

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

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

REPLY COMMENTS ON NOTICE OF PROPOSED RULE MAKING

To The Commission:

I have a BS in electrical engineering, have in the past worked for a power and distribution transformer manufacturer, a manufacturer of amateur radio equipment, and a manufacturer of high end test equipment, and I've been chief engineer for a couple AM radio stations while holding an FCC First Class Radiotelephone license. I have held an amateur radio license for over forty years, extra class for thirty. I've published articles in two ham radio magazines and one company newsletter. I've had my share of experience on the ham bands including Worked-All-States (WAS) and Worked-All-Continents (WAC) certificates using no more than five watts output from, or ten watts input into, my transmitter, many evenings operating HF portable in the parks, and pedestrian mobile on ten meters. I've come across and dealt with various noise and interference problems from Part 15 devices which I've either solved, compromised with, or moved away from.

I am replying to comments filed on behalf of The City of Manassas, Virginia on 5/3/2004. I suppose you might wonder what interest an Oregonian has in the doings of a city in Virginia when there are a thousand other commenters I could reply to. Originally I hail from Pennsylvania which is closer, and my ancestors first settled in this country in Virginia. I'm the only one I know of out here who observes Robert E. Lee Day. I have my reasons.

Actually, there's a good reason why any American interested in telecommunications would be interested in the comment from Manassas, which we shall get to. Let's see what they have. I notice they remark (page 1) that, "BPL has the potential to increase availability of broadband services to homes and business, particularly in rural areas." A lot of people have pointed out this particular potential of providing rural service without any provider having done so in particular, and the setup in Manassas is no exception. Not rural. Costs too much probably.

Then we get to page three.

While the City is encouraged by the benefits derived from BPL technology, it remains sensitive to the concerns

held by amateur radio operators.¹ The BPL system in Manassas is in compliance with the FCC's Part 15 rules, and the technology employed in Manassas effectively allows for mitigation of harmful radio interference if mitigation should become necessary. The City supports the Commission's findings that the current Part 15 non-interference requirements and emissions limits, along with the proposed changes and additions, will meet the dual goals of adequately protecting licensed spectrum users and facilitating the deployment of BPL technology.

They are very positive while being at the same time sensitive to radio users. Bravo!

They mention in a footnote an "April 15, 2004 letter from Allen P. Todd, P.E., Director of Utilities of Manassas, to James R. Burtle, Chief, Experimental Licensing Branch of the Commission," which they've attached at the end of their comments. This letter is optimistic in a similar vein. The Director of Utilities, Allen P. Todd, is also a ham operator of 46 years.

I have perused the web site of the Ole Virginia Hams, which I attach as a supplement, and note links to various outlets discussing BPL and its potential for interference. Among the hams presenting the interference concerns of BPL, I do not find Allen P. Todd listed. However, I do find him giving a presentation on Municipal Broadband at Law Seminars International on July 10, 2003. So while I do recognize him to be a ham optimistic about BPL-radio compatibility, it's not as if he were the one worrying about it in the first place and then decided there was nothing to worry about after all, but rather he's an industry spokesman who has been optimistic all along.

His letter goes on to recount:

On March 23, 2004, a meeting with OVH members was held at the City of Manassas Public Works Facility. ... This meeting provided an opportunity for the amateur radio operators to discuss their concerns. ... Discussions included a demonstration of how BPL can be programmed to filter sections of the radio spectrum. ...

The city agreed to have BPL installed at the home of [OVH Club member] Mr. Zaepfel. With BPL in his home, Mr. Zaepfel will be able to monitor the compatibility of BPL equipment operating in close proximity to his amateur radio station.

I am comparing the account of this meeting in the letter submitted with a short report of the meeting² from the club's perspective, and I see, "During discussions they were surprised that we have observed interference from both the Weir/Traveller and Signal Hill installations." Seems they were a bit optimistic to start out with.

¹ As described in the attached April 15, 2004 letter from Allen P. Todd, P.E., Director of Utilities of Manassas, to James R. Burtle, Chief, Experimental Licensing Branch of the Commission, the City has met with members of the Ole Virginia Hams Amateur Radio Club to discuss their concerns and has established a dialogue with them that is continuing.

² www.w4ovh.com/k4hjf_bpl.txt

I see that from the OVH material, "Bob Zaepfel offered to have the City hook up his home on Longstreet Drive for BPL so that we could have a useful test bed in a RF rich environment to see how BPL would affect his operations and whether or not his signals would cause difficulties to BPL embedded microprocessors. He will take up the matter with Mr. Todd soon. ...

"... Clearly, the City believes that it is not causing any harmful interference at this time. Further testing, perhaps using Bob's home as a test site, may prove otherwise."

The city is optimistic, the ham club less so. But even Mr. Todd's letter doesn't seem to have indicated the matter of all interference concerns is yet resolved: "We will continue to monitor for possible interference, and in the event that interference does become a problem, we will work to mitigate the impact. ...

"With the application of BPL technology and successful deployment of BPL to the citizens of Manassas we would like to invite FCC representatives to visit Manassas and monitor the operation of the BPL network."

It should take the efforts of the NTIA's studies and others to determine what extent the interference problems could be, so the comments (and letter) from Manassas will not be the deciding factor, so why even bother responding to it? I would have just skipped over it except for one paragraph in the letter:

We visited another overhead installation (a pole mounted BPL repeater) on Signal Hill Road. At this location, mild noise could be periodically detected using their intricate monitoring equipment. The mobile ham radio in my car was not sensitive enough to detect any interference. As the vehicle with the radio monitoring equipment moved away from the pole, any noise that could be detected was attenuated within approximately 60 - 70 feet.

I notice from the hams' report of the meeting that, "Mr. Burrows also advised that if no network activity is recognized by the modem, the modem goes into quiet mode and will not transmit. That's why we have noticed at certain times very little activity from some areas where boxes are mounted on poles." And looking at the link³ to this interference location, I see, along with a map diagram:

Signal Hill Rd., Manassas, VA
BPL installation Survey #2
as of February 29, 2004

This is a very active site. Tune to 7.255 MHz AM. Light activity appears as ignition noise covering from about 6 MHz to 8 MHz when on 40 meters. Images can be found on the 20 meter band. Heavy activity sounds like an audio oscillator instead of clicking or ticking. This interference covers 40 and 20 meter bands entirely.

It seems to me that the interference level at this site varies, so that the BPL representatives may not have measured it at its worst. Of course, I wasn't there, so I wouldn't know. Except I see that the OVH have left the BPL complaint forms on their web

³ www.w4ovh.com/images/signalhill_rd.jpg

site. So that's not a decisive test one way or the other either, and wouldn't even be worth mentioning except for one thing: the portentous location where the interference was heard however weak.

According to the comment (page 3), "Through its franchise, Manassas is the first municipal utility in North America to facilitate Internet access through BPL technology." It's the first. And they detected "mild noise." Coming from Signal Hill. In Manassas, Virginia. Remember?

Signal Hill⁴

A Confederate observation post here warned of the Union effort to turn the flank of the Southern position during the initial stages of the First Battle of Manassas. It was the first use of wig-wag signals during wartime. Memorial cites first telecommunication on a battlefield.

It was the "first telecommunication on a battlefield." And from that tiny beginning has sprung the amazing battlefield telecommunications we have today, and all their offshoots.

That was a milestone in telecommunications, from Signal Hill. There is another milestone from another Signal Hill that deserves mention.

Enter the wireless age and the magic of another Italian, Guglielmo Marconi who made history by transmitting the letter "S" in Morse code from Poldu, Cornwall, England to a receiving station on Signal Hill, overlooking St. John's Harbour in Newfoundland on December 12, 1901. Without question this was a startling discovery and a wonderful gift to humankind at the start of a new millennium.⁵

I just want to point out that the guy waving the flags on Signal Hill in Manassas during the Civil War and the Morse code "S" received on another Signal Hill at the turn of a century were minuscule signals but were harbingers of something much larger. Now that you have a report of BPL signals being received over the air from Signal Hill again during the first municipal roll-out of BPL, if you let it grow too fast without sufficient safeguards, you will have neglected not only science, but also history.

I have included as a supplement a copy of the article cited above. Please look at the picture of Marconi raising his antenna on Signal Hill. It was just a long wire, not much different from the power line sending out signals on Signal Hill in Manassas.

I shall end my reply comments with the concluding paragraph of the article cited above:

The story of the advances in the communications industry since the start of the 20th century is well documented. From radio to television, from wired to wireless, from copper to fiber optics, from earth to satellites and beyond, the progress has been outstanding and worthy of [IEEE's]

⁴ www.civilwar-va.com/virginia/north/manassas.html

⁵"Connecting Continents," by Wally Read, "Science and Technology," *IEEE Canadian Review*, Winter, 2002, p. 18.

research. There are lots of "Atlantic Oceans" out there to be challenged and I urge you to tackle them by following Churchill's advice, "to look back occasionally so that you can see further into the future."

My reply comments here are intended to help us do as Churchill advised, to look back on how something very large sprang from small beginnings so that we can see further into the future, that humongous interference problems might have but small noticeable beginnings. Note the progress of new technology above and how it might be applied to broadband. "From radio to television." We get television on cable now, and broadband may be safely sent by cable. "From wired to wireless." Wireless may also be used for broadband and offers rural areas an affordable hope. "From copper to fiber optics." Here sending broadband on plain copper wires is a step backward. Fiber optics is forward. "From earth to satellites." Yes, satellites is progressive. I don't see broadband over powerlines as progressive within this scheme.

Respectfully Submitted,
Earl S. Gosnell III