

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of

Carrier Current Systems, including Broadband over)
Power Line Systems.)

)
Amendment of Part 15 regarding new requirements)
and measurement guidelines for Access Broadband)
over Power Line Systems)
)

ET Docket No. 04-37

COMMENTS OF
THE NORTH MISSISSIPPI SPECTRUM USERS GROUP

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INTRODUCTION

The North Mississippi Spectrum Users Group is a consortium of concerned citizens living in the North Mississippi area. The group is made up of telecommunications professionals, commercial two-way and wireless interests, amateur operators, and other concerned citizens. The purpose of this group is to address issues common to its members, and to take steps to improve the quality of communications across the spectrum utilized by its members. Interference is a primary issue affecting all of the Group's members, and it is in this vein that these comments are presented.

II. EXECUTIVE SUMMARY

The Federal Communications Commission was created in 1934 to bring order out of chaos by regulating telecommunications within the United States. Since its inception, the Commission has acted where necessary to facilitate reliable communications across the entire spectrum, and has labored diligently to make sure that each service under its jurisdiction was able to operate efficiently within its assigned allocations without interference to other services either utilizing the same allocation, or utilizing adjacent allocations. Additionally, the Commission has served as a proponent and protector of the services under its jurisdiction where necessary.

With the advent of the Internet and the skyrocketing demand for broadband access, the Commission has found itself in under increasingly intense pressure to bring this access, particularly to rural areas, and has had very little help from the services which it regulates. It is therefore understandable that any new technology that brings the promise of broadband access to all areas would grab the interest of the Commission. However, there is an old saying: “For every problem, there is an answer that is easy, and obvious, and wrong”. In the opinion of the our group, Broadband over Power Lines is the wrong answer.

It is the opinion of our group that BPL in its current form should not be allowed under Part 15 of the Commissions regulations. We understand that the pressure to “do something” is great enough that the Commission believes that BPL can co-exist with other services. We disagree. However, the realities, given previous comments by Commission members, seem to be that BPL will exist in some form. Thus, our comments exist on two levels. First, we will bring up certain items that we feel have not been given sufficient attention, any of which would be reasons to disallow BPL. However, if BPL is allowed, we are suggesting certain procedures which would go a long way towards mitigating the interference we have all witnessed from existing BPL installations.

II. SPECTRUM CHOICE

The region of the spectrum (HF and low-band VHF) chosen for deployment of BPL is somewhat of a mystery to us. This portion of the spectrum is some of the most used spectrum available, and is subject to massive interference. It appears that the only reason for this choice was the ease of implementation. The potential interference in this portion of the spectrum should, however, override any “ease” issues. As we will discuss further, interference on these frequencies could come from a variety of sources. Given this possibility, the Commission should, at a minimum, relocate the BPL service to a portion of the spectrum that has little comparative use. Portions of the UHF television spectrum would be a good choice, as would areas above 2GHz. Placing this service in its proposed location (particularly the HF portion of the spectrum) is an open invitation for massive complaints to the FCC's enforcement bureau for which the FCC is ill-prepared. We would think that in its own interest, the Commission would relocate BPL to a different portion of the spectrum. This is not to say that all interference issues would be resolved by such relocation, and if this were to be proposed, the Commission would almost need to re-issue the Notice of Proposed Rule making for comments on the particular portion of the spectrum chosen. In any event, our group remains opposed to BPL deployment in any area where real interference is a possibility. However, we would be more receptive to co-existence in spectrum where the amount of interference possible was considerably less than the currently proposed location.

III. OTHER TECHNOLOGIES

Were there no other available technologies, the argument for Broadband over Power Lines would be a more compelling one. However, that is just not the case. The fact that Incumbent Local Exchange Telephony Carriers (ILEC's) have utterly failed in their promise to bring universal broadband is not a failure of the technology. It is, rather, a failure of their implementation. True, in most areas of the country, DSL is available, but only within a few thousand feet of the ILEC's serving wire center – generally located in downtown areas of both metropolitan cities and rural communities, leaving millions uncovered. However, cable-modems are available in many areas. Wireless services are springing up in rural areas. At least one major satellite company (DirecTV) offers broadband services via two-way satellite access. Many Competitive Local Exchange Telephony Carriers (CLEC's) are beginning to “fill in the gaps”, now that the economy has begun to recover, however, much more work needs to be done in that area. Fiber-to-the-home (FTTH) is becoming viable, particularly in new housing developments, but there are entities financing complete retrofits of existing communities (primarily rural in nature) for FTTH projects. In short, there is no shortage of technologies. Add to that the fact that deployment of BPL in rural areas would be extremely expensive, and would not yield a Return-on-Investment (ROI) in the near-term, and the case for BPL becomes nothing more than a method for a few entities to make some quick financial gains before the realities of BPL begin to dim its promise. For this reason, we oppose BPL deployment in its current form.

IV. AGGREGATE INTERFERENCE

One of the areas which has been neglected is aggregate interference. While the FCC did dismiss the potential for localized aggregate interference (i.e. Interference caused by local BPL installations), no significant attention has been paid to non-localized interference.

The portion of the spectrum which has been proposed for BPL is coincidentally the portion of the spectrum in which weak signals can travel significant distances due to reflection from the ionosphere. While the specific power levels for a single system are very small, the addition of several BPL installations will, especially during periods of high sunspot activity, create the potential for interference over a national and international area from sites that cannot be identified. Weak signal work in the HF spectrum has shown that indeed very low power levels can result in significant signal strength at vast distances under the proper conditions. Take that work and extrapolate hundreds of mini-radiators spread over a wide geographical area, and the potential is real and impossible to predict. In every other area of life, our culture tends to protect based on worst-case scenarios. Why are worst-case scenarios being dismissed in this case? Indeed the FCC has rules concerning protection for humans from RF fields when virtually no evidence exists that these fields in general have an adverse affect. That same standard should be applied to all Part 15 devices, and especially BPL, which affects a large portion of our spectrum. For this reason, we oppose the deployment of BPL as it currently exists. If, however, the Commission decides to continue to allow BPL operations under Part 15, this issue must be addressed.

V. MOBILE OPERATIONS

The comments made by the FCC in issuing the NPRM completely neglected to address interference to mobile operations. Indeed, this type of interference could be among the most prevalent and harmful as a result of widespread BPL installations. There does not exist a good track record in the elimination of interference to mobile operations, particularly from power companies. In many areas of our section of the country, AM radio is unusable except for local stations because of power line interference. Some portions of our area are still plagued by CATV interference, and all parties recognize that the FCC just does not have the manpower necessary to address all but major interference complaints. To this, the FCC proposes to add another layer of interference which will make more sections of the area unusable. Indeed, it is this additional raising of the noise floor that concerns us, and the inability of the FCC to significantly address the resulting interference. Instead of adding more “noise” to the “floor”, the Commission should be engaged in helping reduce the amount of noise currently on the spectrum – particularly the HF portion. For this reason, we oppose the deployment of BPL as it currently exists. If, however, the Commission decides to continue to allow BPL to exist, the interference regulations must be specific and the incentive to reduct that interference must be significant.

VI. TRANSFORMER BYPASS ISSUES

One of the technical facets of BPL that has not been properly addressed is the potential problems from transformer bypass. In order for the signal to be propagated into the residence, the transformer must be bypassed, and the signal coupled into the residence. The bypass device itself may in many cases constitute an impedance device that will allow signals at certain frequencies to radiate efficiently, particularly when multiple residences are fed from the same bypass. These “mini antennas” have the potential to not only cause interference on a localized basis, but on a wide, and possibly global, basis during periods of high sunspot activity, particularly in the 10-30 Mhz range. Also, removing the transformer as a “blocking” device would allow other forms of interference not related to BPL. Other wireless devices in use in a residence that would not cause interference because of the blocking properties of the pole transformer would now be free to find their way into the spectrum in unwanted ways, opening yet another Pandora's box of interference.

Additionally, there are safety considerations in transformer bypass, not the least of which is the possibility of lightening damage that would eclipse the amounts now lost due to such damages.

For this reason, our group opposes the deployment of BPL in its current state. If, however, the Commission decides to proceed with deployment, this issue needs to be taken into consideration.

VII. RECOMMENDATIONS

In light of the problems discussed here, and from other venues, there are several recommendations our group would propose. Our first, and foremost, proposal is that no wide-band systems where unintentional radiation upon open radiators is a possibility should be allowed at any point in the spectrum, and Broadband over Power Lines should be excluded from Part 15 regulations as a permissible emission. Once the technology is sufficient to guarantee that radiations would not leave the delivering facility, current Part 15 regulations would be sufficient.

If, however, the Commission decides to proceed, and continue to allow BPL under Part 15, the following stipulations should be included in Part 15 in relation to any system which uses open radiators as a delivery device where unintentional radiation is a possibility:

1. The FCC should establish a clearing house of telecommunications experts with direct access to the Commission's enforcement bureau for all interference complaints from such systems. This could be a quasi-governmental entity such as the FCC currently allows in certain services to conduct their own licensing examinations (the Amateur Service and Commercial Radio Operator exams, for example), or could be tailored after the Amateur Operator's Official Observer program. Organizations have sprung up just for this purpose, and the Commission should be able to find interested parties to assist in interference mediation. Absent this organization, individuals finding themselves with interference would be forced to use other means to resolve interference issues, many of which could be cost-prohibitive – particularly for individuals such as shortwave listeners and Amateur Operators, and for small businesses utilizing the 27-50 Mhz portion of the spectrum. This organization should have the ability to enforce filtering, power reduction, and other means of mitigating interference under a triggering mechanism that could be negotiated. This organization would be the “second” stop for those experiencing interference if contacts with the provider prove unfruitful. The burden of proof should be on the BPL provider, NOT the entity experiencing interference.
2. There must be a database of all BPL installations, the equipment utilized, the geographic area covered, the administrative and technical contacts and their contact information, and the frequencies utilized by the BPL installation. This information should be available publicly in the Internet, and could be maintained by the clearing house agency mentioned above.
3. All BPL installations should be delivered “pre-notched” for the most active and safety-related frequencies (Amateur, Aircraft, Military, and Government frequencies such as WWV) so that initial interference complaints would be minimal. “Fine tuning” of the system for localized operations would then prevent most localized interference.
4. BPL providers should emit some identifying means on their signals in the event of remote interference via ionospheric reflection. This would allow an entity being interfered with on non-local basis to identify the origin of the offending signal, and contact the entity involved. This identifier could be something as simple as the letters “BPL” followed by the latitude/longitude or other geographical identifier sent in morse code at regular frequency intervals along with the broadband carrier. This information would be published in the

database, and those being interfered with on a non-localized basis should then be treated the same as those being interfered with on a local basis.

5. Mobile operations seem to have been ignored during these proceedings. The same attention paid to fixed station interference issues should be extended to mobile operations. Just because a station is in motion does not mean that the interference is less real. Many small-town police and fire departments utilize frequencies in the BPL spectrum, and indeed, in our area, the entire Highway Patrol system operates in that spectrum. Ignoring mobile operations creates potential public safety issues, as well as penalizing mobile operators in general.
6. Power levels should be the very minimum necessary for the system to work. Since the signals are being delivered on open radiators, there is no way to quantify pre-installation what aggregate interference will look like both on a localized, and on a non-localized basis. BPL providers should understand that when all other means fail, power levels will need to be reduced until the interference is mitigated. Such power should be given to the clearing house organization, but understood by all parties to be the last resort prior to system shutdown.
7. All new BPL installations must give public notice before construction begins so interested individuals can voice their support or opposition to the potential provider. Such notice should include a contact at the provider to receive such input. This is to insure that both the provider and the potential users of the system understand all the issues before installation begins. This notice should also be published in the database mentioned previously, and all potential new systems should be identified in the public database clearly.
8. Each BPL subscriber should be given written notice that they must accept any interference, including complete shutdown of their service, from any properly-operated entity without complaint to the interfering entity. The customer's only recourse would be with the BPL provider. This notice is essential for public understanding of the legalities involved.

Respectfully Submitted,

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