

Comments on Access Broadband over Power Line Systems NPRM

RE: ET Docket No. 03-104

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From: John S. Taylor, K5MR
395 Austin Road
Gunter, Texas 75058-3132

I am opposed to deployment of Access BPL technology until it is proven to the Commission's engineering staff beyond any doubt that BPL can be employed without interfering with other users of the electromagnetic spectrum. Mitigating interference is not acceptable. Any and all interference from BPL service must be completely and totally removed. The responsibility to develop a means of eliminating such interference should fall solely on the BPL providers, not the Commission or current spectrum users who will be affected by such interference. The Commission should also consider what techniques are required to adequately protect BPL lines from incoming interference from outside RF sources.

The type of interference measurement system utilized is critical. A magnetic active loop antenna located 3 to 10 meters from the EUT may not be sufficient enough to cover all cases. A real world test might use something such as a high gain receive system using a 16 dBi horizontally polarized yagi antenna array at 200 feet coupled to an HF receiver with a -134 dBm noise floor. This system is capable of receiving BPL emissions over a wide spread area covering many square miles. The exact same interference tests should be repeated in both horizontal and vertical polarization. Interference rejection characteristics of BPL should also be thoroughly tested. For amateur radio application simulations, transmitting 1500 watts of RF power into a high gain antenna system pointed directly at the BPL source and located not more than 200 feet from the source under test is suggested.

Low power BPL is not the answer to interference concerns. BPL across medium and low voltage power lines will propagate over long distances due to the BPL RF signal radiating from power lines that act as antennas. Radiation from BPL lines has already been proven in numerous field tests conducted by the American Radio Relay League (ARRL) and numerous engineering labs in Asia and Europe. The results show operation of a HF radio receiver in the proximity of BPL lines is virtually impossible due to interference. Telephone service providers also have serious concerns about BPL interference coupling into their lines that carry voice and data services on the same utility poles. Frequency agile interference systems are not the answer either. It does not matter how agile the system is if there are no clear, unused frequencies to move to.

Why not utilize the thousands and thousands of miles of unused fiber that was laid during the 1990's instead of laying a trouble ridden BPL technology on top of a power distribution system that was built beginning in the early 1900's? Why not encourage

more use of wireless broadband access instead of relying on electric lines that are prone to enough trouble of their own? Why would service providers want to transmit broadband services across unshielded utility lines that are wide open to interference from other existing services that are in compliance with Part 15? Widespread deployment of BPL service is opening the BPL end user as well as other users of the shared HF and VHF spectrum to multiple interference issues. BPL is a technological dinosaur that will lead to nothing but a continuous stream of consumer complaints. It does not make fiscal sense for a utility company to spend millions on new BPL hardware that send RF signals across power grid systems that are decades old.

The capital investment required to reach a relatively small number of rural customers does make sense when several other viable options are already available. The cost to bring one more broadband option to their front door does not warrant the expected income from this service. Why would any company want to invest millions or billions in hardware for a few “last mile” customers? Why not encourage more rollout of DSL services to rural areas where telephone lines are already in place? This technology is already proven and is favored by many consumers. Another alternative is satellite broadband access, which is already deployed and readily available to every citizen in every state of this country. The Commission mentions competition as a reason for encouraging deployment of BPL Access. With DSL, cable, satellite, fiber and wireless broadband access already in place I do not see the need for yet another alternative. Let’s maximize utilization of services that are already in place.

In Section II, paragraph 5 of the NPRM Document the Commission states “Most Access BPL systems today operate on frequencies up to 50 MHz with very low power signals spread over a broad range of frequencies.” What this means is interference from BPL will be spread out over a broad range of HF frequencies up to 50 mHz. The HF spectrum user will not simply be able to shift frequency to elude the interfering BPL signal if they are covering the entire spectrum. Paragraph 5 also states “These frequencies are also used by licensed radio services that must be protected from harmful interference as BPL systems operate on an unlicensed basis under Part 15 of the Commission’s rules.” How could you ever guarantee freedom from interference if RF signals are being sent across unshielded power lines suspended 30 feet above ground? The laws of electromagnetics cannot be defied. BPL signals are going to be radiated from power grid lines that will act as transmitting antennas. How will the Commission protect mobile radio users from BPL interference since they may pass within close proximity of BPL/power lines at any point in this country? Don’t forget that mobile radio users includes law enforcement, fire and emergency services, homeland security services, FEMA, and many, many more. Another area of concern is medical equipment. What plans are in place to protect medical equipment in hospitals and clinics from BPL interference?

Broadband interference from faulty arcing power lines is already a problem for AM broadcast listeners. This broadband noise is propagated for miles and miles over power lines. Add BPL interference on top of that and you will have major “RF gridlock” in this country. Endangering homeland security by employing a technology that could seriously

impair emergency and security radio communications not my idea of responsible spectrum management.

BPL will not improve the safety and efficiency of power distribution in the United States. It will only increase burdens on an already overly taxed utility power system that is extremely fragile, as evidenced by the massive power outage experienced in the Northeast U.S. during the summer of 2003. The cost of rolling out BPL Access will not be borne by the service providers, it will be cast upon the consumer. Consumers are already heavily burdened by electric utility costs. They do not need another rate hike to pay for BPL.

Regarding proof of BPL interference, the Commission should not rely on the word of any proponent of BPL. It is the responsibility of the Commission to seek out and arrive at its own conclusions following extensive in-house testing. As ARRL field tests have already clearly shown, interference from BPL is clearly a major issue that must be resolved. The same interference testing results have been arrived at in many other countries as well. These countries have made the fiscally responsible decision to deny operation of BPL Access within their borders due to known interference issues. I would hope those who have been entrusted with management of the spectrum in this country would respond in the same manner. Again, it is not the responsibility of the Commission to arrive at technical solutions to BPL EMI issues, but rather to recognize that they do indeed exist and demand correction prior to deployment.

Proponents of BPL state much of the infrastructure needed to operate this technology is already in place. What about the support hardware that will have to be added to the electric distribution system? The distribution lines are the least cost item for deployment. If BPL is being developed worldwide, why is it that several countries, including Japan, have already tried the technology and given up on it due to major technical hurdles, of which interference is the greatest issue? The Commission states in Section III, paragraph 31 of the NPRM that operators of BPL systems will be responsible for eliminating any harmful interference that may occur. First, why would anyone even authorize use of a technology that emits interference. Secondly, how quickly must the operator respond to interference problems, and what recourse does the spectrum user have if the operator does not immediately cease operations? How is the BPL consumer going to feel if the provider shuts down their service due to interference problems? BPL proponents have stated the interference impact of BPL will be minimal. The Commission must define what "minimal" is. In the eyes of an HF spectrum user being interfered with, any interference at all is totally unacceptable. The chance of interference from BPL should be zero, and nothing more, regardless of the benefits. Yes, hundreds of kinds of unlicensed devices are currently operating under Part 15 rules without causing harmful interference, but none of these devices is spewing RF from unshielded lines above ground that act as antennas.

In Section III, paragraph 35 the Commission states that amateurs may simply orient their antennas to minimize reception of emissions from nearby electric lines. In many cases this is not feasible due physical restrictions. In other cases, the amateur may need to

align his/her antenna in a specific direction in order to receive a very weak incoming signal. If the incoming signal is in the general direction of an electric line carrying BPL signals the amateur has no recourse. This is not an acceptable practice.

In Section III, paragraph 37 the Commission states the belief that a properly designed and operated BPL system will pose little interference hazard to non-amateur services such as aeronautical, maritime and public safety. The key word here is "little". How much is a little interference? How would you like to be traveling on a trans-Atlantic flight that was having trouble communicating with the ground flight control because the receiving end was experiencing a "little" interference from BPL?

Conclusion

On the surface BPL Access appears to be a panacea for providing broadband services to every electrical outlet in this country. Everything comes at a cost, and BPL is no exception. Further investigation reveals BPL has real potential to seriously pollute the finite electromagnetic spectrum this country is blessed with. It is the prime responsibility of the Commission to protect this precious national resource. Therefore, the Commission should not allow further deployment of BPL until it can be shown with absolute certainty that BPL will not result in any form of spectrum pollution.

Unless there is a technological breakthrough that adequately addresses the EMI issues, the Commission should use restraint at this time and not allow BPL deployment. Doing so without adequately protecting the American public and government services will only lead to problems for existing spectrum users, business problems for BPL providers, and utility rate hikes for consumers.