

EXHIBIT A

NRCTV Transmit Site
45.27.57 N 98.20.08 W
2,500 - 2,506 MHz
H. Pol. Omni, 56.5 dBm
64 Quam, 6MHz BW

Downstream Data
2,500 MHz - 2,506 MHz
Horz. Pol., Omni
15 & 25 Mi.

Multiple Upstream Sites
West Quadrant (90 deg.)
H. Pol. Directional, 38dBm
QPSK or 16 QUAM

EXHIBIT A
NRCTV WIRELESS DATA/INTERNET
SYSTEM

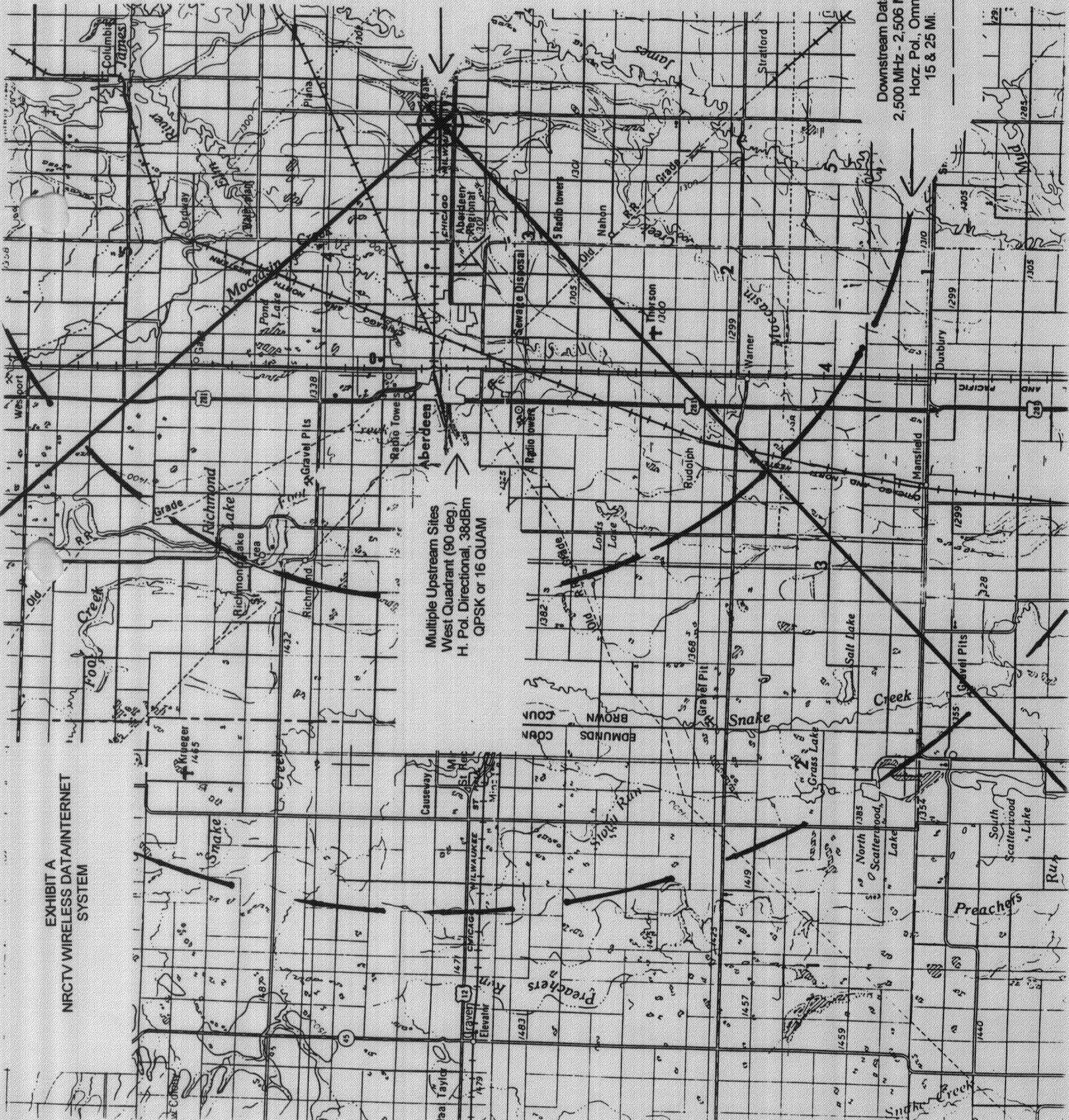


EXHIBIT B

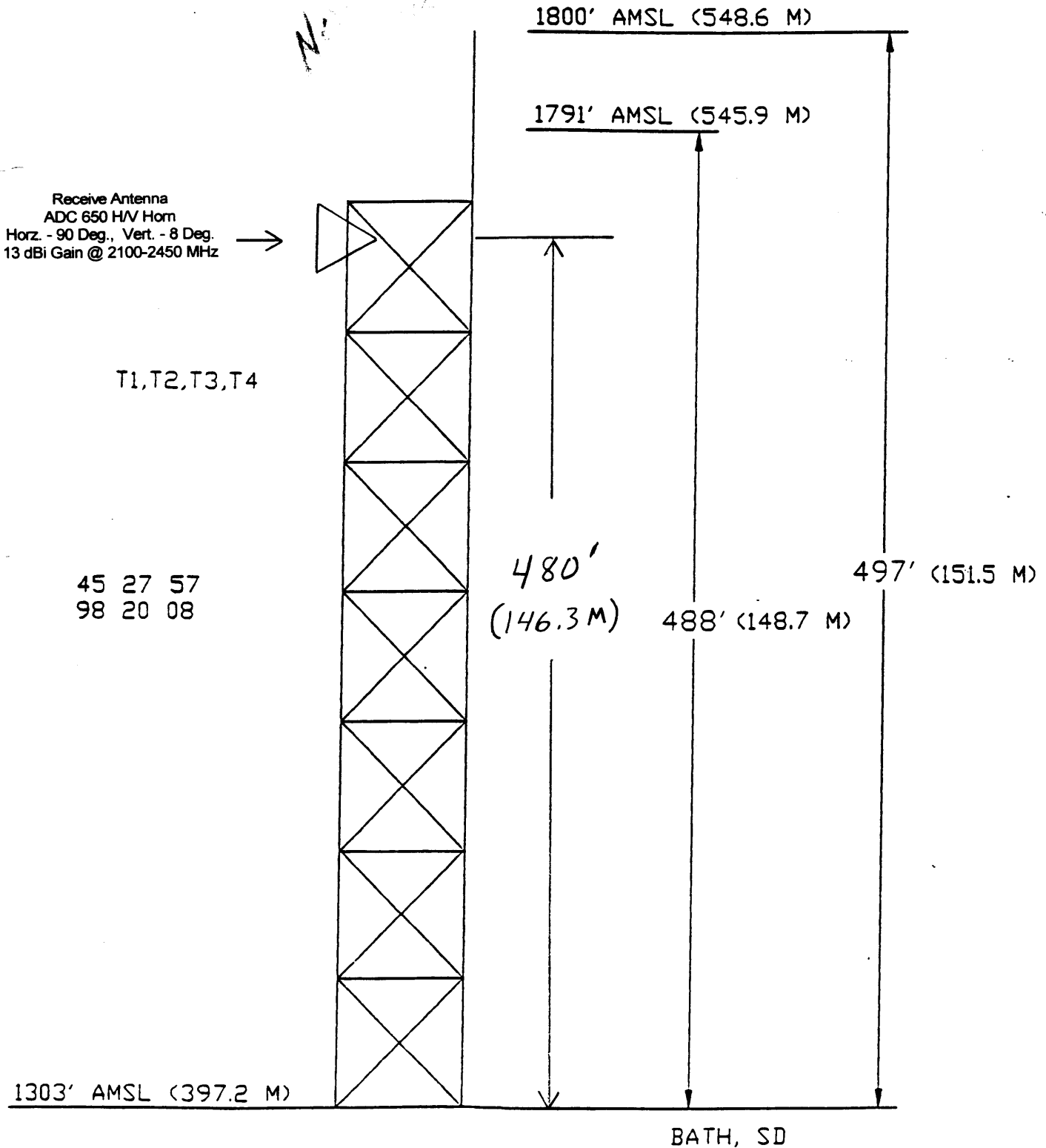


EXHIBIT C

The objectives of this research and experimentation is to develop and establish an affordable, high speed, two way data system. The system will operate in conjunction with a wireless cable delivery system. In its completed form, the system would provide High Speed Internet Access, IP and Voice Over IP telephony, and Virtual Private Networks.

The downstream data (out bound) is transmitted, using an EMCEE TTS50 HS digital ready transmitter, at 2,500 - 2,506 MHZ at a peak transmitted power level of 56.5 dBm. The carrier is modulated using an ADC Digital Modulator implementing 64 QUAM. A 5.057 Mb symbol rate is used, with square root raised cosine filter, with response of 18% excess bandwidth. The resultant bandwidth does not exceed 6MHz.

The upstream data is transmitted back using California Amplifier 52003-2 transceivers and California Amplifier 130120 antennas at multiple locations. Power is variable dependant on the level required, but will never exceed 38 dBm peak. Because the bandwidth of the upstream data is limited to 1.28 Mb, the RF bandwidth required is only 1.6 MHZ. This allows us to divide the 6 MHZ channel into three separate 2 MHZ channels, resulting in three subnets.

A horn antenna is used to receive the upstream channels from the remote sites. It has a horizontal beamwidth of 90 degrees. If the initial tests are successful, additional antennas can be installed to cover the remaining three quadrants. This would allow us to divide the area of service into four service areas, and re-use the upstream channels in each quadrant and break them into subnets.

We expect to be able to develop an efficient system that will be more affordable to build, maintain and operate than is currently available, without compromising quality of service. This could be especially important in rural areas, such as ours, where this technology can deliver services not available by current methods.

EXHIBIT D
TYPICAL REMOTE SITE

