Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
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Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems	)	**ET Docket No. 04-37**
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To: The Commission

In the Matter of Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems, ET Docket No. 04-37, I wish to make the following comments:

1. Issuing the Notice of Proposed Rule Making at this time is premature and effectively preempts incorporating the results of pending technical studies on the effects of BPL on licensed HF radio services. It has been well publicized that organizations including the National Telecommunications and Information Administration (NTIA) and the American Radio Relay League (ARRL) are currently conducting technical measurements to assess the impact of BPL deployment on existing licensed HF users. I believe it is highly inappropriate to proceed with this NPRM until these and other studies can be completed, the results reviewed and objectively accessed. Rules pertaining to permissible emission levels of a technology with the potential to cause widespread degradation to licensed radio services should properly be crafted only after the results of factual technical studies are known. To proceed otherwise gives the appearance that at best, the Commission has only minor regard for protecting those licensed services which are at risk, and at worst, one of reckless and arbitrary rulemaking. Regulatory expediency, however well intentioned, is ill advised and not in the public interest if in its haste the mass deployment of BPL under the proposed rules results in persistent and harmful interference to licensed services.

2. In the earlier Notice of Inquiry on BPL (ET Docket 03-104) numerous comments were submitted warning of the potential for widespread interference by BPL devices and the negative consequences of power lines acting as significant radiators. In the current NPRM, interference mitigation techniques are proposed such as “adaptive interference-mitigation techniques" and requiring that Access BPL providers maintain a database of installation locations and technical information. While well meaning, I have serious reservations about the effectiveness of adaptive methods over the scale and wide geographic distribution envisioned for BPL deployments. To believe that adaptive techniques can effectively cope with a myriad of possible electromagnetic interference scenarios, each consisting of complex time, frequency, and

spatial dependencies, as well as dynamic network interactions, seems overly optimistic. Assuming technical and operational issues posed by adaptive mitigation techniques can be overcome and BPL devices are routinely shut-down and re-configured in response to interference complaints, one must ask whether the resulting Quality of Service to the BPL end-customer would be of a sufficient level to be competitive with other broadband technologies and therefore be commercially viable. Regardless of its effectiveness, this approach is fundamentally flawed because it places the onus on the licensed service for identifying and reporting all incidents of harmful BPL interference to BPL providers. As described in the Notice, adaptive mitigation techniques are invoked once a given interference event occurs and is reported. As such, it is a remedial and an after-the-fact method. Instead, the Commission should impose radiated emissions limits on BPL devices and systems which will cause them to not interfere with licensed services in the first place. Furthermore, the creation, maintenance, and administration of a centralized database of BPL devices appears to be a highly ambitious undertaking. It would require careful cooperation among numerous independent BPL providers to provide technically consistent, accurate, and timely information. While well intentioned, the very necessity for a system whose purpose is to identify and locate offending BPL devices suggests that the licensed services must assume a heretofore new role of actively defending the privileges granted them by license, as opposed to enjoying a degree of protection formerly afforded them by reasonable and well considered regulations.

3. The NPRM states, "We therefore would expect that, in practice, many amateurs already orient their antennas to minimize the reception of emissions from nearby electric power lines". If this is an argument to justify accepting power line interference from BPL devices, I take vigorous exception to it. Where directional HF antennas are utilized, amateurs typically orient them at an azimuth angle depending on the geographic location of the opposite end of the communications path. Antenna orientation therefore is intended to maximize radiated energy toward, or receive energy from, a distant station. Nulling or attenuating interference from arbitrary sources is generally not a design consideration of amateur HF arrays nor a typical operating practice used in amateur HF communications. In addition, if it were the case that amateur antennas are oriented to minimize the reception of emissions from power lines, it further places the burden of interference mitigation on the licensed service as opposed to on the operator of the offending interference source. I reject these implications.

4. The NPRM says the FCC disagrees "...that interference caused to amateur and other radio operations by Access BPL systems complying with our Part 15 limits will be widespread". However, published technical literature suggests otherwise. For example, "For widespread PLC, [power line communications] however, a new situation could arise, where numerous sources are unintentionally radiating in parallel.

Due to the used frequency ranges, there might be considerable contributions to the far field, as the wire structures carrying the PLC signals form an antenna array. Thus, it can be expected that certain portions of transmission power are radiated via ground and skywave, respectively. This scenario may affect extremely sensitive shortwave radio services such as amateur radios, wireless security services, or military surveillance stations. With mass deployment of PLC, a noticeable rise in overall background noise appears probable"[1]. Many other references can be cited which make similar arguments about the interference potential of BPL, as can references which claim the opposite. This contradiction only reinforces the need to consider the results of objective tests and studies and to use the results of those studies as a basis for proposing realistic emissions limits. The technical details of the "careful consideration" which led the Commission to deem existing Part 15 emissions limits "adequate" are conspicuously lacking in the NPRM. Without validated supporting evidence, the Commission's belief that interference concerns can be "adequately addressed" by existing Part 15 limits is highly questionable. I call upon the Commission to suspend this NPRM until such time that results from realistic electromagnetic compatibility studies are available (e.g., the ARRL sponsored tests and those by the NTIA) which would provide the necessary technical basis for determining the adequacy of Part 15 limits with regard to BPL.

5. The NPRM correctly notes that international work on standardizing emissions limits compatible with power lines communications is still under way. However, it is abundantly clear that limits for electric field levels currently being discussed in Europe toward a harmonized standard for telecommunications networks, including BPL, are significantly lower than what is allowed by FCC Part 15.209. Current proposals from various European countries and institutions for new emissions limits range from at least 20 dB lower at 2 MHz (Germany) to more than 60 dB lower at 30 MHz (BBC) relative to Part 15.209 [1]. The Radio Society of Great Britain (RSGB) concluded, "...broad band emissions from PLT [power line telecommunications] in amateur bands should not exceed 0 dB(μV/m) in 9 kHz bandwidth at a distance of 10 m" [2]. Clearly the FCC is out of step with other national regulatory agencies and institutions with regard to permissible emissions levels for BPL technology. Accordingly, I urge a much more conservative U.S. standard for electric field strength applicable to BPL be adopted than what this NPRM proposes. I propose -10 dB (μV/m) at 30 m between 1.705 MHz and 30 MHz. This is a level that is more consistent with international limits which are under consideration. In the absence of EMC test data demonstrating that a higher level is reasonable, the level proposed in this NPRM is not justified.

6. The NPRM describes several BPL proponents who have stated, "the ubiquitous nature of the electric power grid will make it possible for Access BPL systems to bring broadband services to rural and other

underserved locations". As a rural resident myself and avid Internet user, I feel neither underserved nor deprived by not having multiple broadband Internet choices where I live. Furthermore I object to assuming the risk of potential radio frequency inference from BPL and do not feel that such risk outweighs any possible benefit I could derive. As far as the ubiquitous nature of the electric power grid, it is not entirely uncommon for households in the state of New Mexico to provide their own electric power via solar or wind driven energy sources and be entirely disconnected from commercial power mains. BPL provides no benefit whatsoever to these people, yet the risk of RFI would still be present. While this population may not represent the majority, it should be noted that there is a segment of people for whom BPL does not expand available options for participating in Internet and high-speed broadband access.

Respectfully submitted,

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References:

[1] M. Gebhardt, F. Weinmann, and K. Dostert, "Physical and Regulatory Constraints for Communication over the Power Supply Grid," IEEE Communications Magazine, May 2003

[2] The Radio Society of Great Britain (RSGB), "Compatibility Between Radio Communications Services and Power Line Communications Systems", RSGB EMC Committee for the PLC Workshop in Brussels, 5 Mar. 2001