

This is a reply to the comments filed by the Power Line Communications Association ("PLCA").

I am an individual with a degree in physics and with practical and theoretical knowledge of RF systems.

The PLCA makes several major points, which I will address with quotes and comments.

" In addition to noting the various benefits of power line communications to consumers and utilities, the PLCA's initial comments to the Commission also stated that although BPL could be deployed under Part 15 of the Commission's Rules, limited revisions to the existing Rules could expand flexibility in designing BPL networks, improve the quality of BPL service, and extend BPL's reach into rural areas."

Here the PLCA's claims are that BPL can operate under existing Part 15 rules, and that benefits to the public could result from a grant of relief from full Part 15 compliance.

Three aspects of Part 15 bear on BPL technology. One is the requirement of controlled antenna design. Another is the requirement to avoid interference with licensed services and to accept all interference from licensed services. The third is control over spurious emissions.

Current Part 15 devices are tested and certified with one specified antenna, and must be designed so that the antenna may not be easily replaced by an antenna with higher gain or other characteristics that might increase field strength beyond Part 15 limits.

It is difficult to imagine a system with more potentially radiating attachments than the power distribution system. Billions of legal connections to light switches and millions of illegal connections to who-knows-what will all radiate. Their gain, pattern and field strength will depend on details of installation which will vary wildly. It is therefore questionable whether BPL can indeed operate under Part 15 rules due to the antenna issue.

Interference with licensed services has been addressed in other comments. I have no field tests to contribute.

Spurious emissions outside the design frequencies can come from a stunning variety of sources. Every active device, corroded connection, or plugged-in nonlinear load will create sum and difference frequencies from its inputs. Normal Part 15 devices have a well-defined parts list and can be studied and tested for compliance with spurious emission standards. It is unclear that power companies can or will pay for cleaning up every spurious emission source in their outside plant. It is impossible for them to clean up every spurious emission source plugged into their system by end users. Industrial motors, for example, are notorious for generating harmonics from their input power. The Institute for Electrical and Electronic Engineers has case studies of elevator motors creating significant seventh harmonics. A seventh harmonic

of the 80MHz top frequency in proposed BPL systems would be 560MHz, well into UHF and capable of radiating with high efficiency from power lines. It is therefore implausible that BPL systems can comply with Part 15 limits on spurious emissions.

The PLCA's request for loosening of Part 15 requirements is a request for special treatment not required by any competing system for delivering broadband connectivity. To grant this request would be discriminatory and I respectfully urge the Commission to decline it.

The PLCA also has instructions for the Commission on how to process public comments:

" For its part, the PLCA urges the Commission to give primary consideration to actual field tests and surveys of entities offering and testing BPL services and products. The Commission must discount speculative and self-serving comments offered by parties who seek only to hinder the deployment of BPL technology."

I do not seek to instruct the Commission in what it "must" do, but agree that field tests are the most valuable input, if they are conducted carefully and independently. The ARRL has supplemented calculations with empirical testing which shows that HF receivers cannot operate in areas where any of several BPL technologies are being tested. I agree with the PLCA that such testing is more helpful to the Commission's deliberations than "speculative and self-serving comments" are.

A disquieting thread in the PLCA's comment is that they don't mention independent, disinterested testing. In fact, they urge the commission to rely on "surveys of entities offering and testing BPL services and products". Exclusive reliance on data from an interested party, while "discount"ing data from others, could actually increase regulatory uncertainty by creating a perception, possibly leading to legal challenges, that the process of rulemaking was arbitrary and capricious. Surely this is not what the PLCA actually meant.