Transportable Antenna Details

All antennas will be placed on structures as illustrated in Figure 1. The tower consists of a wooden base on wheels for mobility. The pole is extendable and can be increased from 3 meters to 5 meters. This will allow us to deal with slight differences in the terrain. The antenna (illustrated Figure 2) will be fixed to the top of the tower. The dimensions of the tower and antenna orientation are illustrated in Figure 3.

Figure 1: Transportable tower for gateway node.

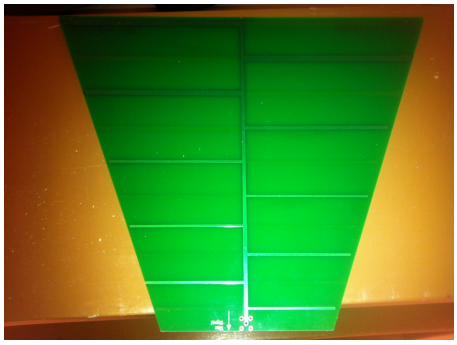

Figure 2: Antenna LT-860 Directional Antenna Dimensions are 11" X 10" X 0.1"

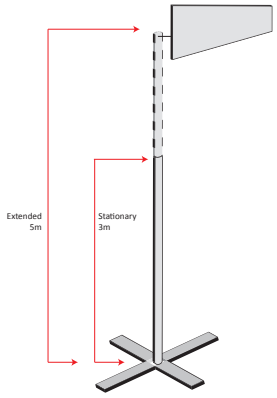

Figure 3: Dimension of tower shown in Figure 1.

Proposed Experimental Details: The experimental details proposed are for the sole purpose of design and testing the MinerGate node. The experiment takes place in a remote part of the West Texas region (refer to Figure 4). All testing will take place within a radius of 30km from the pinned location.

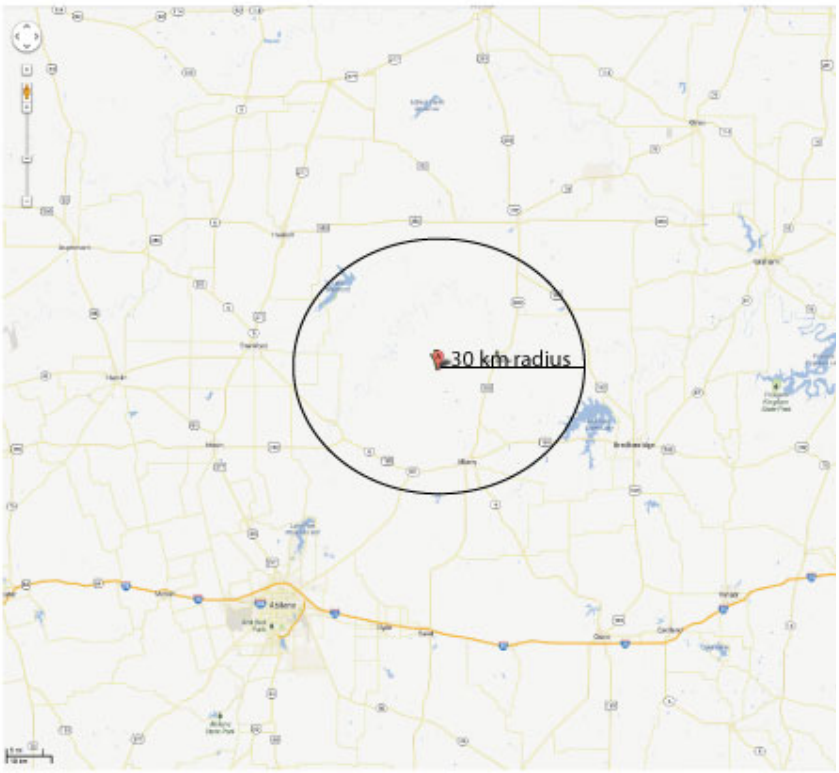

Figure 4: Google Map of testing location.

Table 1: Available Channels: Taken from Spectrum Bridge Database

Channel Number	Frequency Range (MHz)	Allowable Antenna Height (meters AGL)	Noise Floor (dNm)
39	620-626	30	-122.3
40	626-632	30	-80.8
47	668-674	30	-115.5
48	674-680	30	-117.4

Table 1 describes the available channels for communication within our proposed testing site. Nodes will be configured into ad hoc networks with arc distances up to 8km. For example, if three nodes are used they will be configured into a triangle with a center of that triangle being the center of our proposed location. Nodes will be reconfigured into other network graphs as the number of nodes increases.

Node Description: The MinerGate node will be comprised of a Universal Software Radio Peripheral (USRP) manufactured by Ettus Research. The USRP will be configured as a transceiver. The antenna will be fixed to the top of the tower. We anticipate using a maximum 5 such nodes.

LT-860
470-860 MHz Shark Fin Antenna
9 dBi

Shark fin antenna LT-860 will give you an excellent extended range and 9 dB gain in UHF TV band. This antenna can be used for both-transmitters and receivers for 470-860 MHz. Dimension of this antenna is 11" X 10 " X 0.1.". Antenna LT-860 has an BNC connector. This antenna has excellent performances in 470 MHz-860 MHz range.

Electrical and Mechanical Specifications	
Frequency Range	470 MHz - 860 MHz
Impedance	50 OHMS
VSWR (or Return Loss)	< 1.5:1 (or > 14 dB)
Gain	> 9.dBi
Polarization	Horizontal, Vertical
3dB Horizontal Beamwidth	70 Degrees
3dB Vertical Beamwidth	70 Degrees
Front to Back Ratio	> 19 dB
Max. Power Input	50 W
Connector	BNC
Appearance	Shark fin
Size	11” x 10” x 0.1”
Housing Material	Coated PC material
Radom Material	N/A
Radom Color	Black
Case Design	Weather Resistance
Weight	100g
Wind Loading (Frontal)	> 10 Kg, 200 km/h
Temperature Range	-45 to +75 Degrees
Storage Temperature	-30 to +75 Degrees