

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Carrier Current Systems, including)	ET Docket No. 03-104
Broadband over Power Line Systems)	
)	
Amendment of Part 15 regarding new)	
requirements and measurement guidelines)	ET Docket No. 04-37
for Access Broadband over Power Line)	
Systems)	

REPLY COMMENTS OF KEVIN L. ANDERSON

Introduction

1. This comment has three purposes: (1) as a reply comment in support of comments filed by the American Radio Relay League (ARRL), NASWA, SBE, NTIA, and others, (2) as a reply comment questioning those filed by PowerWan, Amperion, and UPLC (to name three examples of providers/supporters of AccessBPL services or equipment), and (3) as an addendum to my own comments filed on April 27, 2004 with respect to the pending rulemaking. I am a regular listener to licensed international broadcasters via shortwave radio and a licensed amateur radio operator (K9IUUA) since 1993. My reply comments and addendum will provide examples of concern from two perspectives.

Perspective 1 – Use of an existing licensed HF radio service

2. I just spent an enjoyable two hours during the afternoon of Father’s Day (June 20) walking the streets of Dubuque, Iowa, my community of residence, listening to the news and information programs of the Dutch international broadcaster, Radio Netherlands. The radio used was a Radio Shack DX-350 portable AM/FM and shortwave receiver that

my wife bought for me some 12 years or so ago for the low price of \$40 – in other words not a fancy radio (but very typical of what many people may have). Radio Netherlands was coming in loud and free of interference on 17810 kHz, one of several frequencies beamed to both the United States and Africa on Sunday afternoons from their transmitters on the island of Bonaire in the Caribbean (Netherland Antilles).

3. What is significant about this walk, which I do several times a week, often in the evenings, on Saturday mornings, and on Sunday afternoon, listening on various frequencies in the 49, 31, 25, 21, 19, and 16 Meter international broadcast bands, is that I was walking typical streets of Dubuque that are lined with overhead power lines. Everywhere there were medium voltage and local service lines in this residential part of town that included houses built between 1900 and the 1940s, plus some old residential commercial districts. Rarely was I not below, or no further away than on the other side of the residential street, from these overhead power lines. Yet, with few exceptions, I had no power line noise and no interference. Occasionally, while walking past a few store fronts and the occasional house, the signal level would drop and I would hear the power line noise or some device(s) in the structure would interfere. But otherwise I had nearly interference-free reception. These are streets currently without AccessBPL.

4. If I am to share the enthusiasm that the supporters and advocates share for Broadband over Power Line (BPL or PLC) systems, especially if implemented using HF (aka shortwave) frequencies, then they must be able to guarantee that I can take the identical walks that I do, regardless of time of day or day of the year, and be able to enjoy unheeded my listening to international broadcasters as I currently do.

5. Instead, the reality that I can expect, as measured by the ARRL and NTIA, plus mathematically modeled by the NTIA, Boeing, and others, suggests otherwise. The latest is some very audio graphic examples of BPL-induced interference as measured in North Carolina and shown in a video titled, *BPL and HF: A Primer*. This video, just over four minutes long in MPG format, is currently available at the direct link of <http://www.arrl.org/news/stories/2004/06/18/8/BPL-and-HF-web.mpg>

6. That video clearly shows BPL-induced interference from roadside overhead power lines as interfering with Radio Netherlands broadcasts, broadcasts by the way from a licensed radio service protected by international treaty obligations and intended for reception by citizens of the United States. This video, and my regular walks while listening to shortwave radio, also shows that properly functioning power lines without BPL generally do not interfere with HF (2 to 30 MHz) communications.

7. I am by no means against broadband for everyone – I support it! My family currently has cable service with broadband Internet, which we thoroughly enjoy nor desire to give up. And currently this service does not interfere in any way that I can detect with any of the licensed radio services I currently participate in. BPL should not be permitted to used at HF frequencies unless they can provide the necessary safeguards, with power levels 30 to 40 dB lower than proposed under Part 15 regulations, as well masking/notching of frequencies, so as to not interfere with licensed services and users of those services.

Perspective 2 – Trouble from Part 15 Devices

8. While my cable internet service (both the cable modem and attached network router for the home) do not seem to interfere with my radio use, I cannot say that my

house is currently RF interference free! I have been struggling to solve interference problems that I have to my amateur radio equipment from at least two identified Part 15 devices in my house, plus a third I have yet to identify.

9. Currently the family's main television, a RCA model from about four years ago, produces a very significant signal that nearly obliterates reception in the 20 Meter amateur band (14000 to 14350 kHz). This interference is disruptive and annoying, covering about 2 to 3 kHz in width, and repeating about every 16 kHz. I know it is the television – there is no doubt about that as the interference is there only when the television is on, and not when it is off or unplugged, and it there regardless of whether I am watching a station on cable, playing a video tape, watching a DVD movie, or none of those. I've tested all the various combinations and definitely narrowed it down to the television. Putting iron cores designed as RF filters around the power lead doesn't solve it, nor does putting them on the various input wires – the noise is still emitted strong enough to be picked up by my outside dipole antenna. And this is a Part 15 device tested for use in a home.

10. Similarly, we recently bought a brand new Maytag Neptune washer with electronic controls. This top-of-the-line, energy-efficient washer also generates wideband noise every time it rotates the drum, which is for about ten seconds at a time starting every ten seconds or so. Very recognizable and easy to identify as the source. So far a similar application of RF filter cores on external wiring has not solved the problem. Again, this is a Part 15 device tested for use in a home.

11. And I have yet at least a third set of noises, at separate frequency points and with different characteristics than the identified television or washer interference, that I have yet to identify. I know it is not my computer and networking equipment, as those have all been disconnected for testing.

12. I live in a 1930s home, a very typical home for my neighborhood in Dubuque. The wiring in the house was recently upgraded to 100-amp service, with all accessible wiring household wiring replaced with new. Yet I am still receiving interference from Part 15 devices even I am already taking precautions to minimize the RF interference they produce. I am still hopeful that I might solve these problems without having to get rid of both the television and washing machine – which would be expensive and unpopular options with the family should it come to that. Yet I may be forced to if I wish to continue as a license amateur radio operator and can't solve the interference problems, *a decision I shouldn't have to take due to Part 15 devices.*

Summary

13. With these two examples I hope I have illustrated what is both the current joy and usefulness that comes from the HF radio spectrum in the form of receivable licensed services, and the bane of trouble that can come from further use of Part 15 devices to pollute the HF spectrum.

14. My knowledge of radio theory, the mathematical models that have been produced, and the real-life examples that have measured, all show that BPL will interfere if implemented using HF radio frequencies. BPL is “interference” *intentionally* created (unlike my television and clothes washer problems, which are unintentional) by the introduction of RF signals on power lines.

15. Yet Part 15 regulations of the FCC also indicate that all these devices must not interfere with licensed radio services and the users of those services!

16. Studies by the ARRL, NTIA, Boeing, authorities in the European Community, and elsewhere, all suggest that BPL can be only implemented without interference if signal levels are reduced by an additional 30 to 40 dB below that currently permitted by Part 15. The NTIA further goes on to suggest in their comments that new procedures are needed for the proper measurement of the radiated BPL signal levels at all points along the power line (and not just at specific wavelengths as suggested in the NPRM).

17. These changes must be introduced if BPL is to have even the remotest possibility of being implemented without creating interference for existing licensed users of the HF (and low-VHF) frequencies. The FCC must practice both a restraint in rushing a new service (and BPL is indeed a new service, albeit a Part 15 one, that should be identified as such) into regulatory support before it is ready, plus a maximum protective effort of existing licensed HF users, including enforcement against BPL devices and installations that do interfere. No licensed service or user of a licensed HF service should have to decide whether they can operate effectively due to interference from Part 15 devices, nor should they have to worry about interference to a Part 15. BPL devices will operate continuously, which clearly will represent *harmful, intention interference!*

I continue to urge enforced protection of existing licensed services.

Respectively submitted,

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