

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC. 20554**

In the Matter of)	
)	
Carrier Current Systems, including Broadband over Power Line Systems)	ET Docket No. 03-104
)	
Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems)	ET Docket No. 04-37
)	

To: The Commission

**Comments from Nickolaus E. Leggett
N3NL Amateur Radio Operator**

The following are formal comments from Nickolaus E. Leggett, an amateur radio operator (Extra Class licensee – call sign N3NL), inventor (U.S. Patents # 3,280,929 and 3,280,930 and one electronics invention patent application pending), and a certified electronics technician (ISCET and NARTE). I also have a Master of Arts degree in Political Science from the Johns Hopkins University (May 1970).

Use of Directional Antennas and Short-wave Propagation

The Notice of Proposed Rulemaking (NPRM) has the following statement in its Paragraph #35:

“We recognize that amateur operations are likely to present a difficult challenge in the deployment of Access BPL in cases where amateurs use high gain outdoor antennas that are located near power lines. In considering this interference potential, we note that ARRL acknowledges that noise from power lines, absent any Access BPL signals, already presents a significant problem for amateur communications.¹ We therefore would expect that, in practice, many amateurs already orient their antennas to minimize the reception of emissions from nearby

¹ Comments of ARRL at 3.

electric power lines. Further, we note that many Access BPL technologies have the capability to avoid using specific frequencies, if necessary, to avoid interference. This would permit Access BPL devices to avoid the use of amateur frequencies when in close proximity to amateur outdoor antennas.”

Many amateur radio stations use directional “beam” antennas to accomplish long distance and international communications using the amateur radio short-wave allocations. The typical beam antenna consists of three conducting elements mounted at right angles to a supporting boom. These three elements, the director, the driven element, and the reflector form a directional (high gain) antenna similar in function to the classic television antenna. The beam antenna receives and transmits radio waves primarily in the direction that it is pointed at.

In this NPRM, the Commission is in effect telling amateurs not to communicate in the direction of electric power lines carrying BPL service. In other words, if the power line is in the direction of Europe, the amateur operator cannot communicate with Europe. Similarly, if the power line is in the direction of Asia, the amateur operator cannot communicate with Asia. This is a rather high cost to impose on the licensed amateur operator for the purpose of allowing the electric utility the right to install an unlicensed BPL system in a neighborhood. This externalization of the cost of BPL on an innocent party violates basic principles of American law as well as the operation of the private marketplace.

This cost of blocked communication will also be imposed on other services that use directional short-wave antennas. For example, Military Affiliate Radio System (MARS) stations use similar antenna installations in residential neighborhoods. These stations send morale messages for our troops overseas. Having transmission directions blocked by BPL operations will negatively impact their operations. Some short-wave

listeners use similar antennas, as do amateur radio astronomers. This problem of blocked access to the World will also apply to Federal Government operations such as short-wave communications conducted by FEMA. These radio services use directional antennas to access the short-wave spectrum that allows long-distance and international communication to be carried out without any intermediate relay stations or communications network technology.

This major problem with directional antennas probably can be overcome by significantly reducing the proposed emitted radio frequency power allowed for BPL systems. Alternatively, the rules can be structured to favor non-shortwave versions of BPL such as the microwave BPL developed by Corridor Systems.

Adaptive Interference Mitigation Techniques

As for the adaptive interference mitigation techniques of BPL, there is the problem that moving BPL off of the amateur radio frequency bands will move the BPL noise on to the short-wave broadcast bands and/or other allocations such as the frequencies used by the MARS service. The Commission should require that any BPL adaptive interference mitigation system must have the ability to accommodate at least three (3) users in the same or different radio services within 200 feet of each other.

Legitimacy and the Engineering Studies in Progress

Many of the small users of the short-wave spectrum believe that the Commission is showing undue haste in setting up the BPL regulations. Some of these observers attribute this haste to a political motivation to reward large industry campaign contributors to the current presidential administration.

This unfortunate perception could be corrected by extending the comment period for this NPRM so that the public can examine and comment on the engineering studies being conducted by the National Telecommunications and Information Administration (NTIA) and the engineering contractor working for the American Radio Relay League (ARRL). I submitted a **Request for Extension of Time** on February 24, 2004 to accomplish this correction and to enhance the quality of the engineering information available to all parties.

In addition, the ARRL study is addressing the issue of amateur radio interference to BPL systems. If the BPL systems installed are highly vulnerable to amateur radio (and MARS and Citizens Band) interference, then amateur radio, MARS, and Citizens Band will be effectively outlawed in communities with BPL service. It is unlikely that any community will tolerate amateur radio stations shutting down their BPL service either directly by interference or indirectly by the actions of the adaptive interference mitigation technique. Therefore it is likely that strict interference immunity standards for BPL systems will be required.

Summary

The technical and engineering debate on the BPL technologies is far from being completed. Time and analysis must be devoted to establishing BPL rules that realistically accommodate the actual short-wave environment.

Respectfully Submitted,

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