

## Exhibit 1

### CellNet Data Systems Point-Multipoint Multiple Address System

The System is designed to support the unique requirements of the Utility Industry, specifically distribution management. This application requires an ability to provide communications service to many thousands of remote terminal units (RTUs), and hundreds of thousands of customer metering devices. While providing this service, the system must maintain a response time on the order of a couple seconds in order to alert the utility to critical alarms in the field. The current System uses a multi-master architecture operating in the Power Pool channels allocated under Part 94 Multiple Address System (MAS) to satisfy these needs in conjunction with unlicensed microcells operating the ISM band between 902-928 MHz. Licensee seeks to modify the authorization to also deploy refinement of this technology on channels in the 1427-1432 MHz band.

Each current System Master Station is designed to support up to 32,768 remote points in a point-multipoint network. Master Stations provide coverage in an area from 2 to 5 miles in radius. In order to provide coverage over a large utility service territory, seven individual data channels are required. These channels are re-used in a common mapping pattern to provide large area coverage and avoid "dead spots." The proposed 1.4 GHz operations would provide coverage in smaller areas, generally 1 mile in radius or less.

In order to provide optimum usage of the Part 94 Power Pool channel allocations, the current System is based on 2400 baud sub-channels, each occupying less than 2 KHz of the specific channel. The current System sub-channels are spaced at 2 KHz intervals. With this spacing and bandwidth, using a 12.5 KHz channel, four sub-channels are operated at  $\pm 1$  KHz, and  $\pm 3$  KHz from the center of the channel. A second 12.5 KHz channel provides another 4 sub-channels for a total of eight data channels. With frequency re-use these data channels can provide coverage over an unlimited area using only two 12.5 KHz channels. If the channel allocations are 25 KHz, the System can provide ten sub-channels within each license. This is obviously more efficient than using a two 12.5 KHz channels.

The current System provides one of the most efficient uses of the MAS spectrum. The combination of multi-master frequency re-use, and narrow band modulation (9-QPR) result in equivalent throughput (per 25 KHz channel) of  $10 \times 2400$  baud or 24,000 baud per license. With this capacity the system supports over 32,000 points per master station, and millions of points in an fully operational network. This is many times more efficient use of the spectrum than the 1200 or 4800 baud applications presently

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operating in these channels. The proposed 1.4 GHz operation would demonstrate how this currently underutilized band could be used with exceptional efficiency.

The specific aspects that are being developed under this program include:

- 1) Bandwidth efficient technology in the 1427-1432 MHz bands.
- 2) Multi-master "cellular" approach to MAS system coverage.
- 3) Channel sub-division to provide improved frequency utilization.
- 4) Frequency and Power control sub-systems to ensure adequate margin and protection in co-channel interference situations.

These developments represent significant improvements over the techniques and equipment presently used in these bands. These specific channel allocations represent a scarce resource. This development program will greatly improve the use of these bands with resultant benefits to the Utilities and their Customers.