

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the matter of

Carrier Current Systems including Broadband over ) ET Docket No. 03-104  
Power Line Systems )

Amendment of Part 15 regarding new requirements ) ET Docket No. 04-37  
and measurement guidelines for Access Broadband )  
over Power Line Systems )

April 30, 2004

COMMENTS of ZONE INNOVATIONS

Introduction

The writer Walt Evanyk, is an experienced Broadband Engineer in RF, Broadband Networks, Defense Electronics, EWCM, EMI, EMC, Wireless IC Design and RFID. The Writer chairs the Communications Sub Committees for both the DFW Homeland Security Alliance and HOMESTARRS and is a Technical Specialist for the National RFID Institute. He has served on many International Standards Committees such as OFDM, 802.xxx, ATM, T1E1, OSIG, DAVIC and has over thirty patents.

**To the Commission**

**General Comments**

BPL has potential is a safe statement, when not having to clarify the term potential with real facts, insuring adequate time for receipt and analysis of results and impartial testing.

Claiming a test or trial deployment proofs a technology can provide a service or perform a task, in carefully selected trial demographics or with orchestrated demonstrations that do not reflect the mean of the real world can be similar to “salting a mine”. A true evaluation is in the real environments, along side of other mediums, within the same parameters, and performing as a transparent operation. No wonder it is being asked “Why such a rush to push the process along, before there is time for independent test and analysis reports to surface and be considered ?”

It is incredulous, that many power companies even with the FCC's vast resources there seemingly is an effort to place the burden of demonstrating interference, on specific license services (this is a first in the history of the FCC), even though, it clearly now has been demonstrated by those, that have accepted the challenge. (Contrary to Commissioner Adelstein's comments and the BPL supporters, that there are no significant interference issues). There exist concrete evidence both nationally and internationally of unacceptable radiation and interference from the aerial/buried lines and the nodes within any BPL existing deployment.

The Commission seems to be trying to make distinctions between various licensed services as to the responsibilities of the power companies. Example, with one licensed service the commission stated it is easy "just reorient the antenna". Of course, that's only possible if the antenna is directional and one does not desire to communicate in the direction of the interference. Not a practical solution for any licensed service.

Weak unintentional signals from any source can cause multiple intermittent problems. In a building, for instance, it was just recently observed wall clocks were not maintaining accuracy time. The accuracy of these clock was to be maintain by receiving transmission, from the nearest appropriate WWV transmitter. Image, what other scenarios can develop especially with a large scale deployment of BPL.

Let us look at another item. Since the BPL supporters are using HF frequencies, even the current rules could allow the radiation of enough RF energy to cause significant signal and interference many miles under favorable propagation conditions.

The latest news from Progress Energy Corp seems to be the ole "escape and wiggle" by taking advantage of their interpretation of the Commission's intentional broad wording in the rules, "with regard to 'harmful interference' that any interference that may still exist in a particular selected trial site is not 'harmful'".

Personally, I believe Amperion's technology is one of the most promising approaches, but mitigation techniques can be very complex, when one is trying to notch out a particular frequency, let alone a band of frequencies. To date, it seems Progress has not solved (or perhaps doesn't want to understand anything remains to be solved) interference issues.

Wiggle or weasel words in requirements and legislation must be eliminated and replaced with clear responsibilities and penalties for non compliance and lack of action.

Presently the books are full of exiting (some months and even years old) cases and complaints that the FCC has not been able to have the power companies swiftly solve.

With the current suggest approach by the Commission, it's rules and guideline there would be no incentive for any true effort by the utility. If the rules are loosened there will be less incentive.

I understand the efforts of and the extreme pressure applied to the commission.

But I must applaud and commend Commisisoners Martin and Copps for their openness and suggested conservative approach. This technology and any other must be evaluated for all its merits and issues such as technical, catastrophic issues, business case and value to our nation. This can be done keeping one foot on the ground (not becoming space cadets), or perhaps the next technology darling of the day will be modulated gas lines.

The FCC wisely required Cable Networks to met radiation leakage requirements to prevent interference to other licensed service, but for some reason there doesn't seem to be as much a concern with BPL deployment. Well, let us think about this. A rule of thumb, that is very simple, "if it "leaks" then it will accept "ingress" and conversely.

Thus, it is entirely practical and probably that any public service, utility, agency, bank, hospital, emergency service or military operation utilizing BPL could be crippled or compromised either by accident or via an organized orchestrated effort .

In my opinion, the term "Home Land Security" seems to be showing up in many proposals and justifications to achieve a desired result such as in the SAVI last minute filings. These are serious times, thus solutions and technologies must be thoroughly tested and evaluated in real world environments, applications and meet stringent requirements. Any and all technology must be evaluated by numerous neutral parties and organizations.

As far, as over used terms or phrases another is "Why every farm and community would now have broadband and BPL would provide a competitive atmosphere". Let us review this a bit. I'm not aware of one trial that has focused yet as a rural deployment. Let's see? Repeaters even ½ mile or at least 1 mile applied across several 50 mile square areas and 1,000 residents or even 5,000. Hmmm. Wonder why no one has produced a credible business plan for rural deployment. Simple, where are the largest concentration of customers. Perhaps a mandate such as a fixed ratio for each power company's install based to contain urban areas as to rural areas.

Not to long ago FTTH (fiber to the home) was the technology darling (Broadband for everyone). Well the business cases for it and FTTC (fiber to the curb) hasn't resulted in mass broadband in every urban setting and forget rural.

It has been suggested to drop the conducted emission requirements. Does this mean we can see an end to those requirements as well for the consumer devices connected at the end of this great transmission line for some, (for others antennae)? Why not?

In Progress's case it seems the underground lines are blanketing whole spectrums or bands, but they are indicating its time to go home and simply begin ringing the cash register.

### **Rules and Specifications**

It is my firm belief that the best modulation and system approach for BPL is OFDM. Because of its spectral efficacy, noise immunity, Quality of Service (QoS) tools and Digital Signal Processing (DPS). Thus, there would be no need to increase the power limits and in fact BPL should have a much lower power limit due to the inherent gains of signal to noise and bit error rates that OFDM offers and in consideration of the proven interference capability of BPL.

Part 15 must be applied and not relaxed for a new technology. BPL must perform the same type leakage requirements of their local drops (plant) (adjusted for 1-80MHZ) by truck roll monitoring and be held responsible for leakages, interferences and fines.

Radiated signals on any HF frequency or group of frequencies must be less than 2 DB above the ambient noise floor when measured at a maximum distance of 10 ft from the power line, pedestal or termination point above ground using a properly cut and focused dipole antenna for the appropriate frequency or frequencies.

Based on, for the most part the demonstrated past inadequate or inability of the utilities to address interferences to licensed services there must be formal clear and enforced incentives from the FCC for the utilities to abide by the rules and regulations such as penalties for non conformance.

Having the utilities self monitor within their circle would cause a train wreck. This past east coast power grid failure happened even with advance warnings (echoed by Brad Foss, AP Feb12 of the vulnerability of the nation's power grid). Their track record has been less than stellar in many areas including solving or addressing current interference issues to licensed services without BPL in the fray. It still is very common for individuals (consumers) to minimize or eliminate interferences simply (after no action from some power companies) to hit their electric pole a few times with a sledge hammer.

What are the safe guards that "Interference" and "Mitigation" efforts will not be crossed subsidized between "Regulated" and "Unregulated Identities". One can not simply say this is a "State" or "PUC" issue. A federal identity (the FCC) is writing the rules and acting as the engineer in a locomotive speeding down the track. This has all the implications of a possible unfair and unbalanced playing field in spite of one of the FCC's stated goals of providing a competitive scenario.

Conducted emission standards must be implemented and followed.

Data on each and every CPE, Unique Identity, Amplifier, Terminal, Periodic Power Grid Sweep, Filed Complaint and its resolution must be easily accessed by the Public and officially filed and maintained by the utility and the Commission.

### **In Conclusion**

As mentioned earlier, it is imperative to consider all factors in evaluating a new technological approach. A term Schnaars used is "Zeitgeist" the condition that characterizes the technological darling of the day universally applied to intellectual, political, and social trends of an era. By implication the zeitgeist idea holds that the forecasters are imprisoned by the spirit of the times in which we live. Simply stated it means to be carried away by the technological spirit of the day. Leave the space cadet role to NASA. Let's work together on firm ground.

The Rules should not be relaxed, but in fact probably tightened (for BPL) until BPL proponents can demonstrate (not in a conference room or carefully selected demographics) to the FCC and independent third parties there is a need to do so and there are no interference issues. The commission must make every effort possible to fully listen, evaluate inputs, results from both sides of the fence, including neutral third parties, testing labs and not rush to some implementation and verification plan by some artificial deadline.

BPL deployment must have the full responsibility of eliminating (not having them determine if it is "Harmful" interference. This should not be a problem since the majority claim there are no interferences. The Commission must make the requirements crystal clear with no escape routes due to weasel, wiggle or vague language and terms.

In addition, BPL users, experimental licenses and trials must adhere to the same principles of the other broadband providers. Routine plant leakage, radiation emission drive bys and reports must be issued to the FCC and made public through a very simple and timely method.

Supported by past historical data of utility companies inactions the FCC should offer incentives for compliance in the form of clear and sever penalties/fines for unresolved interferences to any licensed service.

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