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Reply Comments on ET Docket No. 03-104 (FCC NOI 03-100), Inquiry Regarding Broadband Over Power Line (BPL)

As a degreed electrical engineer actively employed as a Principal Engineer in the development of RF and microwave hardware, as well as an Extra Class licensee (N3IW) in the Amateur Radio Service, I submit the following reply comments for ET Docket No. 03-104.

Although the BPL industry and utility industry claims that no interference has resulted from the current trials, they present no data to support the claim. The American Radio Relay League (ARRL) has done extensive calculations of the interference potential to licensed users of the HF spectrum. These calculations use accepted methods in the RF and Microwave industry to predict the electromagnetic radiation from BPL. The predictions have been verified by measurements made in the Amateur HF bands in the existing trial areas. The methodology used by the ARRL is sound and follows accepted RF engineering practice. It is the type of analysis that should have been done by the companies proposing BPL prior to implementation of the trials. Given the experimental results and predictive calculations, BPL will cause widespread interference to users of the HF spectrum even under current Part 15 limitations. Masking portions of spectrum has proven to be successful in reducing interference with narrowband devices; however, given the amount of spectrum that BPL occupies, such masking will likely render BPL useless as a broadband technology. Without masking, BPL will render the HF spectrum useless for licensed users.

In addition, a masking scheme must account for changes in allocations to licensed users. Future spectrum decisions cannot be restricted by a masking scheme applied to a Part 15 device. Any future allocations in the HF spectrum will need to be masked in BPL devices. This places a very high cost on the hardware in order to remain flexible in its spectrum usage. But, it is not good spectrum policy and not in the public interest to restrict spectrum allocation to licensed users based on the spectrum occupied by an unlicensed device. Other technical challenges of BPL exist and the cost effectiveness of a large-scale deployment has not clearly been shown.

In order to efficiently transmit BPL on the power transmission system, devices designed to pass HF frequencies must be installed. In its present state, the power system inherently rejects HF frequencies as it is designed to pass 60 Hz. The power utilities use a PLC mode around 136 KHz for system control and communication. The system will transmit enough RF energy at 136 KHz that the Commission rejected a low frequency, low power allocation to the Amateur Service based on the potential to interfere with the PLC of the power

companies⁽¹⁾. By installing devices to pass HF energy, the power system is opening itself up to interference from any HF signal source, many of which are at very high power levels and located near the power transmission grid. Recent events show that kind of interference potential can have widespread, catastrophic results both inside and outside the United States. This is a potential means of ingress for someone wishing to sabotage the power transmission system. Likewise, the level of security of personal information on the BPL system is not the same as a traditional wired medium. BPL radiates over long distances and can be intercepted by anyone with the appropriate receiver.

I believe that the measurements and calculations performed by the ARRL show that BPL presents a very real and harmful interference threat to all users of the spectrum occupied by BPL and that even under current Part 15 limitations cannot be economically made to coexist with current and future licensed users of the spectrum. Part 15 is intended to protect licensed users from harmful interference and is not intended as an access to spectrum usage that would normally require licensure. I urge the Commission to not pursue the matter further and to take action against BPL on complaints that may arise from BPL deployment under the current Part 15 limitations.

Sincerely,

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Footnotes:

(1). FCC Report and Order FCC-03-105