EXHIBIT III

Ameren Energy Communications, Inc.
Power Line Communications
Experimental License WC2XXK
Confirmation No. EL12223
File No. 0093-EX-PL-2002

Second Report
June 4, 2003

Ameren Energy Communications, Inc. ("AEC") respectfully submits this, its second report, pursuant to the terms of its Experimental License, WC2XXK, File No. 0093-EX-PL-2002, for power line communications ("PLC")[1] granted on June 5, 2002.

I. Description of BPL Test Installations

Equipment selected for testing

During this second six month period, AEC continued testing BPL equipment from one vendor, Main.net. Main.net has provided the BPL modems for in-home use and the BPL modems for external use on the electric distribution system. Main.net also has provided the software for network management, which has undergone some improvements with assistance provided by AEC and Big River Telephone Company ("Big River").

Others involved in the tests

Pursuant to an agreement with AEC, Big River continues to act as the network operations manager for the tests. Big River has arranged for interconnection of the BPL test system to the internet backbone via T-1 wireline connections and continues to act as the Internet Service Provider ("ISP") for purposes of the testing, including providing technical support to test users via Internet and telephone technical support.

Pursuant to a research arrangement with AEC, and at AEC's request, Southern Illinois University Carbondale continues to work on BPL equipment, including performance issues. Ameren affiliates continue to provide technical support for the tests, including testing the BPL equipment for electrical safety issues and developing installation and operational protocols.

Description of test installation

As stated in its first report, AEC and its test partners have installed a BPL system in Cape Girardeau, Missouri that passes approximately 300 homes. The BPL network consists of five "cells." A cell is a group of homes served by a backhaul connection point. In this case, the

[1] Also known as "Broad-band over Power Line" (BPL).

backhaul connection points use wireline T-1 type connections. In the area defined, Ameren has approximately 50 BPL Access devices connected to the medium voltage electric grid. Thus, to the extent that the term "installation" in Section 15.31(d) of the Commission's rules refers to a medium voltage BPL access connection, these provide almost 50 representative "installations." In addition, this configuration allows the testing of a multi-cell network architecture. Approximately two-thirds of the facilities are deployed overhead and one-third underground.

Each cell consists of a BPL modem at the backhaul connection point, BPL modems acting as repeaters at points between the backhaul connection point and the end user, and a BPL modem within the premises of the end user plugged into a wall outlet and connected to their personal computer generally with an Ethernet cable. Network management is done via software provided by Main.net and operated by Big River.

The test network has been installed and is being operated in basically the same manner, from a technical and operations standpoint, as a commercial BPL network. One purpose of this deployment configuration is to test installations that are "representative" of the "typical installation" that will be deployed upon commencement of commercial operations, as set forth in Section 15.31(d).

As the test network was being installed, AEC notified households within the service area that they could participate in the tests. AEC stopped accepting test participants after acquiring between 50 and 60 participants. Each participant signed an agreement that acknowledges that the service is experimental in nature and can be cancelled at any time, as required under the conditions of the experimental license. Participants do not pay for the service; however, they agree to cooperate with AEC in gathering data for the tests.

II. Customer Acceptability Testing

After completion of installation of the network, activation, and operation for approximately one year, the network has had few technical or operational problems. After a minimal amount of initial technical support to end users, additional technical support needed by end users has been minimal. AEC, Big River, and the customers generally are pleased with the operation of the network. As disclosed in AEC's previous report, AEC conducted three test surveys within the first six months of operation, two being questionnaires that could be filled out online and one being a "focus group" meeting. Most users participated in the on-line surveys. A smaller, but representative, number of users attended the focus groups. The surveys covered the users' experience with operational issues, the amount and kind of use of the service, changes in users' behavior after switching to the service, such as use of more or different Internet resources, and economic and marketing issues.

Testing and research are on-going. AEC's preliminary conclusion is that the BPL product is superior to dial-up and is competitive with DSL and cable modem service as perceived by the end users. Therefore, the end user customer acceptability test results to date continue to support AEC's possible interest in commercial deployment of the service. Since the network is deployed in a cellular manner, new or additional customer acceptability issues generally are not expected in a commercial roll-out. Further deployment, if AEC were to decide to do so, simply may consist of adding successive cells of basically the same configuration as those already deployed.

However, current equipment providing service in this trial pre-dates the attainment of FCC Part 15 compliance verification which was completed by Main.net in December 2002. (Note: A copy of Main.net's test results following this verification testing have been provided to the FCC OET). Any change or movement to commercial deployment would only occur with the replacement of experimental equipment with FCC-compliant equipment, and any additional equipment only being FCC-compliant equipment. No decisions have yet been made regarding commercial deployment.

III. BPL Emissions Testing

Test Sampling

This report summarizes the BPL emission tests conducted in Cape Girardeau on March 27 and May 6, 2003 (collectively, the "2003 Testing" or "2003 Tests"). Consequently, the following description is limited to the sampling of equipment, participants and geographic areas relevant to the 2003 Tests.

It should be noted that equipment currently in service consists of experimental apparatuses which pre-date Main.net's independently tested and verified equipment with respect to the FCC emission standards for the environment of the Access or the in-House BPL. It should be further emphasized that the scope of the 2003 Tests was to (a) obtain the upper envelope of the system emissions using extreme rather than typical testing parameters as described below, and (b) experiment with the testing methods and procedures in order to determine their accuracy and appropriateness for power line testing. Thus, the results of the 2003 Tests are preliminary and tend to exaggerate the emission values as compared to those that would be expected if the conventional testing procedures for FCC compliance were used and the system under test was employing FCC-compliant equipment.

Emissions Testing Objectives

The 2003 Tests were the first in a series designed to monitor the system emissions and fine tune the measurement procedures. Specifically, the purpose of the 2003 Tests was to: (a) Obtain data to assist AEC in monitoring BPL emissions, and understanding the mechanisms of their occurrence and propagation; (b) Correlate the foregoing emissions with the density of BPL apparatuses, modulation schemes, modem output level, and system physical properties; and, (c) Derive test procedures suitable for the environment of the overhead power line by refining and extending existing methods.

Emissions Measurement Locations *(street and "cell" names redacted for competitive reasons)*

Testing was performed in a 45 acre portion of the 12.47kV overhead-power-system hosting an autonomous experimental BPL cell referred to as "the 'XYZ' cell." This particular cell serves 14 residential BPL users. The area map in Fig. 1 shows its layout. With reference to the map, the coverage area of the cell is delimited by the area south of 'DEF' St., north of 'GHI' St., east of 'JKL' St. and west of 'MNO' Ave. Also with reference to the map: the locations of the cell

users are denoted by numbers enclosed into circles; the thick dashed line indicates a three-phase four-wire overhead-power-line; and the thin dashed line indicates a single-phase overhead power line.

The exposed part of the cell[2] incorporates a concentrator unit (CU) which links the cell to the internet (via a T-1 connection), and several repeater units (RU). The location of the CU is denoted on the map. One repeater is located at each distribution transformer in the 'XYZ' cell. These repeaters are coupled to the power system on the high voltage and low voltage sides of the transformer. In addition to the repeaters at the distribution transformers, some customers have a repeater installed in their power meter base. Two additional repeaters are located adjacent to the CU on the power line (shown on the map).

The CU and RU are connected to the high voltage lines through suitable non-galvanic couplers. The low voltage connections of the repeaters and meter base repeaters are galvanic. The CU was coupled to two line phases and the neutral. The repeaters located at the distribution transformers are connected to one phase (B Phase). The BPL experimental users are also connected to phase B.

At normal operation, the modems inject to the line a spread spectrum signal using one of the frequency ranges from 2 to 20 MHz. In order to minimize collisions due to the electrical proximity between the modems in a cell, only one of the modems "talks" at a time, with the other modems in the "listen" mode.

Tests and Measurement Stations

The tests consisted in measuring the electromagnetic emissions in the 'XYZ' cell. Two sets of measurements were performed. One set of measurements was performed with the BPL network turned off in order to measure the native ambient conditions. The second set of measurements was taken with the BPL network operating.

Six personal computers were placed at various customer locations throughout the cell to ensure there was traffic on the BPL network while the measurements were being taken. The computers were programmed to continuously upload and download files across the network to generate traffic.

In order to obtain a comprehensive idea of the radiation patterns, the fields were measured at several locations within the area covered by the cell. This required several testing sites designed to: (a) span the entire cell region, and (b) repeat measurements at the same site for different conditions of the cell. The first two test series were conducted on March 27 and May 6, 2003 and covered a total of 12 locations in the cell. The measurement stations are shown on the map in Fig.1 labeled with letters A through K.

[2] The part of the cell that is exposed to the ambient is the "Access BPL" and it includes the overhead power line up to the customer meter on the low-voltage side of the transformer. The tests were not concerned with any BPL-related equipment used inside the user's facilities. As noted below, those tests are being performed chiefly by the modem vendor.

Measurements on stations A through I were conducted on March 27, and covered the frequency range from 0 to 30 MHz. Measurements on stations J, K and again A were conducted on May 6 and covered the range from 0 to 300 MHz.

An additional map diagram in Fig. 2 represents the measurement stations and their approximate layout distances.

Measurements at A through G were done to obtain the emissions near the line. Measurements at H, J and K monitor the emissions within the loop of the cell. Station I represents a user facility (outdoors). The building between PQR St. and XYZ St., not shown in the map, was used as an additional measurement location. This area is located approximately 1200 ft south of the XYZ cell.

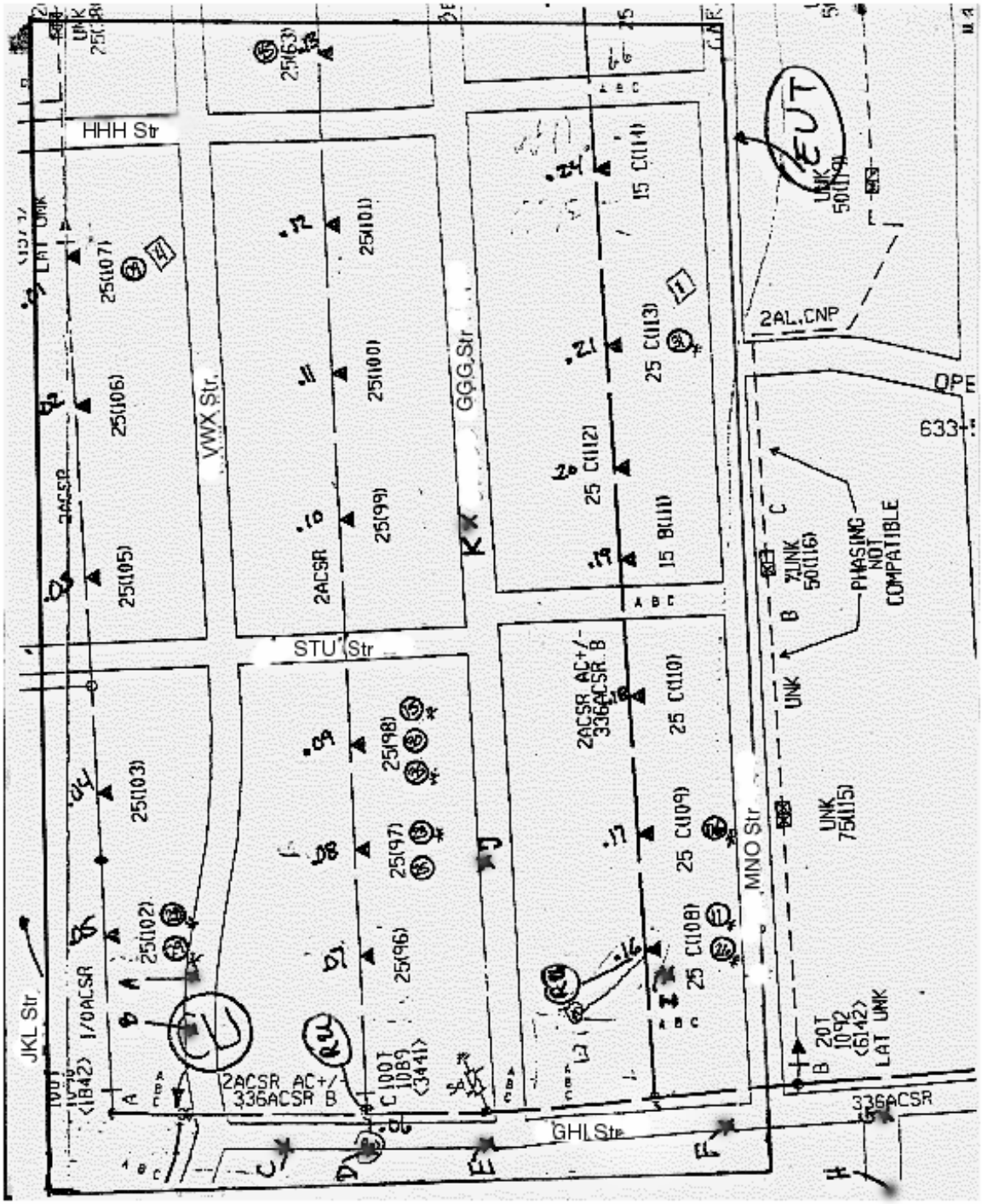

Fig.1. The map of the EUT and measurement stations

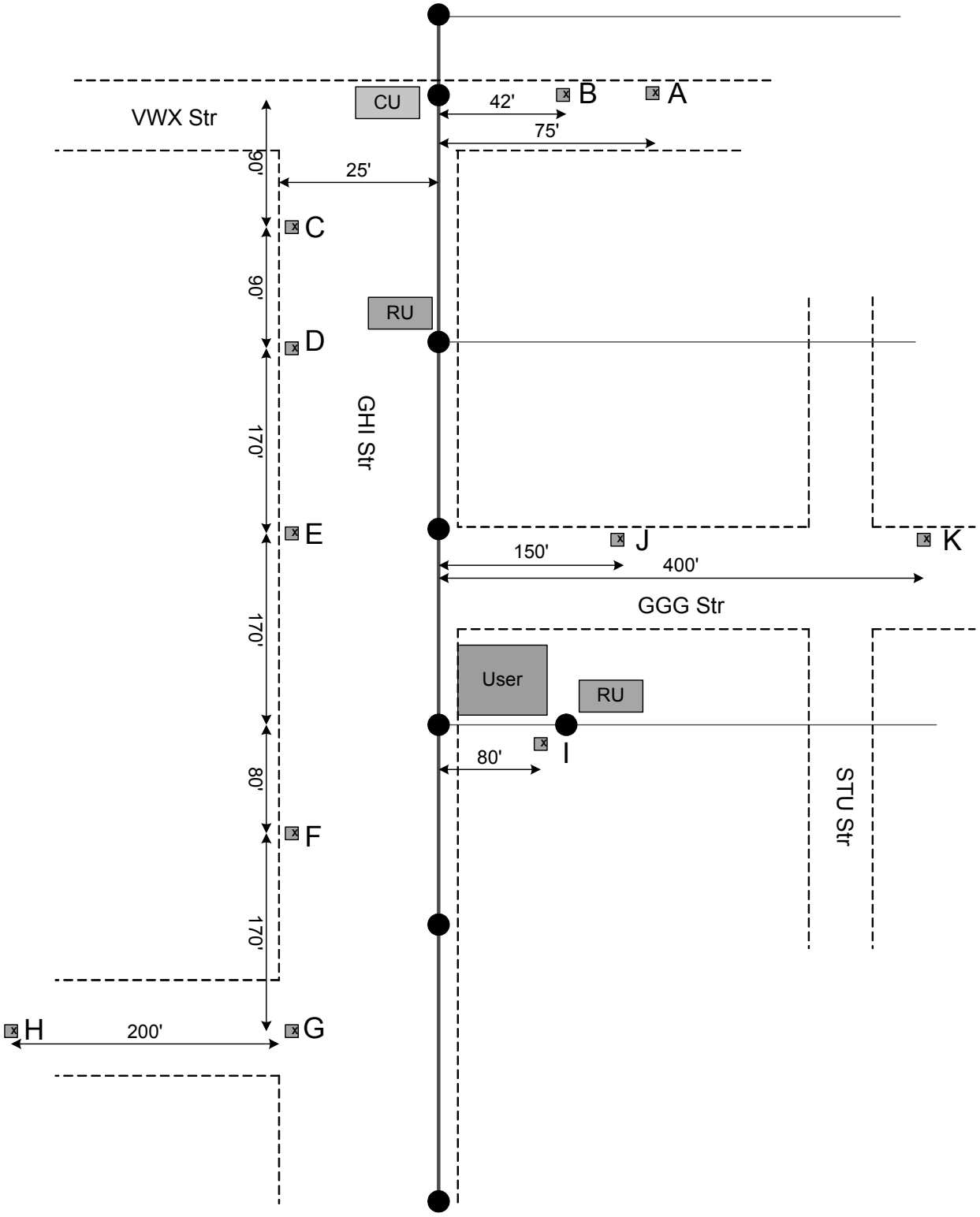

Fig. 2. A diagram of the measurement sites.

Emissions Equipment and Measurements

The equipment used for the measurements consists of a spectrum analyzer, a loop antenna, an active monopole antenna and a biconal antenna. All devices were calibrated.

Two sets of measurements were collected, using our own protocols for the test process (which are materially different from those used by Main.net in its tests). The first set was obtained with the cell modems turned off. This set constitutes the native background emissions from the line either due to inherent noise or due to the antenna properties of the line. The background measurements provided the base line at each location for evaluating BPL emissions. The second set of measurements was obtained with the modems operating.

The objective of the tests was to obtain the power-line emissions under the maximum operating conditions of the cell. This would provide the upper envelope of the expected channel emission performance. In order to ensure maximum cell activity the following steps were taken:

- All modems were configured to operate at their highest power setting. This caused the maximum conduction current on the line at the point of common coupling4 and, consequently, the maximum radiated emissions along the line. Also, the parasitic radiation from the modem itself is expected to be maximum. (Note: Main.net provided Ameren temporary password authority to modify unit power levels for this test only. The modems were restored to their prior settings following the tests. Under normal commercial operational terms, Main.net's customers would not be authorized nor would they have access to be able to modify the power levels of the PLUS modems.)
- The cell was set up to operate continuously. In order to assure the continuous activity in the cell, a special scheme was utilized whereby dedicated user sites were configured to continuously upload and download data files, thereby assuring continuous traffic.

The frequency range of the measurements was from 9 kHz to 300 MHz. The field was measured in the horizontal and vertical polarizations. In order to measure the horizontally polarized component of the field, the loop and biconal antennas were rotated 360° with their polarization axis sweeping the horizontal plane.

In order to capture the maximum field emissions at each location, the following procedure was used for both the background and the active cell measurements:

- The spectrum analyzer was set up to the peak detection mode;[3]
- A 30 second measurement window was defined. Within that time window, the maximum peak observed at each frequency was retained and recorded.
- If the antenna polarization changed, the time window was not reset. Thus, the measurement values obtained with the new polarization were compared to those recorded in the previous time window and the maximum at each frequency between the two was retained.

[3] A spectrum analyzer can measure the time-varying envelope of a signal in terms of the envelope's peak, quasi-peak, or average value. Naturally, the peak measurement has the highest value, followed by the quasi-peak and average measurement, which has the least value.

- The time window was reset at the end of an antenna session or at the beginning of measurements at a new location.

Therefore, the recorded data represent the highest 30s-peak observed at each frequency among all polarizations of the field at the measurement location.

Results of Emissions Testing

The following filtering technique was applied to the collected data for identifying BPL emissions:

(a) Identify all the peaks in the native background emissions that are above the appropriate FCC limit;
(b) Identify all the peaks in the active cell emissions that are above the same limit; and
(c) Exclude from the last set all elements whose frequency appears in the background emissions. The remaining elements are emissions that do not correlate with the baseline emissions, but correlate with the active state of the BPL. Therefore, these are the suspected BPL emissions.

The results are analyzed separately below for frequencies below 30 MHz and frequencies above 30 MHz.

Low frequency range (9 kHz to 30 MHz)

For the measurements at stations A through G, it was difficult to discern the native background from the BPL contributions to the emissions. The reason is the high background activity since these stations were close to the line. This is demonstrated by Fig. 3, showing the background field at station A, and Fig. 4, showing a detail of the same field between 2 and 20 MHz where most of the activity is seen.

The active cell measurements obtained at A are seen in Fig. 5. The comparison between background and active cell measurements revealed no uncorrelated peaks above the FCC limit. The same result was obtained for stations B to G. The absence of uncorrelated peaks does not necessarily lead to the conclusion that there are no above-the-limit BPL emissions at these stations, but if such are present, they are indistinguishable from the high background activity since the station is near the line (approximately 75' from the line, as shown on Fig. 2).

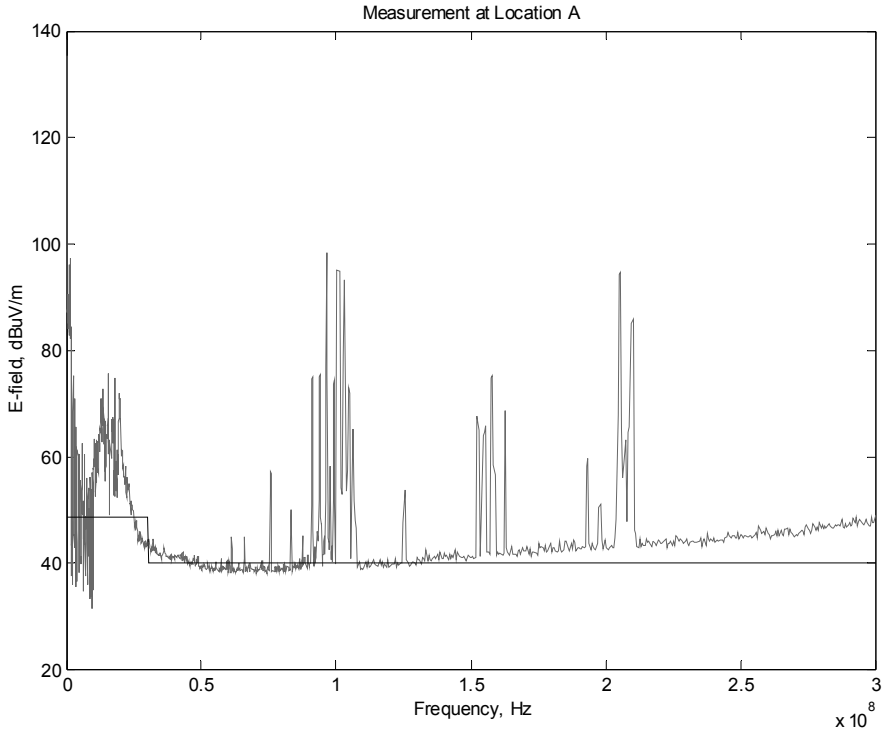

Fig.3. Background E-field at station A: 30s maximum peak, all polarizations. Line represents FCC limit

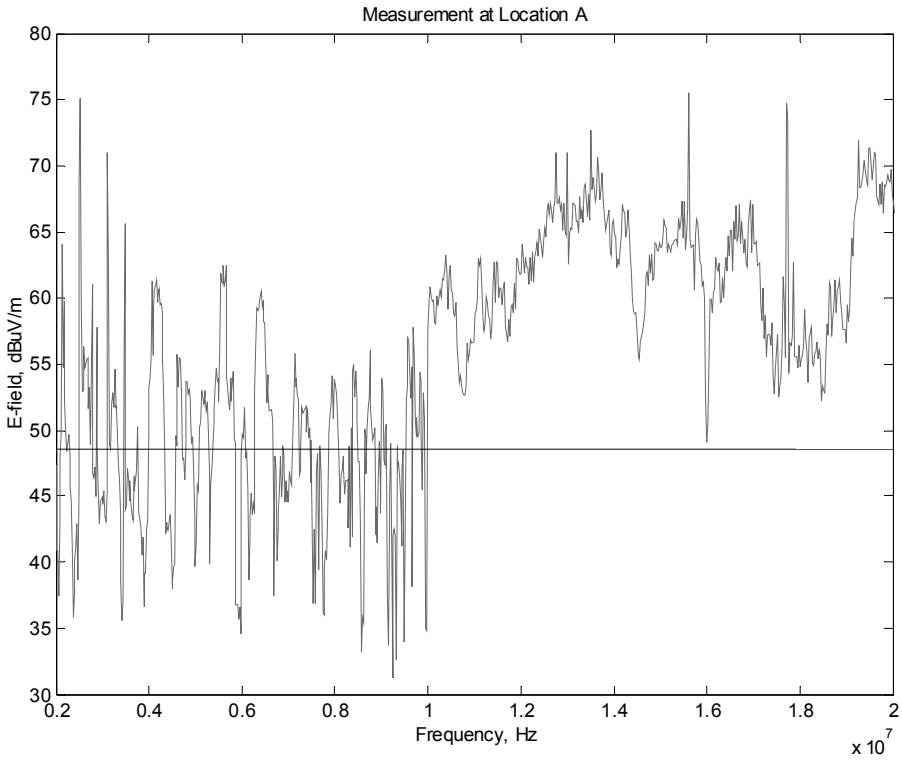

Fig.4. Background E-field at station A: 30s maximum peak, low frequency range, all polarizations. Line represents limit.

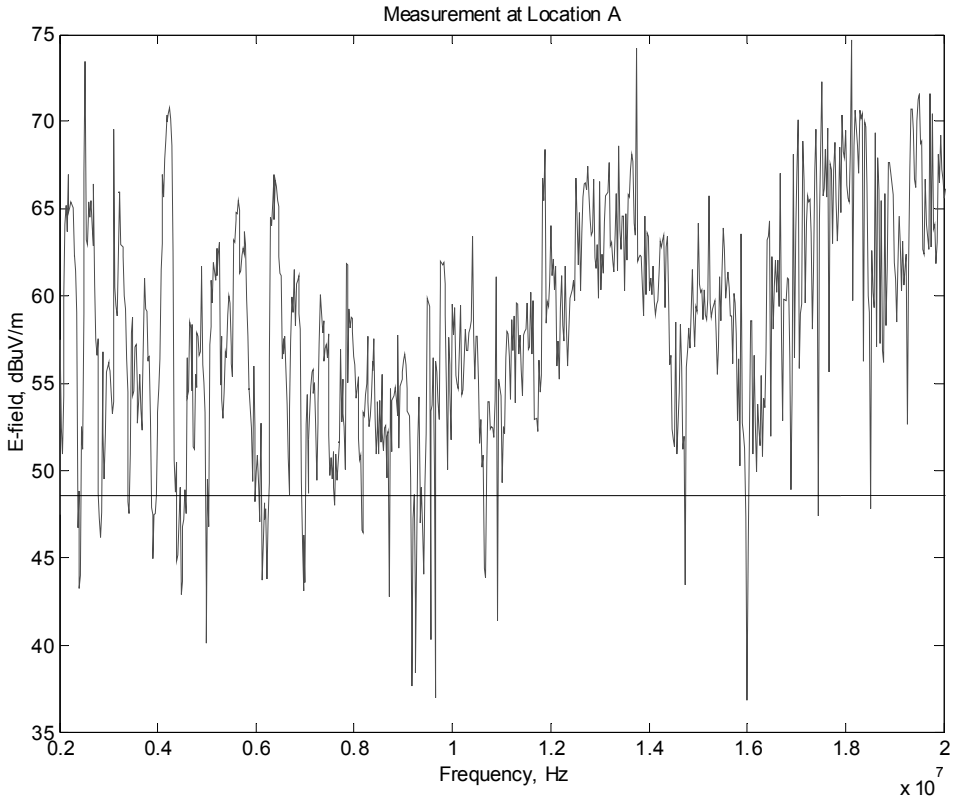

Fig.5. Active cell E-field at station A: 30s maximum peak, low frequency range, all polarizations.

The distinction between active cell and background peaks becomes easier farther away from the line as the background emissions decrease significantly. This is demonstrated in Figs. 6 and 7 showing respectively the background and active cell measurement at station J, some 150' from the line as shown in Fig. 2.

According to the detection procedure, suspected BPL emissions with experimental equipment using our own test protocols were found at stations J and K. Figure 8 depicts graphically the frequency and amplitude of the suspected peak at these two stations. Notice that the set of suspected frequencies decreases rapidly from J to K as the distance from the line increases from 150' for J to 400' for K, as shown in Fig. 2. In Figure 8, we also see four peaks occurring at identical frequencies and amplitudes at both locations. Table 1 lists these points. No cause of this coincidence was established since at that time the correlation was not seen.

No suspected peaks were discovered at the building approximately 1200 ft. outside of the XYZ cell.

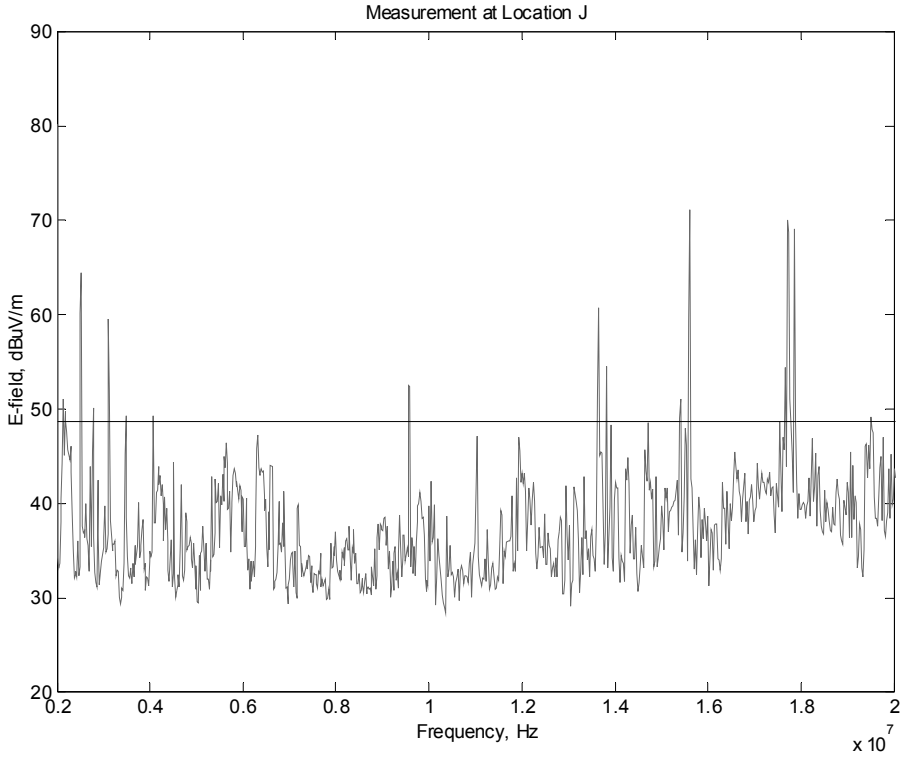

Fig.6. Background E-field at station J: 30s maximum peak, low frequency range, all polarizations.

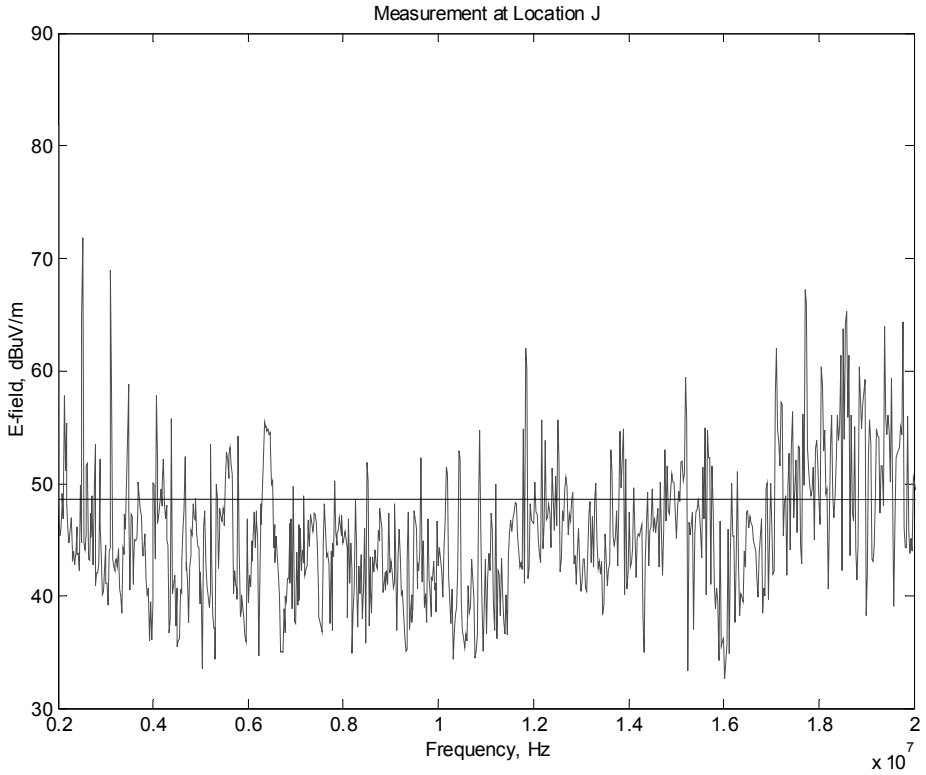

Fig.7. Active cell E-field at station J: 30s maximum peak, low frequency range, all polarizations.

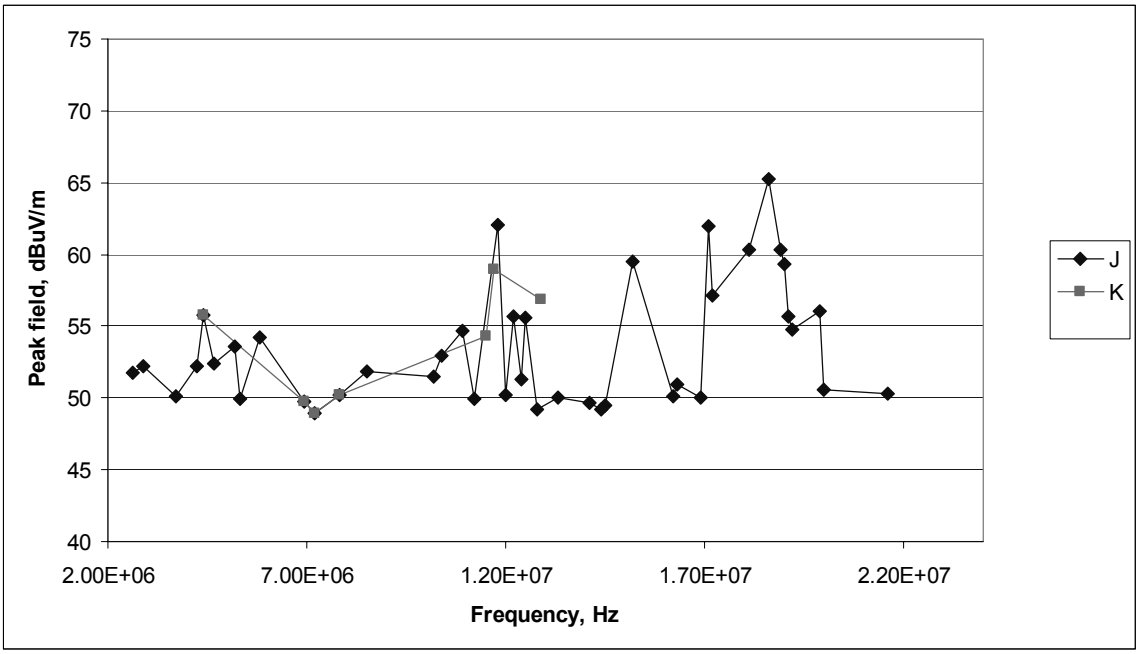

Fig. 8. Suspected BPL peaks at locations J and K.

Table 1. Emission correlation between J and K

Frequency, Hz	Amplitude, dBuV/m
4.40E+06	55.79
6.94E+06	49.73
7.18E+06	48.94
7.82E+06	50.24

High frequency range (30 to 300 MHz)

Figures 9 and 10 show a comparison between background and active cell measurements at stations A and K respectively. These measurements are typical of all measurements taken in the high frequency range. It was determined on site that the observed peaks occur due to RF broadcasting. No suspect BPL emissions were detected in this range with experimental equipment using our own test protocols.

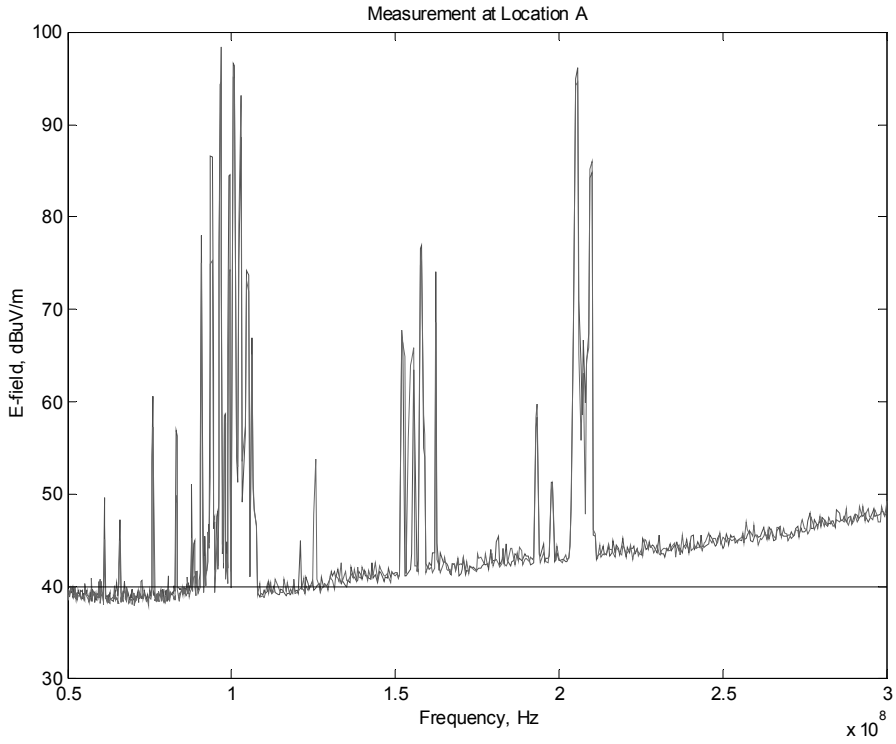

Fig. 9. Background and active cell comparison at station A.

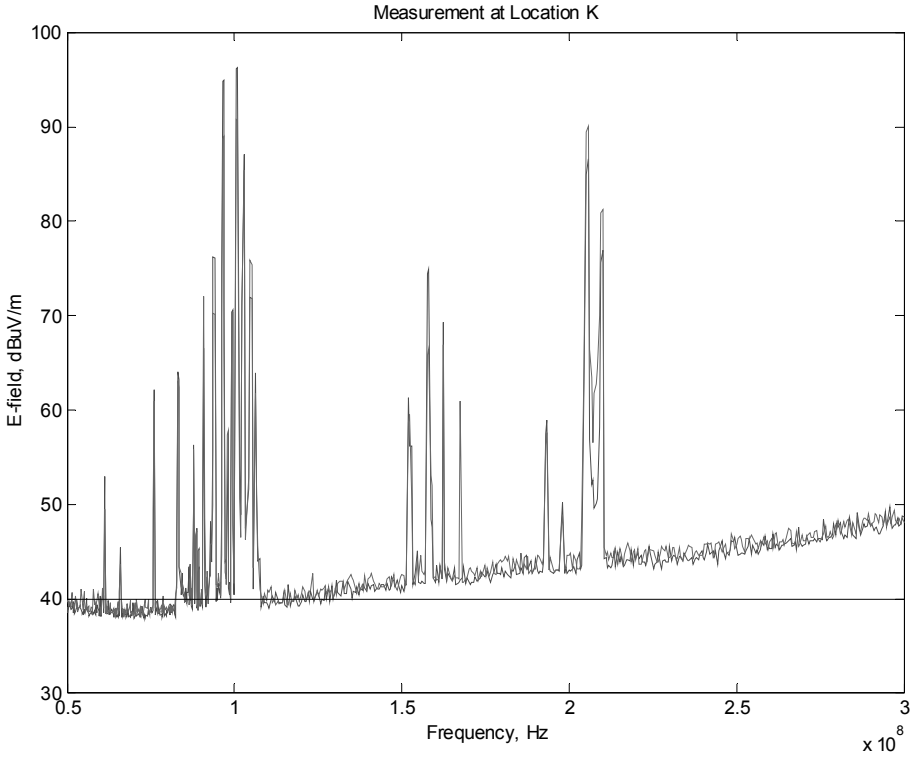

Fig. 10. Background and active cell comparison at station K.

Preliminary Conclusions

These tests of experimental equipment using our own test protocols were the first in a series designed to monitor the system emissions and fine tune the measurement procedures. These first tests were conducted under extreme system conditions in order to identify and subsequently probe problem areas. It must be emphasized that: (a) the modems were operating at the highest output-power setting; (b) the cell activity was extreme and unlikely to be typical of a fully functioning BPL; and (c) the measurements taken represent a 30s peak and not a quasi peak or average.

In addition to these conditions, the BPL installed system used at the time of the measurements was not optimized to comply with FCC limits. This equipment will be replaced if a decision is made to proceed to commercial deployment. In addition, the BPL experimental users were connected on only one of the line phases. This unbalanced loading of the line conductors could contribute to common mode currents on the line and could increase emissions. In a fully functioning and normally operating BPL system, all phases would be used for signal injection, thus reducing the line unbalance and the common mode component of the conducted current.

The results with experimental equipment using our own test protocols showed some emissions exceeding the FCC limits between 2 and 30 MHz only. These were observed at locations within the geographical area of the cell and in close distance from the line. A rapid decay of these emissions with the distance from the line was observed. These emissions were characterized as suspected emissions from the BPL since they did not appear in the background measurements at the same locations. However, no tests were conducted to ascertain a positive relationship of those suspected emissions to the BPL. Subsequent visits will look into the suspected frequencies closer and establish their relation with the BPL.

An additional benefit from these measurements was the assessment and fine tuning of the measurement procedures. This initial series of tests raises a concern with measurements near an overhead medium-voltage line. This is due to the high background activity and the strong near field presence. It is uncertain how the 40 dB and 20 dB extrapolation rules would apply under such circumstances.

Generally, it is difficult to distinguish between modem and background emissions 75’ or less from the line (based on observations at Station A). Therefore, any procedures that may be adopted by the Commission that will require close distance measurements are likely to be time consuming and unreliable. The preliminary tests showed no appreciable modem emission at distances of 400’ or more away from a BPL line (based on observations at Station K).

Interference Complaints

AEC and Big River have not received any complaints of interference from test participants or third parties during the tests.

Vendor FCC Compliance Testing

Low voltage units consist of modems that do not physically connect to a medium voltage power line either directly or with an inductive coupler. Main.net, the equipment vendor, continues to perform FCC compliance testing of the low voltage units, in conjunction with one or more Telecommunication Certification Bodies ("TCBs"). AEC has kept in close touch with Main.net regarding the FCC compliance testing of the low voltage indoor units. Main.net has advised AEC that Main.net has been granted Certification by a TCB of the low voltage units and that its Certification report is on file with the Commission under Grantee Code QM3.