

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC

In the matter of)
)
Inquiry Regarding Carrier) **ET Docket 03-104**
Current Systems, Including)
Power Line Broadband Systems)

Written Reply Comments of Gary C. Sutcliffe

I wish to reply on comments filed with the Commission on the interference potential of broadband transmissions over power lines (BPL).

I have been employed in the electronics industry for over 30 years and hold a bachelor's degree in electrical engineering from the University of Wisconsin, (1976). I have also

been a licensed Amateur Radio operator for over 30 years, currently holding an Amateur Extra class license and have been assigned the call sign W9XT by the Commission.

My professional has involved the design of a number of digital systems that fall under Part 15 regulations and required testing and certification. In my Amateur Radio work, I have experienced and corrected interference from Part 15 devices. My professional work and personal hobby have given me exposure to a wide variety of aspects regarding radio interference.

Summary

The majority of the comments filed by proponents of wide spread implementation of BPL have not provided technical data or conclusive theoretical analysis that their proposed systems will not cause interference to radio communications in the HF and lower VHF spectrum. Their arguments are based on anecdotal evidence on the lack of interference reports in their limited test sites.

On the other hand, the American Radio Relay League (ARRL), in their comments and reply to comments, has present a strong case through theoretical calculations and field tests that BPL does indeed provide a major risk of severe interference problems.

To support my above comments I would like to specifically reply to the following comments filed with the Commission. Text in Italics is excerpts from their filed comments.

Reply Comments

1. Reply to comments made by Ameren Energy Communications Inc.

Ameren stated the following conclusions based on tests in an experimental field installation serving 14 residential users:

Comment:

Some emissions above the Part 15 limits were observed between 2 and 30 MHz, which were probably caused by BPL transmissions. Most of these field emissions occurred in proximity to the lines, i.e. within 20 meters. Measurements at further distances from the lines indicated a rapidly decreasing field.

Reply:

In a typical urban or suburban environment, it is often be difficult or impossible for users of the HF or VHF spectrum to avoid being within 20 meters of a power line. This furthers the argument that large numbers of HF users could be affected.

Comment:

No emissions above the Part 15 limits were observed outside the geographical area of the cell.

Reply:

Frequencies in the proposed BPL frequencies are subject to propagation to locations hundreds or thousands of miles away. It is unlikely that a 14 user system meeting current

part 15 limits would cause significant problems half a continent away. That may not hold true for larger systems.

In addition, it is impractical to do exhaustive data collection over a large enough area and time frame to prove that the system was not causing interference. If the system had indeed been causing problems hundreds of miles away, it would be unlikely that the cause would have been identified and reported without an extremely difficult, time consuming, and expensive investigation.

Comment:

AEC has not received any complaints of interference from test participants or third parties during the time the experimental BPL has operated, which suggests that the commercial deployment of BPL is unlikely to cause interference to its users or third parties.

Reply:

The AEC test site included 14 residential users. Their comments did not include a list of actual users of the HF or lower VHF spectrum in the test area. A random selection of any area with 14 residential users is unlikely to include Amateur Radio stations, let alone military, governmental, radio astronomy observatories, or other users who would be adversely affected by BPL generated radio interference.

Furthermore, an area of 14 residences is unlikely to have people with the technical expertise to track down and identify any interference that might have occurred.

To properly evaluate the interference potential of BPL, test sites will need to be installed near actual HF users who have the technical expertise to evaluate the interference. The level of interference is going to be based on BPL signal levels compared to the level of the desired received signal. If BPL prevents or hinders reception of the desired signal, it is interference. The ARRL has demonstrated through calculations and field testing that BPL systems will generate signals many 10's of dB stronger than typical HF received signals.

2. Reply to comments made by the Hawaiian Electric Company, Inc. 07/02/03

Comment:

BPL Interference is a low risk – Because the equipment vendors will FCC-certify their access and in-home BPL technologies.

Reply:

Meeting FCC emission limits will not by itself safeguard the HF radio spectrum. The important point is that the FCC's regulations and limits must be set so that interference will not occur. That is the main purpose of 03-104.

Conclusions

The Commission has stated its desire to promote low cost and wide spread availability of broad band technology. No one can argue against the economic, social, and security advantages of such technologies to the citizens and corporations of the country.

Broadband will become a critical part of the nation's infrastructure. Unfortunately the recent wide spread power blackout exposed a weakness in another critical part of the nation's infrastructure, the power grid.

At the time of this writing there are calls for Congress to investigate the cause of the power blackout. Comments by experts published in the media are pointing to the frailty of the power distribution system – the same system that will support BPL. Perhaps we should not put another important part of our country's infrastructure in the hands of corporations that have not done a very good job of maintaining what they are currently responsible for.

There are currently alternatives to BPL including cable, DSL, and satellite. Others are under development that will not jeopardize the HF spectrum. There are no alternatives to the unique advantages of HF radio communications and Amateur Radio. These must be protected in any implementation of BPL.

BPL must be implemented with regulations and maximum emission levels set in a manner that will not cause interference to Amateur Radio and other licensed and legitimate unlicensed users of the HF radio spectrum. It will be necessary to prevent BPL operation in Amateur Radio and other sensitive frequency bands by the use of filters or other technologies that prevent emissions on these critical frequencies.

I wish to thank the Commission for taking the time to read and consider my comments.

Respectfully submitted,

Gary C. Sutcliffe, BSECE, licensee of ARS W9XT

**3310 Bonnie Lane
Slinger, WI 53086**

**262-644-9036
w9xt@qth.com**

Dated: _____
August 20, 2003