

Duke Power Company
Power Line Communications
Experimental license - WD2XIG
File No. 0022-EX-PL-2004

Duke Power Company respectfully submits a report pursuant to experimental license WD2XIG, File No. 0022-EX-PL-2004 for Broadband over Power Lines (BPL) granted on March 15, 2004.

I. Equipment Selected for Testing

- During the past year Duke Power has conducted testing of BPL equipment manufactured by Main.Net Communications. During this time Main.Net has provided the BPL equipment for both in-home and external use on Duke's electric distribution grid.

II. Description of installation

- Duke Power and Main.Net installed a BPL system in Charlotte, North Carolina passing approximately 500 homes. The BPL Network is a "cell" type architecture, where a "cell" is a group of homes served by a back-haul connection point. Duke Power used fiber optics as the primary back-haul.
- A BPL cell consists of a BPL equipment at the back-haul connection point as well as BPL equipment on both the medium and low voltage distribution networks. The BPL equipment installed on the medium and low voltage distribution network acts as repeater network between the back-haul connection point and the end-user modem. The BPL customer premise equipment plugs into a standard 120-volt outlet and connects to the customer's computer via a standard ethernet cable.
- The BPL network is being operated, both from a technical and operational standpoint, as a commercial network. During the test, Duke Power partnered with three Internet Service Providers to provide both data and voice services to end-users.

III. Description of network testing

- **Emissions Testing** -The University of North Carolina at Charlotte Electrical Engineering Department was commissioned by Duke to perform radiated emissions testing on the deployed system and provide a report to Duke with its findings. Measurements were made in the trial area in three stages: prior to equipment being installed, during installation and after installations were complete. The reported identified no issues with radiated emission levels from the BPL equipment that would pose

interference to licensed operators in the same spectrum used by the system. The report from UNC-Charlotte can be provided to the FCC upon request.

- **Network testing** - One of the goals of the trial was to understand the limitations of the technology. Testing for data loss, delay and speed was performed to each of the end-user modems. The data from this testing will be used to redesign the network to meet our desired service level metrics.

IV. End User Acceptability and Interference complaints

- **Customer Experience** - Two surveys have been conducted with the approximately 75 users on the network with an overall favorable response. The feedback was consistent with our analysis of reliability and performance improvements needed to meet customer expectations.
- **Interference Complaints** – Duke has received no legitimate interference complaints on its system. Duke received one interference complaint on 6/10/04 from an individual located approximately 7 miles from the trial area. Duke contacted the individual the day after the complaint was received to set up a time to investigate the interference. The BPL Network was removed from service while monitoring the interference (the system was monitored with a spectrum analyzer for verification that the system was indeed disabled). The noise that the individual was seeing did not go away when the system was removed from service. The individual concurred that the noise he was hearing was not being caused by the BPL equipment. A copy of the complaint and his thanks for our quick response can be provided to the FCC upon request.

V. FCC Part 15 Verification

- Main.Net has not completed FCC Part 15 compliance testing on its current generation (2) equipment to date. Duke communicates frequently with Main.net regarding FCC compliance testing and requirements prior to further deployments.

VI. Conclusion

- Duke Power has concluded based on its testing to date that BPL is a viable form of communications and has the capability to provide satisfactory performance with minimal downtime. Further evaluations and work will be required to bring this type of communications to market. Duke will be evaluating other vendor equipment in the future as well as redesigning the current network to provide the performance that the users will require.