

Before the  
Federal Communications Commission  
Washington, DC 20554

Re: ET Docket No. 04-37, Notice of Proposed Rule Making

In the Matter of )  
)  
Carrier Current Systems, Including Broadband over ) ET Docket 03-104  
Power Line Systems )  
)  
Amendment of Part 15 regarding new requirements )  
and measurement guidelines for Access Broadband ) ET Docket 04-37  
over Power Line Systems.

**REPLY COMMENTS TO UNITED POWER LINE COUNCIL**

**By**

**Dale G. Svetanoff, WA9ENA**

To the Commission:

I am replying to comments filed by the United Power Line Council (“UPLC”) in response to the Notice of Proposed Rule Making (“NPRM”) on the referenced Docket. I am both a licensed Advanced Class Amateur Radio operator (WA9ENA) and a N.A.R.T.E.-certified EMC engineer, having been employed as a professional in that capacity for nearly 20 years.

My comments directly relate to the section and page numbers as they appear in the UPLC comments: *(Note: I am a member of the Cedar Rapids BPL Steering Committee which has issued a test report used by members, including myself, as a portion of these reply comments filings. The comments in this document are strictly my own and in no way have they been reviewed or approved by any members of the Committee.)*

**Section II, page 3:** “Access BPL testing has proven that the interference potential is extremely low, and quite manageable”

The attached report, “Cedar Rapids, Iowa, BPL Trial System Radio Frequency Interference Tests”<sup>1</sup>, shows *measurable proof* that BPL signals cause severe levels of interference to HF communications even when the affected Amateur Radio station is not directly adjacent to the overhead power lines carrying BPL signals. The American Radio Relay League, Incorporated (“ARRL”), noted that at least 27 interference complaints<sup>2</sup> against access BPL systems had been filed by May 3<sup>rd</sup>, 2004, with no adjudication of any of them by the FCC.

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<sup>1</sup> “Cedar Rapids, Iowa, BPL Trial System Radio Frequency Interference Tests”, Cedar Rapids BPL Steering Committee, June 18, 2004, pp. 1, 18-19, 23-27.

<sup>2</sup> “Comments of ARRL the National Association for Amateur Radio”, Docket 04-37, filed May 3, 2004, pg. 3.

**Section II, page 3:** "... the UPLC agrees with the FCC that Access BPL devices will not cause the power lines to 'act as countless miles of transmission lines all radiating RF energy along their full length.'"

The problem here is that the FCC's own thinking on this subject is thoroughly flawed and wrong! In the cited ¶36 of the NPRM, the FCC incredulously makes the statement "... we do not believe that Access BPL will cause the power lines to act ..." (remainder of statement quoted above by UPLC). The Commissioners present NO technical data to substantiate their belief, nor do they present any technical reference to substantiate the claim. The directional gain of single wire antennas that are multiple wavelengths long is well-known and has been used for decades in the MF and HF bands<sup>3</sup>. Remember that we are talking *electromagnetic* effects in the context of these documents; where RF current flows, so does an accompanying field. The radiated fields would be lessened if the BPL systems used balanced transmission lines and if those lines were twisted about each other, as is done with telephone line conductors.

The UPLC filing fails to cite any specific instances in which field measurements have contradicted predictions.

**Section II, page 3 to 4:** "... there needs to be a rule of reason when it comes to allegations of BPL interference ..."

I agree with that portion of the sentence. Unfortunately, until standards are set to determine what constitutes "interference" and "harmful interference", there will be a continuing string of contentious arguments between victim parties (spectrum users) and source parties (BPL vendors and service providers). With respect to communications, interference is harmful when the desired communications can not take place due to jamming or other signal sources at or near the same frequency as the desired signals. In real communications, there are no "allegations". Inability to communicate IS the suffering of harmful interference. I suggest that UPLC members put on some headphones and listen to actual HF communications, with and without on-signal BPL present.

**Section IV, page 5:** "The UPLC agrees with the FCC that the interference protections proposed are adequate to protect public safety, as well as other licensees, and does not believe that additional measures are needed."

The report of the Cedar Rapids BPL Steering Committee<sup>1</sup> demonstrates that this is a mistaken belief.

**Section IV, page 6:** "The UPLC agrees that 'the current Part 15 levels will limit the harmful interference potential of Access BPL devices to relatively short distances around these devices.' This has been confirmed in various BPL trials throughout the country, all of which report compliance with the Part 15 limits."

This first part of the above statement is another quote from an incorrect FCC conclusion. NO technical basis is presented either by UPLC or FCC in their respective documents to support this

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<sup>3</sup> *Radio Handbook*, 22<sup>nd</sup> Edition, Orr, William I., Howard W. Sams & Co., 1981, pp. 28.2 to 28.3.

statement. Neither party has bothered to define “relatively short”. These sort of undefined and/or unsubstantiated claims would be totally unacceptable in formal technical papers; they should be equally unacceptable in an NPRM. While compliance to Part 15 limits is expected, what UPLC *and* the FCC have so far failed to see or acknowledge is that the Part 15 limits are excessive when such devices are operating in proximity to communications systems. The excessiveness could vary between as little as 10 db, to more than 50 dB, depending upon the distance between the Part 15 device (source)<sup>4</sup> and the victim communication system, the nature and spectral distribution of the Part 15 signals, and the communication mode<sup>5</sup> in use by the victim station(s). This is the reason that existing Part 15 limits are *not* acceptable as *de facto* maximums under all conditions.

**Section IV, page 6:** “As the FCC notes, all unlicensed devices are subject to the condition that they not cause harmful interference, so even if interference did occur, the Part 15 rules would require BPL to cease operations, or otherwise mitigate the interference, as the FCC has proposed.”

I agree with this statement, but the FCC has so far failed to enforce its own rules with respect to interference from access BPL systems.

**Section IV, page 7:** “Given that the Part 15 rules provide this overarching safeguard against any potential BPL interference, the UPLC encourages the FCC to revisit the existing emission limits at a later date...”

Yes, the FCC should revisit the Part 15 emission limits and lower them. This necessity is borne out by the test results of the Cedar Rapids BPL Steering Committee<sup>1</sup>.

**Section IV, page 8:** “Conducted emissions have no direct bearing on interference to radio transmissions.”

The U.S. Military and the commercial aviation industry might question the basis for such a statement. MIL-STD-461E requires testing of conducted emissions from electronic systems (on both power and signal leads) so as not to interfere with radio communication systems. The technical base for commercial aviation electronic standards is RTCA document DO-160D, which mandates conducted emissions testing for electronic apparatus used aboard aircraft. If conducted emissions have no bearing on interference to radio transmissions, then I have to believe that persons making such statements would not hesitate to board an airliner which has had no qualification testing performed for its electronic systems.

**Section V, page 10:** “UPLC asks that the FCC clarify that BPL operations are permitted to correct harmful interference by notching or shifting frequencies first, rather than requiring them to shut down immediately.”

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<sup>4</sup> “Cedar Rapids, Iowa, BPL Trial System Radio Frequency Interference Tests”, Cedar Rapids BPL Steering Committee, June 18, 2004, pg. 19.

<sup>5</sup> Different modes require different bandwidths. Morse code telegraphy, and some digital modes, use bandwidths of 500 Hz, or less. Typical single sideband voice communications use a bandwidth of 2.1 to 3 kHz, typical.

The subject of the Cedar Rapids BPL Steering Committee test report, Mr. James Spencer, has suffered interference from a trial BPL system for more than 10 weeks<sup>6</sup>. Alliant Energy has notched and shifted, sometimes incorrectly<sup>7</sup> in attempt to mitigate, but not end, the interference. (Given the signal levels at Mr. Spencer's receiver, "mitigation" would be "cease BPL operation".)

I obviously need to remind UPLC, as well as the Commission, that one of the basic tenants of the Amateur Radio Service is to provide no-cost communications in times of emergency or Homeland Security threats. During any such emergency, there is NO TIME to wait for a BPL system to shift or notch while emergency communications, some of which could be related to safety of life and property, are rendered inoperable. ANY such time delay in correcting an interference issue must be considered as a hazard and impediment to emergency communications. Since emergencies and threats can occur in any locale at any time, cessation of BPL operations MUST be IMMEDIATE whenever interference occurs. Mitigation attempts by the BPL provider MUST be at the discretion and convenience of the affected communications station(s); important communications could be impacted if trial adjustments are made randomly.

**Section V, page 11:** "... the BPL industry is nascent and the FCC should not upset reasonable investment-backed expectations by imposing the mitigation requirements retroactively to existing equipment, or too quickly on new equipment."

The Part 15 requirements regarding mitigation of interference have existed for many years. In my opinion, investors into BPL technology who do not investigate or understand the risks associated with deployment of a spectrally invasive system are either ignorant or stupid. Please refer to my previous discussion regarding emergency communications.

**Section VII, page 14:** "Now, it is very important to stay the course of protecting authorized operations without granting them veto rights to kill BPL in the cradle."

If the FCC were enforcing its own rules and properly considering the thousands of highly detailed technical filings to both the NOI and NPRM, BPL would have been still-born, as well it should have been. I maintain that Access BPL is a technologically bad idea that should never have seen the light of day.

Incumbent *licensed* services are supposed to be protected from harmful interference, a fact that both the UPLC and FCC seemed to have forgotten. In my view, WE the LICENSED USERS were granted "veto rights" when the Part 15 rules were written and adopted. Therefore, the "veto" power already exists.

**Section VII, page 15:** "... continue to reject the pet theories, hyperbole, and empty rhetoric of the opponents of BPL."

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<sup>6</sup> The trial system tests near Mr. Spencer's Amateur Radio station began on or about March 30, 2004, and continue at this time.

<sup>7</sup> "Cedar Rapids, Iowa, BPL Trial System Radio Frequency Interference Tests", Cedar Rapids BPL Steering Committee, June 18, 2004, pp. 23 and 27.

The “pet theories” originated with men named Maxwell, Hertz, and Faraday. The electromagnetic spectrum and the laws of physics do not bend to accommodate economic or political desires.

The UPLC seems to have mastered the art of hyperbole with its technically unsupported NPRM filing.

The “empty rhetoric” has been filled with the work of the Cedar Rapids BPL Steering Committee, the ARRL, FEMA, and NTIA. If one ignores the laughable attempt to water down the technical impact of the original FEMA<sup>8</sup> report and studies the NTIA documents<sup>9</sup>, the very real problems of BPL’s intrusion into the HF spectrum are readily apparent.

My conclusion is that the UPLC’s pompous arrogance is exceeded only by its near-total lack of technical understanding of the real issues between licensed services and BPL.

Respectfully submitted,

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<sup>8</sup> Letter, Michael D. Brown, Under Secretary Emergency Preparedness, FEMA, to Michael K. Powell, Chairman, Federal Communications Commission, dated January 6, 2004.

<sup>9</sup> “Potential Interference From Broadband Over Power Line (BPL) Systems to Federal Government Radiocommunications at 1.7 to 80 MHz, Vol. I and II, April 27, 2004.