

Docket No. 03-104 - Comments to Broadband over Power Line Notice of Inquiry

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These comments are submitted from a radio amateur concerned that BPL may become a source of interference to amateur radio and other licensed services. They present three possible unintended consequences of interaction between BPL and amateur activity. Technical details on which these comments are predicated are found in studies on power-line carrier systems conducted in Japan, Netherlands, Great Britain, Germany, Finland, Norway, and Poland, as cited on the ARRL's web site, and in the ARRL White Paper "Calculated Impact of PLC on Stations Operating in the Amateur Radio Service".

1. Increases minimum necessary power

FCC rules part 97.313 (a) require amateur stations to use minimum transmitter power necessary to carry out communications. Improvements in amateur equipment have allowed the common 100-watt transceiver to be effective for world-wide communications. Operation at 10 watts and below is increasingly popular: many amateur radio contests offer preference to low power stations.

Amateurs avoid intentionally interfering with other services in shared allocations and with other amateurs, and generally seek clear frequencies in which to operate. In order to overcome the effects of atmospheric and man-made noise, it is sometimes necessary to increase power. If BPL results in an increase in the noise floor rather than a few narrow-band emissions at constant frequencies, a counteracting increase in amateur power will be necessary.

2. Promotes higher and larger antennas

The "average" amateur station does not sport an expansive antenna farm. Wire antennas using trees for support, or the modest tower, are the norm. The choice of antennas is often a compromise between minimum acceptable performance and non-technical concerns.

One response to power lines as a source of interference is to mitigate the effects through antennas having greater gain and directivity. In order to maintain the directional characteristics of the antenna in free space, it must be held a certain minimum distance above ground. The amateur with a low wire dipole having poor directivity and gain may need to erect a tower and a rotatable beam antenna to maintain a usable signal-to-noise ratio in the face of BPL interference. Not only is this a cost and inconvenience, but it exacerbates PRB-1 "reasonable accommodation" concerns.

3. Emergency Communications

The 2003 ARRL Field Day was beset by poor propagation in the amateur allocations below 144 MHz due to unsettled geomagnetic conditions. The 14 MHz band was the one high-frequency allocation providing reliable communications, day and night, during the 24-hour period of the emergency preparedness exercise. The VHF and UHF allocations were unaffected and provide reliable local-area communications.

Field Day's purpose is to demonstrate the amateur community's capability to mobilize and provide communications under conditions such as might be encountered after a natural disaster. While local-area communications would be necessary, they might not be sufficient: amateur repeaters necessary to extend beyond line-of-sight coverage might not be available after a disaster, leaving satellite and high-frequency as the means to get beyond the local area. Satellite communications requires ground stations at both ends of the path to simultaneously "see" the satellite, which depends on the time relative to the satellite's orbital period. This leaves high-frequency bands to fill the gaps. Additional interference from BPL could be sufficient to render a single amateur frequency allocation useless given the limited antenna and transmitter power resources available in an emergency situation.