

Clearwire

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Marlene H. Dortch, Secretary  
Federal Communications Commission  
The Portals  
445 Twelfth Street, S.W.  
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Washington, DC 20554

**RE:** Promoting Expanded Opportunities for Radio Experimentation and Market Trials Under Part 5 of the Commission's Rules and Streamlining Other Related Rules, ET Docket 10-236

2006 Biennial Review of Telecommunications Regulations – Part 2 Administered by the Office of Engineering and Technology, ET Docket 06-155

Notice of Ex Parte Presentation

Dear Ms. Dortch:

Clearwire Corporation (“Clearwire”), a primary licensee in the 2.5 GHz band, is filing this *ex parte* to recommend remedies to a number of troubling aspects of the FCC’s existing Experimental Radio Service (“ERS”) licensing processes.<sup>1</sup> First, despite the obligation imposed on most ERS licensees to coordinate their proposed use with primary license holders, it has been Clearwire’s experience that many ERS licensees ignore or overlook this important step. The risk of harm to a primary carrier’s operations by the lack of prior coordination is compounded by the fact that if interference does occur, there is no emergency contact information required by the ERS application. Clearwire also has observed an increase in applications -- particularly ERS special temporary authority (“STA”) applications -- requesting access to spectrum for what appears to be a commercial use with no discernible research or experimental purpose. Finally, Clearwire recommends that ERS licenses be required to comply with the Commission’s discontinuance rules.

Clearwire recommends that the Commission take action to protect existing networks and customers from potential interference and restore the integrity of the experimental

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<sup>1</sup> Based on the comments filed in this proceeding, it is clear that many primary licensees have expressed similar concerns. Please note that Clearwire is a member of both Cellular Telecommunications Industry Association (“CTIA”) and Wireless Communications Association International (“WCAI”) and fully agrees with the filings made by both of those groups in this proceeding. Clearwire also supports the filings made by Qualcomm, Motorola, AT&T, Verizon Wireless, Satellite Industry Association, APCO, Telecommunications Industry Association, V-Comm, LLC and others to the extent that they demonstrate that continued coordination and consent is required to ensure that primary, incumbent licensees are not subject to harmful interference caused by secondary, experimental licensees.

licensing process by taking four steps. First, the Commission should require as a prerequisite for grant of an ERS authorization, a demonstration that the proposed experimental use has been successfully coordinated with any potentially affected primary licensees. Second, the Commission should require ERS applicants to provide emergency contact information for a person denominated to handle interference complaints. Third, the Commission should follow its existing rules and limit ERS authorizations, including STAs, to applications related to one of the permitted purposes under the ERS licensing rules. Finally, the FCC should require ERS licensees to abide by its discontinuance rules.

### I. Introduction and Background

Clearwire is one of the nation's leading providers of 4G wireless broadband network services, providing high-speed mobile Internet and residential access services, as well as residential voice services, in communities throughout the country. Clearwire operates open, Internet-Protocol ("IP") 4G wireless broadband networks in markets across the United States and Europe. These networks provide communities with high-speed residential and mobile Internet and interconnected voice over Internet protocol ("VoIP") services. Clearwire's 4G network reaches 134 million people in the U.S. and covers over 70 of the top U.S. markets. Clearwire currently markets its 4G service through its own brand called CLEAR® as well as through its 4G wholesale relationships with, among others, Sprint Nextel Corporation. Clearwire currently serves more than 1.3 million retail subscribers and more than 9 million wholesale subscribers, including all of Sprint's 4G customers. Clearwire provides these services using licensed spectrum in the 2.5 GHz band over both Broadband Radio Service ("BRS") and Educational Broadband Radio Service ("EBS") and using Part 101 Private Operational Fixed Microwave licenses.

### II. Clearwire Recommends Pre-filing Coordination of ERS Applications

Clearwire appreciates that the ERS licensing program must be supported and maintained to fuel innovation and advance technology. Clearwire agrees with the Commission that "[f]or many years, the ERS has provided fertile ground for testing innovative ideas that have led to new services and new devices for all sectors of the economy."<sup>2</sup> In fact, Clearwire has been the recipient of several ERS licenses, including one that permitted it to run important base station equipment tests regarding the next generation of 4G services.<sup>3</sup>

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<sup>2</sup> Promoting Expanded Opportunities for Radio Experimentation and Market Trials Under Part 5 of the Commission's Rules and Streamlining Other Related Rules, ET Docket 10-236, 2006 Biennial Review of Telecommunications Regulations – Part 2 Administered by the Office of Engineering and Technology, ET Docket 06-105, *Notice Of Proposed Rulemaking*, FCC 10-197, Appendix B at page 74 (rel. Nov. 30, 2010) ("*Experimental NPRM*").

<sup>3</sup> Unlike most experimental licensees who file for ERS authorization first, and coordinate with affected primary licensees later, if at all, Clearwire obtains consent of the primary licensees prior to filing its ERS application. Clearwire includes letters memorializing successful coordination and consent with its

With experience as both a primary licensee and an ERS licensee, Clearwire supports the Commission's efforts to make the ERS more streamlined and accessible. Clearwire also agrees with the Commission that the processes associated with ERS must be protective of the operations of existing, primary licensees.<sup>4</sup> To that end, most ERS licenses issued today contain conditions requiring the licensee to coordinate with primary, incumbent users in the band, and often, ERS licensees are required to obtain the primary licensee's consent before commencing operations.<sup>5</sup> Despite the obligation to coordinate ERS use with primary license holders, it has been Clearwire's experience that many ERS licensees ignore or overlook this important step. In fact, many ERS licensees with a license in hand do not seem to understand that coordination is required before they commence operations. Instead, some appear to be of the view that coordination is only required if they cause actual interference to an existing licensee's operations. This misapprehension of the coordination process by many ERS licensees creates an unnecessary risk to the operations of primary licensees and increases the potential for interruption of service to customers. Isolating the source of actual interference as it is occurring is often a complex, resource-intensive scramble to pinpoint the cause of the interference or temporarily patch the problem so that customer service is not degraded or interrupted. To avoid this problem, Clearwire vigilantly monitors OET's ERS licensing database to determine which authorizations might endanger its commercial operations and initiates coordination with the ERS licensee even though the coordination burden rightfully resides with the ERS applicant.<sup>6</sup>

So far in 2012, 37 ERS licenses have been applied for in the 2.5 GHz band, including 33 applications that propose 34 locations within five miles and 29 locations within two miles of a Clearwire base station. Of the 37 ERS applications, 20 ERS licenses were granted with a specific condition requiring coordination with primary 2.5 GHz licensees before

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application. In this way, primary licensees are fully informed of the proposed ERS use and Clearwire is confident that its experimental use will not negatively impact any primary licensee.

<sup>4</sup> Experimental NPRM at ¶ 3.

<sup>5</sup> In its Comments, Marcus Spectrum Solutions LLC requests that the Commission permit a showing of *de minimus* interference as an alternative to coordination. Comments of Marcus Spectrum Solutions, ET Docket No. 10-236 (filed Mar. 8, 2011) at 3.. Clearwire strongly opposes such a change because it would be contrary to the Commission's requirement that ERS licensees cause no interference. In addition, an ERS licensee's assessment of what constitutes *de minimus* interference to a primary licensee's network may not be sufficiently protective of existing operations. In all likelihood, the ERS licensee does not have sufficient technical information regarding a primary licensee's operations to make such a determination without coordinating directly with the primary licensee. If the threat of interference is truly *de minimus*, a pre-filing coordination process likely will be resolved very quickly.

<sup>6</sup> At times the applications are so lacking in specificity that Clearwire has to contact the ERS licensee simply to determine the nature of the proposed use. If a pre-filing coordination process is put in place, the ERS applicant will be responsible for determining which primary licenses may be affected by its proposed use.

the ERS licensee commences operations. Only two ERS licensees contacted Clearwire to coordinate their proposed use. Clearwire has attempted to contact the remaining ERS applicants, including ERS licensees that do not have a specific coordination requirement, if their proposed operations are within Clearwire's licensed area and if the proposed experimental use creates a high likelihood of interference. Under such circumstances, the ERS licensee often has already proceeded with its plans, only to learn from Clearwire that its proposed use has to be shifted to particular frequencies or otherwise adjusted to prevent harmful interference to Clearwire's commercial operations. In some cases, ERS applicants and licensees have been extremely cooperative and have immediately modified their requests to minimize interference. In other cases, however, discussions are difficult and protracted because the ERS applicant or licensee has already invested time and resources in reliance upon a spectrum use plan that is incompatible with Clearwire's operations. For example, an experimental license was recently granted to Sierra Nevada Corporation (Call Sign WF9XOH) with an effective date of May 1, 2012 proposing to test the reliability and data throughput of an air-to-ground WIMAX video link using bi-directional communications between a plane flying at an elevation of 18,000 ft. and a ground unit. It was conditioned as follows: "Licensee should get consent from existing and future Broadband Radio Service/Educational Broadband Service (BRS/EBS)." The ERS licensee never contacted Clearwire, which operates its Denver market within the geographic area of the experimental license, despite the high likelihood of interference posed by uncoordinated air-to-ground operations. Clearwire discovered the application in the ERS database on April 10 and attempted to contact Sierra Nevada Corporation. After the application was granted, Clearwire again tried to contact the Sierra Nevada which responded on April 24, less than two weeks before the ERS licensee intended to commence operations. Clearwire and Sierra worked together to determine the frequencies and geographic areas in which Sierra could operate without causing interference. However, on May 14, the Sierra notified Clearwire that it had moved the experimental operations out of state and would not need access to Clearwire's spectrum in the area. Similarly, Clearwire noticed Drexel University's application (Call Sign WG2XBX) in the EBS database proposing to construct three base stations in the middle of Clearwire's Philadelphia, PA commercial market. Drexel and a partner school had received grants in excess of \$200,000 and they were intending to conduct experiments using certain equipment that would have had a significant negative impact on Clearwire's primary operations. Fortunately, Drexel had not yet purchased the equipment so Clearwire and Drexel worked together to determine acceptable equipment, locations and operating standards that will allow Drexel to complete its research and Clearwire to maintain the integrity of its Philadelphia market.

To help the ERS process run more smoothly, Clearwire recommends that the ERS rules be revised to require that ERS applicants demonstrate that the proposed experimental use has been successfully coordinated with any affected primary licensees.<sup>7</sup> By requiring

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<sup>7</sup> Clearwire strongly opposes the Comments of BAE Systems Information and Electronic Systems Integration Inc. ("BAE") on a number of points. First, BAE suggests that primary licensees only be permitted to object to an experimental application that will cause interference to current operations. While

pre-filing coordination, the widespread failure of ERS licensees to initiate coordination would be cured and primary licensees would have some assurance that they will receive notice of proposed ERS use potentially affecting their operations. Providing potentially affected primary licensees with prior notice and the ability to comment also would provide both parties with adequate time to assess the potential for interference. In addition, ERS applicants would have greater assurance of the availability of particular frequencies and/or geographic locations, and both ERS applicants and primary licensees would be spared the time and expense of re-working band use plans at the last minute that could have been harmonized during the application process. To ensure that pre-filing coordination does not become a deterrent to realizing the important goals of ERS, the Commission could couple the requirement with a “shot-clock” rule that requires primary licensees to respond to a coordination notice within 30 days and a requirement that both parties work in good faith to successfully coordinate the ERS request.<sup>8</sup> Based on its own

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Clearwire generally agrees that consent should be required for a primary licensee’s current and not future operations, some ERS licenses are granted for a year or longer and under the Rules may be granted for up to five years. During such a lengthy time period, changes to the location and nature of a primary licensee’s service seems inevitable. Under such circumstances, the ERS licensee, which is operating on a secondary basis, cannot be permitted to stand in the way of network development and growth. It must ensure that the primary licensee enjoys interference-free operations throughout the ERS license term, even if that means an interruption of the ERS licensee’s ability to operate due to changes in the primary licensee’s operations. BAE also suggests that the Commission adopt rules that primary licensees may not require payments or the execution of spectrum lease agreements. The amount of time and resources that primary licensees must spend reviewing ERS applications and negotiating with ERS licensees is at times significant and often requires the involvement of engineers and lawyers. Primary licensees should continue to be permitted to recoup reasonable costs. In addition, as described elsewhere, the spectrum leasing rules are an ideal way for parties to work out the consent and coordination process. Clearwire has successfully used the spectrum leasing process with a variety of companies to provide them access to Clearwire’s spectrum.

<sup>8</sup> Clearwire would like to specifically respond to the Boeing Company’s request for more relaxed coordination and consent requirements because Boeing “ha[s] not received any complaints of harmful interference resulting from its test operations”. See, e.g., Notice of Oral *Ex Parte* from Bruce Olcott, Counsel to the Boeing Company, to Marlene Dortch, Secretary, Federal Communications Commission (filed Nov. 15, 2011) ET Docket No. 10-236; see also Notice of Oral *Ex Parte* from Bruce Olcott, Counsel to the Boeing Company, to Marlene Dortch, Secretary, Federal Communications Commission (filed Oct. 14, 2011) ET Docket No. 10-236; see also Notice of Permitted Oral *Ex Parte* Presentation from Bruce Olcott, Counsel to the Boeing Company, to Marlene Dortch, Secretary, Federal Communications Commission (filed Aug. 25, 2011) ET Docket No. 10-236. In Clearwire’s experience, Boeing is a company that adheres to the conditions of its ERS licenses and engages in appropriate coordination before commencing operations. Unfortunately, it is also Clearwire’s experience that Boeing is the exception rather than the rule, so Clearwire must oppose the less rigorous process that Boeing recommends. See, e.g., Letter from Dane Ericksen and Richard Rudman, Co-Chairs, Engineers for the Integrity of Broadcast Auxiliary Services Spectrum to Neil King, Engineering Manager II-Systems, BAE Systems Information and Electronics Systems Integration Inc. (filed Aug. 5, 2011) ET Docket No. 10-236 (In referring to a particular licensee’s advance coordination as unusual and stating that “Unfortunately, in the past many experimental licensees receiving a similar requirement have ignored that obligation, resulting in unnecessary difficulty in identifying and tracking down the resulting interference.”); see also *Reply Comments*, Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (filed Apr. 8, 2011) ET Docket No. 10-236 at 3-6.

experience as an ERS applicant, Clearwire is confident that a pre-filing coordination process can be highly successful for both the ERS applicant and the primary licensee.

It is also imperative that primary licensees be able to contact the ERS licensee at any time once the ERS licensee has commenced operations. The FCC's electronic filing system requires that an ERS application include contact information for purposes of processing the application, but does not anywhere require emergency contact information for a person denominated to handle interference or other technical issues that may arise. Without such contact information, the secondary status of experimental licenses and the requirement that ERS licensees cease operations if they cause interference are difficult to enforce. Clearwire therefore recommends that the FCC require ERS applicants to provide emergency contact information in their ERS applications.<sup>9</sup> Clearwire would like to point to Broad Comm, Inc.'s ERS applications for the Republican and Democratic National Conventions as an example of how this process can work well. Broad Comm, Inc. contacted Clearwire prior to filing its ERS applications for the conventions to discuss possible use of 2.5 GHz spectrum and to coordinate a frequency plan.<sup>10</sup> It then provided Clearwire with 24-hour emergency contact information in the case of any interference concerns during the duration of the conventions.

### III. Experimental Licenses Should Only Be Granted for Experimental Purposes

Clearwire has observed an increase in applications -- particularly ERS STA applications - - which request access to spectrum for what appears to be a commercial use with no discernible research or experimental purpose. Experimental STAs recently have been issued for sporting events and other temporary, commercial uses where a short-term lease of spectrum would be more appropriate. For example, Clearwire contacted Volvo Ocean Race Miami, after seeing its STA application pending in the ERS database requesting access in Miami, FL to a staggering amount of spectrum for the period from May 6 to May 22, including: 71-76 GHz, 81-86 GHz, 2200-2315 MHz, 2350-2700 MHz and 5530-5920 MHz.<sup>11</sup> Volvo's application included the entire 2.5 GHz band in Clearwire's commercial market in Miami, FL. Volvo was seeking the STA for coverage of the Volvo Ocean Race, a sailboat race. The stated purpose of the STA was to provide video and

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<sup>9</sup> See, e.g., Reply Comments of Virginia Polytechnic Institute and State University, ET Docket No. 10-236 (filed Apr. 7, 2011) at 23; Comments of V-Comm, LLC, ET Docket No. 10-236 (filed Mar. 10, 2011) at 9.

<sup>10</sup> Requiring prior coordination and consent would ensure that the coordination requirement remain with the experimental licensee and not be switched to the primary licensee. See, e.g., Reply Comments of V-Comm, LLC, ET Docket No. 10-236 (filed Apr. 11, 2011) at 9-15; Reply Comments of AT&T, ET Docket No. 10-236 (filed Apr. 11, 2011) at 3-7; Reply Comments of the Satellite Industry Association, ET Docket No. 10-236 (filed Apr. 8, 2011) at 3-5, Reply Comments of the National Association of Broadcasters, ET Docket No. 10-236 (filed Apr. 11, 2011) at 4., Comments of Wireless Communications Association International, ET Docket No. 10-236 (filed Mar. 10, 2011) at 4-6, 8.

<sup>11</sup> See, File Number 0247-EX-ST-2012

voice transmissions from a chase boat, a helicopter and race boats to an on-shore media center in Miami. Clearwire informally objected to Volvo's application because it lacked any experimental purpose and would require expensive, time-consuming retuning of Clearwire's Miami network to avoid potential interference. These concerns lead Volvo to revise its request to delete the proposed use of 2.5 GHz. Clearwire was surprised to learn, however, that the application was eventually granted as an STA on other spectrum, despite the complete lack of experimental purpose. Similarly, earlier this year, Broad Comm Inc. was granted an ERS STA license (Call Sign WF9XLT) to provide support and logistics communications for the 60th Anniversary 12 Hour FIA World Endurance Championship at the Sebring International Speedway Sebring, Florida -- a sports car endurance race.<sup>12</sup> Again, there was no experimental or research purpose evident from the application.

The Commission's rules indicate that an application for an ERS STA may be granted if "need is shown for operation of six months or less, provided such operation is not in conflict with the Commission's rules..." 47 C.F.R. §5.61(a). The rules that otherwise define ERS are set forth elsewhere in Part 5 of the Commission's rules. In pertinent part, ERS applications must:

- Provide as their purpose, one of the following types of operations: experimentations in scientific or technical radio research; experimentations under contractual agreement with the United States Government, or for export purposes; communications essential to a research project; technical demonstrations of equipment or techniques, field strength surveys by persons not eligible for authorization in any other service; demonstration of equipment to prospective purchasers by persons engaged in the business of selling radio equipment; testing of equipment in connection with production or regulatory approval of such equipment; development of radio technique, equipment or engineering data not related to an existing or proposed service, including field or factory testing or calibration of equipment; development of radio technique, equipment, operational data or engineering data related to an existing or proposed radio service; limited market studies or experiments that are not specifically already covered if there is demonstration of need for such additional types of experiments. 47 C.F.R. §5.3.
- "[B]e issued only to persons qualified to conduct experimentation utilizing radio waves for scientific or technical operation data directly related to use of a radio not provided by existing rules; or for communications in connection with research projects when existing communications facilities are inadequate." 47 C.F.R. §5.51(a).
- "Each applicant for an authorization in the Experimental Radio Service must enclose with the application a narrative statement describing in detail the program of research and experimentation proposed, the specific objective sought to be accomplished; and how the program of experimentation has a reasonable promise of contribution to the

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<sup>12</sup> In neither of these cases did the licensee reach out to Clearwire or any of the licensees it leases from to coordinate use of the 2.5 GHz band.

development, extension, or expansion, or utilization of the radio art, or is along the lines not already investigated.” 47 C.F.R. §5.63(a).

- “Stations operating in the Experimental Radio Service may be authorized to use and government or non-government frequency designated in the Table of Frequency Allocations set forth in Part 2 of this chapter, provided that the need for the frequency requested is fully justified by the applicant.” 47 C.F.R. §5.85(a).

Sporting events do not meet any of the denominated purposes for an ERS license. Nonetheless, in Clearwire’s experience, ERS STA applications have been granted without any showing of a proposed program of research or experimentation. There is another way for such parties to obtain temporary rights to spectrum: the spectrum leasing rules contained in Parts 1 and 27. Requiring non-experimental users to obtain spectrum rights through short-term leasing arrangements is the appropriate path for a commercial entity that requires short-term use of spectrum for an event. ERS licenses should be limited to the denominated purposes under the rules.

#### IV. Compliance with the Discontinuance Rule Should Be Enforced

Pursuant to Section 5.81 of the ERS rules, ERS licensees must alert the Commission’s OET in the case of permanent discontinuance of operations so that the license may be cancelled. In Clearwire’s experience, the discontinuance process is ignored by most ERS licensees. For example, Clearwire recently experienced interference to its commercial network in Dallas, TX. Clearwire contacted ERS licensees in the area and learned that over half were not operating and had no future plans to do so. Similarly, as Clearwire proactively contacts other ERS license holders in an attempt to coordinate spectrum use, the company has learned that many ERS licensees have permanently discontinued operations and/or never operated due to a change in plans. Clearwire appreciates that a multitude of factors come into play when conducting an experiment, however, again, it should be incumbent upon ERS licensees to fulfill their obligations under the rules. Other potential ERS licensees as well as the primary licensees would benefit from having a more complete picture of what entities are operating in a particular geographic or spectral location.

On a similar note, experimental licenses should not be granted “just in case.” Clearwire recently contacted the University of Maryland MAXWell Laboratory which just extended an existing experimental license (Call Sign WF2XJX). Clearwire had previously been in contact with the licensee, and was of the understanding that there were no operations currently underway and that the ERS license was dormant. When Clearwire contacted the licensee to ask about the renewal of a long dormant ERS license, the ERS licensee indicated that it extended the license to support the possibility of future experiments, but admitted that they were not currently operating nor did they have any immediate plans to operate. Holding an ERS license in reserve should not be permitted by the Commission since it creates confusion regarding actual spectrum usage.

V. Conclusion

Clearwire recommends that the Commission use this proceeding to institute a number of modest changes to its ERS processes. The changes it recommends -- pre-filing coordination, emergency contact information, compliance with the discontinuance rules and ensuring that the applications support an authorized ERS purpose -- serve the public interest. Both ERS and primary licensees will benefit from greater certainty regarding the availability of spectrum for ERS while guarding against interference to existing operations.

Respectfully submitted,

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