

Before the
Federal Communications Commission
Washington, DC 20554

In the matter of:

Carrier Current Systems Including
Broadband over Power Line Systems

ET Docket No. 03-104

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

ET Docket No. 04-37

Comments of William A. Thompson

I am opposed to any deployment of so call Broadband over Power Line equipment in the United States. These devices are not similar in any way to typical part 15 unintentional radiating devices and they are not similar to existing carrier current broadcasting devices used in the AM Broadcast Band. They should not be allowed in frequency bands occupied by any existing service.

1. Typical part 15 devices radiate radio frequency energy as a small number of discrete frequencies. A typical manufacturer of these devices attempts to design them to have radiated signals significantly below the part 15 specifications so that manufacturing variations do not cause any production device to be over the limit, often a manufacturer desires at least a 10 dB margin (the strongest signal is one tenth the power allowed under the specifications). Most of the signals radiated by the device are far lower than the part 15 specification allows.

Access BPL devices are designed to be as close the part 15 specification as possible so as to maximize the range of the device. Furthermore, the Access BPL device is designed to fill the spectrum used with a wall of energy in order to maximize the amount of data that can be passed by the device. Thus Access BPL devices will interfere with radio and television reception to a far greater degree than existing part 15 devices.

2. Existing part 15 devices can cause significant interference with existing services. A case in point is one of my co-workers who has to turn off all computers in his house in order to receive an HDTV signal from WBBM-Digital in Chicago. At least in this case he has the ability to turn off the interfering device. If Access BPL were installed in his neighborhood, the signals would be all over his house and he would be unable to receive this HDTV signal even though his home is only 30 miles from the transmitter in Chicago!

3. Carrier current broadcasting devices operate on a narrow frequency band, occupying only the frequency spectrum needed for a single AM broadcast station. They are always tuned to a frequency that is unused for AM broadcasting in the area of the carrier current system. Thus there is no interference with reception of licensed AM broadcasting stations. These signals do not propagate through distribution transformers and so cannot leave the local area of the carrier current broadcasting device.

Access BPL devices will fill the spectrum they occupy and thus be on the same frequency as licensed radio stations. Distribution transformers will be bridged to allow the signal to reach the access point via higher voltage lines. This will allow the signal to travel much farther than old carrier current systems. Access BPL devices will therefore interfere with radio and television reception over a wide area.

4. As technology advances, the DSL and Cable Modem competitors for Access BPL will continue to increase the data rates of their services. In order to compete, Access BPL providers will have to use more of the radio spectrum for their devices. This will push Access BPL signals into the frequency ranges used for more of the television channels, the FM radio band, and aviation. Access BPL will cause very significant interference to these services.

5. Regarding paragraph 35 of 04-29, the commission states that they believe most radio amateurs "...orient their antennas to minimize the reception of emissions from nearby electric power lines". This is incorrect, most radio amateurs have no ability to rotate or re-orient their antennas. The common idea that radio amateurs all have an antenna tower and rotatable antennas is wrong. I am a radio amateur and my antennas are wires hanging in a tree. When the power line develops "line noise" I cannot receive any signals and cannot operate my station.

6. Regarding paragraph 37 of 04-29, it states that "...most public safety systems are designed so that mobile and portable units receive a signal level significantly above the noise floor.". This is generally correct, however the commission should be aware that public safety systems are generally designed for 95% coverage. This means that the mobile or portable radios used will receive a usable signal (generally above 12 dB Sinad or 20 dB quieting) but in 5% of the area they may receive an unreadable signal. These poor signal areas are often inside houses or other buildings.

Access BPL systems that use frequencies occupied by public safety agencies will cause the coverage area of the public safety agencies to become smaller. Instead of 95% coverage, these agencies may find themselves with 90% or smaller coverage. This could cause a first responder to miss a command to leave a building during a fire or other emergency. It could cause a loss of life.

7. Regarding paragraph 46 of 04-29. The commission asks if emission measurements should be conducted at antenna heights greater than those proposed in Appendix C. Yes, they should. Measurements should be made at least as high as the overhead power lines themselves. Indeed, the maximum radiation of these power lines may be straight up at lower frequencies below 15 MHz. Measurements at lower heights cannot be accurately corrected because the correction factor will vary greatly due to the terrain and ground conductivity.

It is practical and safe to make these measurements at the height of the overhead power line 10 meters from the line.

8. The recent phase 1 NTIA study concludes that interference is likely 55 meters from an Access BPL device and the power lines to which it is connected. My entire house and yard are within 55 meters of the overhead power lines. This leads me to believe that I will receive significant interference. The NTIA study also says that with "low to moderate desired signal levels" interference is likely 460 meters from the BPL device and attached power lines. These are intolerable distances and interfering devices with such ranges are not allowed in any other part 15 service, why are they to be allowed here?

9. The commissioners keep stating that Access BPL will finally permit broadband internet access into rural areas. This is unlikely to be the case. Currently planned BPL installations are going into suburban areas with significant population density because that's where the money is. Rural areas require much more investment per subscriber. Furthermore the range of access BPL is only a few thousand feet. Wireless internet and DSL lines are much better for access in lightly populated areas. DSL lines have distance limits of 15,000 to 20,000 cable feet from the headend equipment. Several manufacturers now make headend equipment that can be installed in remote cable vaults. DSL equipment is now so easy for a subscriber to install that no visit to the customer premises is required in most cases and the price has declined to the point where it is cheaper than AOL.

10. The commission should be aware that many shortwave radio services are used throughout residential areas. I have an amateur radio license, there are over 300 amateurs in the town I live

in. I also have a Citizen's band radio. I have a time receiver for listening to standard time broadcasts from WWV at 5, 10 and 15 MHz. I also have a receiver for listening to shortwave broadcasting stations. All of these devices will be useless if Access BPL comes to my area.

In summary I am opposed to any deployment of Access BPL in the United States. I believe that a number of the assumptions made in the commission's docket are incorrect and that interference due to Access BPL will be strong enough to make the radio spectrum it uses useless for the licensed services in those bands.

Respectfully submitted
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