

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
Inquiry Regarding Carrier Current)
Systems, including Broadband over) ET Docket No. 03-104
Power Line Systems)

To The Commission:

Comments of S. Earl Jarosh

Much has been written and said about BPL recently and many of us are in opposition to it on the very real and proven technical proof of interference to current Amateur Radio operation. A portion of BPL resides in the entire HF/SSB bands used for long distance weak signal point to point communications. HF/SSB is defined as 2-30 MHz and has the unique ability to provide predictable worldwide point to point communication on low power with out the aid of any other relay stations or devices. Many services other than Amateur Radio also depend on this predictability and non-interference.

I will concentrate in this document on other well-established infrastructure licensed radio, TV, and data services that will adversely be affected by BPL. I have also purposely avoided the technical discussions so as to fully concentrate in a real world sense the effect that a widely deployed unlicensed protocol running at the maximum limits of RF interference country-wide would have on currently licensed actively used Radio frequency infrastructure.

Documentation filed with the FCC and recent field trials have provided initial adequate and compelling evidence identifying the interference levels that are currently being generated by BPL (please reference the video at http://216.167.96.120/BPL_TRIAL-web.mpg)

BPL interference sounds like a Geiger counter style crackling din. This would be like trying to listen to an AM broadcast radio station during the worst thunderstorm that you could imagine. Constant never letting up static crashes in rapid succession.

Again we all understand that BPL is a Radio Frequency technology deployed on the existing electrical grid. This makes BPL much like High Speed Broadband delivered through Cable TV. Broadband is delivered to homes through a non-radiating coax cable. This keeps the interference inside the coax cable. Unlike Cable TV, BPL is delivered to the homes on open wires that radiate just like an antenna. These new antennas known as electrical lines/grid crisscross the entire USA. They also radiate in all directions perpendicular to the wires which means in all directions down, to the sides, up into the air and will be radiating interference to many commerical and government services.

BPL works in the frequency range of 2-80 MHz. All AM, SSB voice, Data and TV technologies that reside in this radio spectrum will be effected by the technology known as BPL.

Some examples of services effected will be:

- International and Coast to Coast aircraft
(These flights use and depend on clear HF/SSB voice communications in addition to other data and voice services. All ground based airport and non-airport tracking stations will be affected)
- Marine (coastal waterways, International waterways, great lakes) (Sailboats, pleasure craft, commerical, charter all depend on clear HF/SSB voice communications to the main land for emergency, general traffic, weather reports, coast guard reports. All ship to shore communications will be affected.)
- Air Force One
(The President's airplane's still use HF/SSB commerical and military channels for at the very least backup and probably periodic primary use. Both the airplane and ground stations could be affected even with their High Power transmitters)
- VHF Aircraft frequencies 108-136 MHz (Air industries lifeblood)
(VHF Aircraft frequencies are an AM mode and are the third order harmonic of 36-45 MHz. Third order harmonics radiate a significant amount of the original energy. The AM mode is high susceptible to BPL interference and interference passed through to the third order harmonic has the real possibility of creating noise that could impede ground to air communication. Aircraft radios are low power and rely on line of sight to the ground station. To energize the entire electrical grid beneath the air traffic with BPL may hit the airplanes an all sides with a wash of interference to their radios.)
- Forest Service, DNR, Expeditions, Alaska Emergency Channel
(HF/SSB voice communications is still used in remote or mountainous areas for long distance communications back to BPL effected base areas. These are areas where VHF/UHF FM communications are not possible)
- TV Channels 2-6 (54-76 MHz)
(Broadcast TV sends images to us using the AM mode, which like SSB is effected by interference. In addition the rural areas receive much weaker signals from licensed TV and radio services requiring installation of higher gain antennas. These antennas amplify both the signal and related interference. TV channels 2-6 would be the common example here. BPL has the potential to seriously degrade television reception on those channels in those areas. No evidence of testing has been done to determine what this interference looks like on a television.)
- Antarctica
(May be a lesser issue with today's satellites and relay stations but HF/SSB is still a dependable point to point backup communication medium but our mainland base stations would be affected by BPL interference.)
- Cat 5 10/100/1000 Hub/Switch installations
(These can be sensitive installations especially older non-fiber all copper installations with lots of hubs/switches or repeaters. The IDF's are often in the same room with all of the electrical which has known to cause problems. Proven varying RF levels in these small closet locations cause hubs and switches to halt or drop data.)
- Amateur Radio Emergency Services (ARES) Worldwide
(HF/SSB is used for long range point to point communications worldwide. Often times this is the only way that humanitarian aid is coordinated and information is passed in and out of third world and technology poor countries especially in times of

severe crisis and especially in the early critical stages of a disaster. Examples would be: hurricanes, earthquakes, tornados. This is a weak signal mode that will be greatly affected by BPL.)

- Amateur Radio Emergency Services (ARES) Domestic (HF/SSB is used for long range 100-3000 mile communications point to point. VHF/UHF is short range 30-100miles through relay stations (repeaters) 5-30 miles point to point. When the electrical grid went down from MI and OH eastward, the standard communication infrastructure degraded after a day. Emergency HF/SSB traffic flow would have been impeded in the operating part of the country if BPL had been widely deployed)

In addition the Amateur Radio Service is an emergency service and in order to continue in that process it must be unimpeded by intentional interference like that that would be created by BPL. The Amateur Radio Service has consistently helped out in times of disaster working very carefully with government services like police, fire, red cross, NOAA (for tornado and hurricanes) as Skywarn spotters and community service. Since 911 has also been actively working with Homeland Security to provide both local and long distance (HF/SSB). Many of these efforts will be seriously compromised if requested BPL RF levels are approved and allowed to be widely deployed.

The part 15 Class A (commerical) and Class B (residential) was created to deal with individual isolated devices. A computer here, a baby monitor across the street, a handheld device in my pocket, a Wireless device, etc all creating some level of different type of interference but once away from the device's field or when it was turned off the interference went away. Not every device would be creating interference at the maximum limits allowed. This was to keep peoples TV's, radios, stereos from interference. These ratings were intended as location specific not service specific. The commerical rating was intended for devices that would use in a commerical setting (like an office) which would be physically far away from residential homes and areas. It is inappropriate to apply constant maximum levels of Part 15 Class A broad spectrum radiation across every neighborhood of the USA.

Side Note and opinion:

With recent examples of power line infrastructure problems, maybe the power line companies should concentrate on utilizing their current funds to correct problematic, aging, over capacity power lines before venturing into a new and unrelated industry. In the UPLC's Docket No. 03-104. They referenced a "potential to promote homeland security". BPL is a depended technology so therefore if the grid is down, then power to the repeaters, Fiber transitions, and Waypoints is out therefore the entire BPL system is out therefore there is no advantage or assistance to Homeland Security.

In Conclusion:

Currently the appropriate testing data is not available to determine what kind of RF Dead Zone/Curtain/Barrier will be created using Part 15 Class B (3 meters) or Class A (10 meters) in all directions from every electrical wire deployed in the USA should wide deployment of BPL commence. Studies at this time do not support any form of the UPLC's request to relax the unlicensed RF emissions standards or RF emissions testing protocols.

It does not appear that the proper due diligence has been applied to determine the far reaching effects of wide BPL deployment nor has any scientific or equipment intensive based studies been done to determine real not just theoretical effect on a wide range of licensed protected services that utilize this important piece of radio spectrum.

BPL is bad science and electrical wires were never design to be a delivery system to carry RF energy, this was understood over 100 years ago by Marconi. In RF science those wires are called an antenna which receives and emits signals but makes a poor RF delivery system as the intended signal degrades very quickly along its intended path. The science of RF delivery is transmission lines which in the early days were carefully balance pairs of wires which through proper science and design progressed into low loss Coaxial Cable now commonly known as coax. To continue to promote the highly inefficient BPL delivery system is to take a step 100 years backwards with technology rather than moving forwards. This inefficiency explains BPL industry's need for relaxed emission standards. All of this comes at a cost of using more electrical power, no matter how small, it all adds up to a larger drain on an already overloaded grid. This also seems to go directly against any of our efforts of conservation.

At the very minimum it is necessary that the Part 15 Class B (residential) rules be applied to the entire BPL industry to minimize interference and keep the overall unlicensed RF noise floor low so that licensed services operate without interference or with very minimum interference. This was the purpose and intent of the Part 15 rules.

Respectfully submitted,

S. Earl Jarosh
N0HZ
612-868-1313
Money Centers of America
V.P. of Information Technology
earl@jarosh.org
earljarosh@moneycenters.com
www.moneycenters.com