August 20, 2003

Federal Communications Commission
Washington, D.C.

Subject: Reply to Comments/Docket No. 03-104 (Broadband over Power Line)

Dear Commissioners:

Before offering my reply comments, I would like to briefly describe my background. I am a Professional Registered Engineer and hold B.S., M.S., and Ph.D. degrees in electrical engineering. As a professor of EE my research and teaching interests focus on power systems and electromagnetic fields. I also have several years of industrial experience in the design and analysis of antennas. In addition to my professional training and experience, I have been an amateur radio operator since 1968 and hold an extra class license, call sign K5MC.

Many electric power companies and BPL vendors have submitted comments on ET Docket No. 03-104, Carrier Current Systems including Broadband over Power Line (BPL) Systems. Not surprisingly, these parties extol the virtues of this technology and either ignore or vastly understate its serious drawbacks.

One common comment from many of these parties is that no field data exists which proves that BPL technologies in this country cause electromagnetic interference (EMI) to licensed radio services. Engineers employed by the American Radio Relay League (ARRL) have now conducted several EMI surveys of BPL field trial sites in MD, VA, PA, and NY that clearly demonstrate harmful interference to amateur radio stations [1]. This evidence is unmistakable and anyone with a fundamental understanding of the technology will not be surprised by these results.

One very misleading comment by some parties having a commercial interest in BPL is that the technology uses the power line wires only as a conducted transmission medium and has no more inherent propensity of causing interference than any other unintentional digital emitter. However, Access BPL uses overhead wires designed for 60-Hz transmission. As been pointed out by many others, these lines certainly do not meet the definition of "transmission lines" at frequencies between 2 and 80 MHz. Anyone with a basic grasp of EM field theory will agree that typical overhead distribution lines will radiate a significant portion of the input power at such frequencies.

I could reply to more misleading or incorrect statements made by parties supporting BPL, but many other people with strong technical backgrounds have already submitted such replies. It is quite clear, however, that BPL proponents

suffer from a collective denial of the technology's interference potential to the many licensed radio services operating in the HF and VHF bands.

In closing, I strongly urge the Commission to very carefully assess the EMI potential of BPL before large-scale deployment of the technology. This assessment, which should involve all stakeholders, must determine whether viable technical solutions can be found that reduce EMI to acceptable levels and at what cost. If such solutions cannot be found, the Commission must not allow BPL technology to move forward. If no feasible solution exists for this specific technology, there are a number of other technologies available for "last-mile" broadband delivery compatible with licensed radio services.

Very truly yours,

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Reference:

[1] ARRL video of EMI surveys of BPL Field Trial Sites in MD, VA, PA, and NY, available at http://216.167.96.120/BPL Trial-web.mpg