The Amateur Service is scrupulously regimented and strict about rule compliance. There is no reason whatsoever to believe that amateurs will not comply with the SS rules enacted pursuant to the Report and Order, and no reason to believe that there will be any enforcement problem with SS operation whatsoever.

the Part 15 rules. If Clearwire requires any degree of protection from interference from amateur operation, it should have designed its system architecture as a licensed commercial service provider, and participated in the necessary auctions for CMRS facilities necessary to provide its service on a licensed, protected basis. It is not, as it claims, a "co-user of a shared band".<sup>6</sup> Having chosen not to proceed as a licensed service, it cannot be heard now to claim that Amateur rules should be configured so as to protect their systems from possible interference.

5. Nor has any interference potential been demonstrated in Clearwire's petition. Clearwire claims that it "stands to be seriously harmed" by amateur transmitters that "violate the rules." In particular, it claims, "a Clearwire receiver trying to monitor a 190 milliwatt transmitter from 40 km away will be vulnerable to nearby Amateur equipment that fails to comply with the automatic power control requirements of Section 97.311(d)." The Commission is apparently supposed to take Clearwire at its word on that premise, because there is nothing to substantiate the claimed interference potential. Even assuming the truth of the allegation, it would not justify regulatory restrictions on amateur stations for the reasons above stated.

6. Clearwire further has no basis for suggesting that amateur stations might violate the rules adopted in the Report and Order. The Amateur Service is one of the most, if not the most, compliant radio service administered by the Commission. Clearwire's assumption, apparently, is that there is nothing wrong with the SS rules adopted in this proceeding on their face; rather, it suggests that there will be an enforcement problem, and that amateurs will not limit power in SS operations in accordance with the new rule requiring such.

7. Clearwire fails to appreciate the fact that non-SS amateur operation at 2.4 GHz

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<sup>6</sup> Clearwire Petition, at 6.

(regardless of bandwidth) is permitted at power levels up to 1.5 kW, and with *no* automatic power control requirement. 47 C.F.R. §97.313(b). While few, if any, amateur stations operate at that power level in the 2.4 GHz band, it points up the absurdity of Clearwire's current contention. Part 15 devices are not protected against interference from amateur stations at all, and cannot rely on compliance with amateur Part 97 regulations as a means of avoiding interference to their unprotected devices. The previous amateur SS rules did not require automatic power control (APC) circuitry, and the new rules are therefore, from Clearwire's viewpoint, an improvement in interference avoidance.

8. As to Clearwire's suggestion that amateur SS equipment should be subject to the Commission's equipment authorization program [apparently merely to monitor the integration of automatic power control (APC) circuitry in amateur SS equipment], the requirement is completely unjustified, and is based on pure speculation. Transmitters used in the Amateur Service have never been subject to equipment authorization, regardless of emission type, due to the obvious fact that it is essentially an experimental service, and because the development of amateur technology would be significantly deterred or stifled by such a requirement. The only amateur equipment subject to equipment authorization are external RF linear amplifiers, and that requirement was imposed to insure that they are not used by licensees in another service entirely.<sup>7</sup> Equipment authorization substantially increases the cost of equipment to amateurs, who cannot recoup the cost thereof. Without some basis for Clearwire's purely speculative assumption

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<sup>7</sup> Clearwire incorrectly states that the basis for the equipment authorization requirement for external RF power amplifiers in the Amateur Service is that such amplifiers "for amateur use"... "threaten interference to other users if designed or constructed unlawfully". The only purpose was to insure that they are configured so as to be used by amateurs, and not by Citizen's Band users, who cannot use them lawfully.

that there will be violations of the APC requirement, the additional restrictions should not even be considered.

9. Clearwire's request for burdensome station identification requirements is exactly contrary to the Commission's goal in this proceeding: to make amateur SS operation more flexible (a goal that Clearwire claims to support). The Report and Order, at paragraph 20, concerning station identification and recordkeeping, states as follows:

The basis for the station record keeping requirement was a concern that the Commission and amateur radio licensees could not monitor readily SS emissions and therefore ciphers or other prohibited messages could be transmitted by stations using SS emissions. To date, we are not aware of any instances of improper messages being transmitted by amateur stations and the record in this proceeding does not indicate to the contrary. We agree that this requirement no longer serves a useful purpose and that eliminating it is a logical outgrowth of our proposal to remove restrictions on the spreading techniques that amateur radio stations may transmit.(footnote omitted)...We see no regulatory purpose being served by requiring amateur radio stations that transmit SS emissions to keep different records than amateur radio stations transmitting any other emission type...With respect to the station identification requirement, we will revise the rule as TAPR requests...

The Commission thus permitted amateur SS transmissions to be identified by a CW or phone emission pursuant to the standard rules in Section 97. 119(b)(1) and (2). The Commission saw no need for any different station identification requirement for SS emissions than for other emission modes. Clearwire would have the Commission retreat from that requirement (without any empirical justification at all) and provide specific algorithms for Part 97 SS emission identification. By way of claimed "precedent" for this unique treatment of amateur SS stations, Clearwire cites a Part 15 regulation for identification of unlicensed devices in the 59-64 GHz band. ARRL fails to perceive the applicability of such a rule to amateur stations. The Commission specifically found in the Report and Order, at Paragraph 16, that it does "not

believe it is necessary or desirable for (it) to adopt rules, other than the automatic power control requirement, that specify or could limit methods available for resolving potential interference between amateur station transmissions and other users of these frequency bands."

10. Clearwire ultimately admits that its effort is to restrict amateur station configuration so as to avoid "untoward interference to commercial Part 15 operations in the 2.4 GHz band, including Clearwire's provision of broadband Internet access."<sup>8</sup> However, that entire issue was appropriately vetted in comments filed by Metricom, Inc. and Symbol Technologies, and the Commission found no need for regulation of the Amateur Service other than with respect to the APC requirement. Clearwire's concern that amateur equipment will be "improperly designed or constructed" is unsupported, totally without foundation, and in ARRL's view, insulting to the amateur experimenters who are developing and refining SS equipment and techniques.

Therefore, the foregoing considered, the American Radio Relay League, Incorporated respectfully requests that the Commission affirm the Report and Order adopted in this proceeding

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<sup>8</sup> Clearwire Petition, at 8.



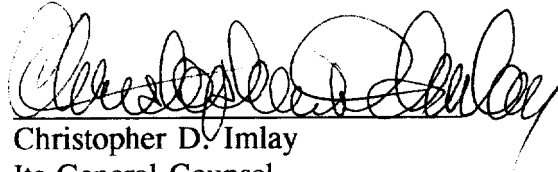
in all respects, and to dismiss the frivolous Petition for Reconsideration of Clearwire Technologies, Inc.

Respectfully submitted,

**ARRL, THE NATIONAL ASSOCIATION  
FOR AMATEUR RADIO**

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By:



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January 31, 2000

## CERTIFICATE OF SERVICE

I, Christopher D. Imlay, do hereby certify under penalty of perjury that I caused to be served, this 31st day of January, 2000, via United States Mail, postage prepaid, a copy of the "OPPOSITION OF ARRL, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO TO PETITION FOR RECONSIDERATION OF CLEARWIRE TECHNOLOGIES, INC." on the following:

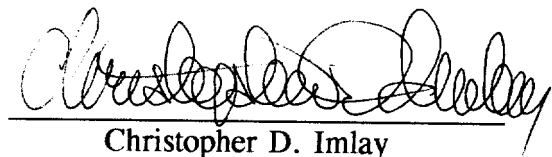
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