

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

May 1, 2004

In the Matter of

Carrier Current Systems, including Broadband over ) ET Docket No. 03-104  
Power Line Systems

Ammendment of Part 15 regarding new requirements ) ET Docket No. 04-37  
and measurement guidelines for Access Broadband  
and Power Line Systems

**COMMENTS OF E. ALAN CROSSWELL**

With respect to the above-referenced proceeding, I, E. Alan Crosswell of 144 Washburn Road, Briarcliff Manor, N.Y. 10510, hereby submit my comments regarding the Notice of Proposed Rule Making (NPRM).

**Introduction** I am an FCC-licensed Extra Class Amateur Radio operator and an active volunteer in providing emergency communications in Westchester County, NY where I serve as the Amateur Radio emergency communications coordinator<sup>1</sup> for approximately 120 fellow Amateurs who serve our citizens, local government, and NGOs such as the American Red Cross.

I am also Director, Network and Computing Systems for Columbia University Academic Information Systems where I am responsible for managing broadband Internet services for approximately 40,000 students, faculty and staff in their classrooms, offices, residence halls and University-owned apartments surrounding the University's New York City campus.

I am a strong supporter of the Commission's regulatory role in keeping the airways clear of interference and encouraging efficient sharing of our common scarce radio spectrum resource.

I live in the vicinity of an Ambient Corporation BPL field trial<sup>2</sup> and have experienced harmful interference from this system for which I filed interference complaints on March 31, 2004 with Con Edison, Ambient Corporation and the Commission. I am still awaiting prompt cessation of the interference as stated in Special Condition (1) of the STA after four weeks of delays on Ambient's part.<sup>3</sup>

I understand there are a number of competing, proprietary technologies for BPL and that some of the others being tested may not cause harmful interference to primary licensees, but the Ambient experimental system as deployed in

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<sup>1</sup>Radio Amateur Civil Emergency Service (RACES) Radio Officer, appointed by the Commissioner, County of Westchester Department of Emergency Services; and Amateur Radio Emergency Service (ARES) Emergency Coordinator appointed by the Section Manager, ARRL Eastern New York Section

<sup>2</sup>Experimental License WD2XEQ (File No. 0050-EX-ML-2003)

<sup>3</sup>Con Edison and the Commission have not directly acknowledged my complaint to date. Ambient's representative states that Ambient has agreed with Con Edison to take the lead on response to my complaint. On April 27, 2004, Ambient reported that they had attempted a mitigation of notching the 20 meter band, had discovered a technical problem with their equipment which prevented the notching from working, are waiting on a fix from their equipment vendor, and have taken the position that they will not cease the harmful interference while awaiting the fix.

Briarcliff Manor, NY certainly does. This system is deployed along a main thoroughfare where I regularly drive my vehicle with a mobile HF station using an inefficient vertical antenna. The test area is only about a mile long and throughout that area strong interference appears over much of the 20 meter band (and elsewhere). It does not appear to be a point source but is continuous along the length of the overhead power line to which the RF signal has been coupled.<sup>4</sup> Even in areas not mapped out as part of Ambient's test area<sup>5</sup>, lower-level interference is heard. I can only imagine what the interference to my home station with a more efficient dipole antenna would be like if this unintended radiator is coupled to the power lines on my street without any alteration to the system as currently deployed for Ambient's STA.

**Specific Comments on the NPRM Text** In ¶27 Ambient discusses avoiding interference by notching a sub-band. This apparently does not work with the equipment currently deployed in Briarcliff Manor, NY, as the attempt to notch 14.0 - 14.350 MHz in response to my interference complaint of March 31, 2004 was made and failed. Ambient states that they are waiting on a fix from their equipment vendor.

I hope the statement in ¶31 regarding the responsibility of the Access BPL provider to eliminate harmful interference will be more than empty words. To date I have waited four weeks for Ambient to address my harmful interference complaint. I hope this is not representative of the type of responsiveness that those interfered with should expect. I encourage the FCC to follow through on its mandate under 47 C.F.R. §15.5 and notify Ambient that they must cease interfering with this licensee.

I support the goal of using adaptive mitigation techniques but caution that for these to succeed, the Access BPL receiver will need to be sensitive enough to detect the signal of a distant transmitter. My nearby HF transceiver generally only transmits when I am communicating two-way with a distant station. The interference caused by BPL disrupts that *reception*. I do not feel that I should be further polluting the spectrum by transmitting on a given frequency prior to listening in order to cause an adaptive BPL system to "clear" the frequency.

I strongly support the Commission's idea of an *easily* searched geo-coded public database of BPL installations. I further suggest that periodic transmission of station ID in a documented format be required in order to aid in location of the responsible system operator. I am somewhat skeptical that an industry-run database will be useful to those wishing to file complaints against that industry and encourage the Commission to establish clear, enforceable guidelines of public access and usability.

In response to ¶33 I once again encourage the Commission to establish the importance of timely resolution of interference complaints.

In ¶34 I wish to point out that even low-gain outdoor antennas mounted on vehicles are interfered with by Access BPL. In fact, given that most power lines run adjacent to roadways, entire areas of Access BPL deployment will jam Amateur and other HF users. The Commission has licensed Amateurs for mobile as well as fixed operation – please keep this in mind when developing regulations to protect licensees from harmful interference.

In ¶36 it is claimed that, "...the primary source of emissions will be the individual couplers... and to a lesser extent the power line immediately adjacent thereto." I encourage the Commission to send technical staff to Briarcliff Manor, NY to see a demonstration system in which the interfering signal is of nearly continuous amplitude along the entire length of the power line between couplers.

Bear in mind in ¶37 that Amateur licensees also serve a "public safety" communicator role<sup>6</sup> – in fact Amateurs routinely provide "last resort" public safety communications when government and NGO communications systems fail or are overloaded.<sup>7</sup> For instance, the National Hurricane Center routinely communicates with Amateur Stations in the 20 meter band. Amateur stations providing national, international and maritime disaster communications need the noise floor to be as low as possible in order to effectively communicate with stations frequently running low power transmitters since they have lost commercial power and are using batteries and are frequently in portable installations such as at schools used as shelters with relatively low-efficiency temporary or portable antenna systems. In New York

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<sup>4</sup>On April 27, 2004, Ambient's representative in my interference complaint recounted a conversation he had with Ram Rao of Ambient in which Mr. Rao confirmed that the emissions from the system are continuous rather than point source.

<sup>5</sup>See Ambient Comments to ET docket 03-104 NOI

<sup>6</sup>47 C.F.R. §97.1(a)

<sup>7</sup>Amateurs in Westchester and New York City were the first to re-establish communications between the New York City and Westchester County Offices of Emergency Management after the 9/11 attacks and continued to serve a communications role for many weeks during the subsequent recovery effort.

State, the State Emergency Management Office also includes HF radio systems – both government and Amateur – among the suite of equipment used to communicate with county emergency operations centers.

The key feature of HF radio systems that distinguishes them from their “more modern” counterparts in the VHF, UHF, and microwave bands is that they do not require an extant significant infrastructure of repeater systems and communications networks to effectively communicate over distances of hundreds and thousands of miles. When a major infrastructure failure occurs either through natural events such as ice storms or technological failures such as the August 14, 2003 blackout, HF radio systems fill in the gaps.

In ¶40-41 the Commission proposes remote-controlled and adaptive mitigation techniques. Ambient is cited as having the capability to respond to short-term changes in the RF environment. Without an adequate technical description of this capability, it is hard for me to imagine that this adaptive response will include the ability to detect a remote transmitter at a distance of hundreds or thousands of miles and notch out that frequency so that a nearby receiver is not blocked from receiving it.

As indicated above, while in theory, the claim in ¶42 that most Access BPL devices already possess the capability to mitigate interference has proven not to be the case in the Ambient trial in Briarcliff Manor, NY. Of course, these trial systems will need to be brought into compliance with the new rules when adopted!

In ¶43 I feel that perhaps CORES would be the best place to register BPL systems. It would certainly not be reasonable to put the burden on the party receiving harmful interference to have to search the potentially large and inconsistently implemented list of Access BPL operator databases rather than a central registry.

Measurement (¶45) should be *in-situ* and along the entire length of a BPL deployment – not just at the signal injection points. The NTIA measurement recommendations<sup>8</sup> should be adopted.

**Comments on Appendix B: Proposed Rules** In §15.109(f), avoiding site-specific interference does not protect a local *receiver* from harmful interference.

**Comments on Appendix C: Proposed Measurement Guidelines** In 2.a.2, I encourage requiring *in-situ* testing of *all* installations. Given the unique propagation characteristics caused by each power line installation, there is no such thing as a representative installation.

**BPL is not Broadband** Maybe by the current FCC definition<sup>9</sup>, the fairly low-speed transmission rate of current BPL and DSL systems is considered broadband. However, perhaps we should look to our neighbors overseas<sup>10</sup> that have residential Internet access at speeds today of 20 to 50 Mbps and higher, delivered over fiber. Perhaps the route to “Broadband Nirvana” is better served by the Commission encouraging right of way owners and users such as electric utilities to provide truly high bandwidth Internet access by investing in a fiber infrastructure, connecting to high-speed localized wireless access points or with direct fiber to the home instead of the spit and bailing wire approach of grafting BPL onto power lines. Fiber might actually be economical in rural areas where spans of hundreds of km will be possible without costly repeaters. I seriously doubt that BPL will be.

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<sup>8</sup>Potential Interference From Broadband Over Power Line (BPL) Systems to Federal Government Radiocommunications at 1.7 – 80 MHz. NTIA Report 04-413. April 2004.

<sup>9</sup>200 kbps in one direction

<sup>10</sup>or on most US college campuses