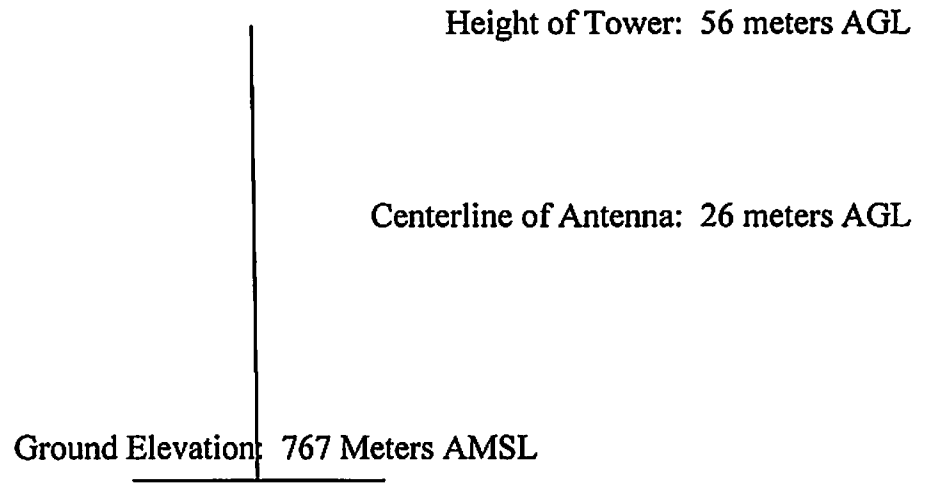


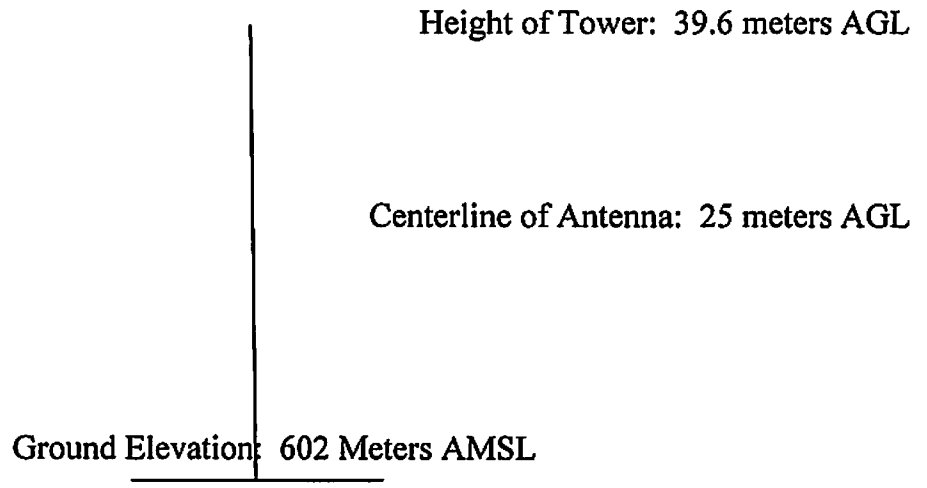
## **BASE STATION ANTENNA INFORMATION**

Each of the three base stations will use either an omnidirectional antenna or a directional antenna. Only one antenna will be used at any one time, and authority is requested to use either the omnidirectional antenna or the directional antenna at all three base stations. The directional antenna beamwidth is 120 degrees. It may be oriented at any point along the 360 degree circle. Up to three directional antennas may be employed at any one time, each within its own section. The orientation in the vertical plane will be -0.5 degrees.

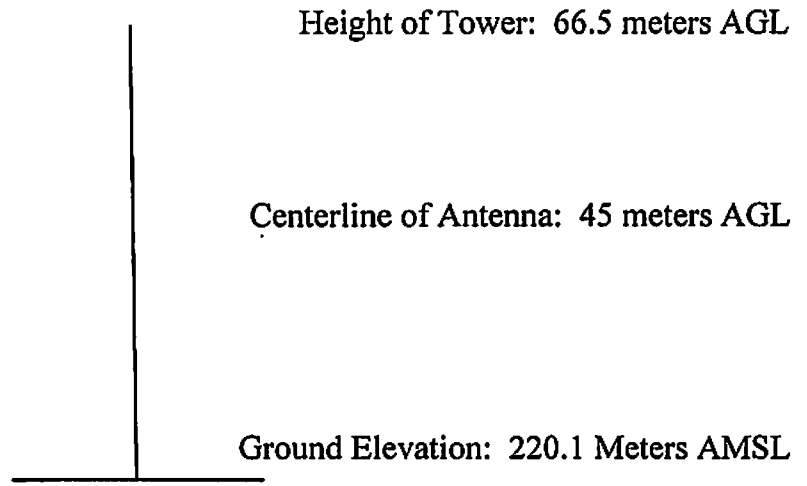
**VERTICAL PROFILE SKETCH OF DICKINSON TOWER**



**VERTICAL PROFILE SKETCH OF GREEN BAY TOWER**



**VERTICAL PROFILE SKETCH OF GUADALUPE TOWER**

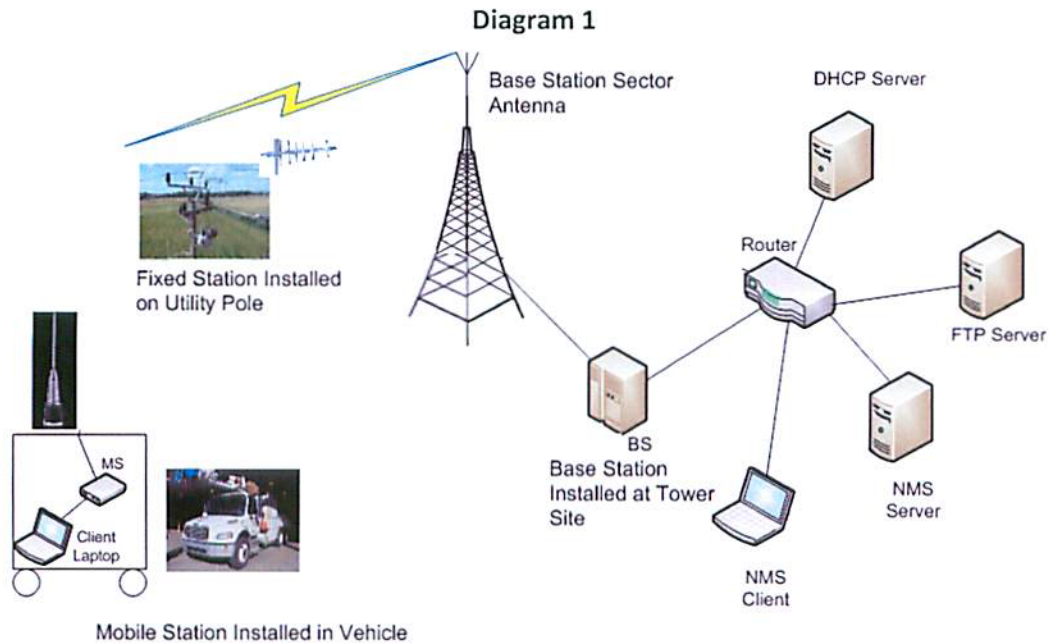


## DESCRIPTION OF EXPERIMENTAL OPERATIONS

- a. The complete program of research and experimentation proposed including a description of the equipment and theory of operation.

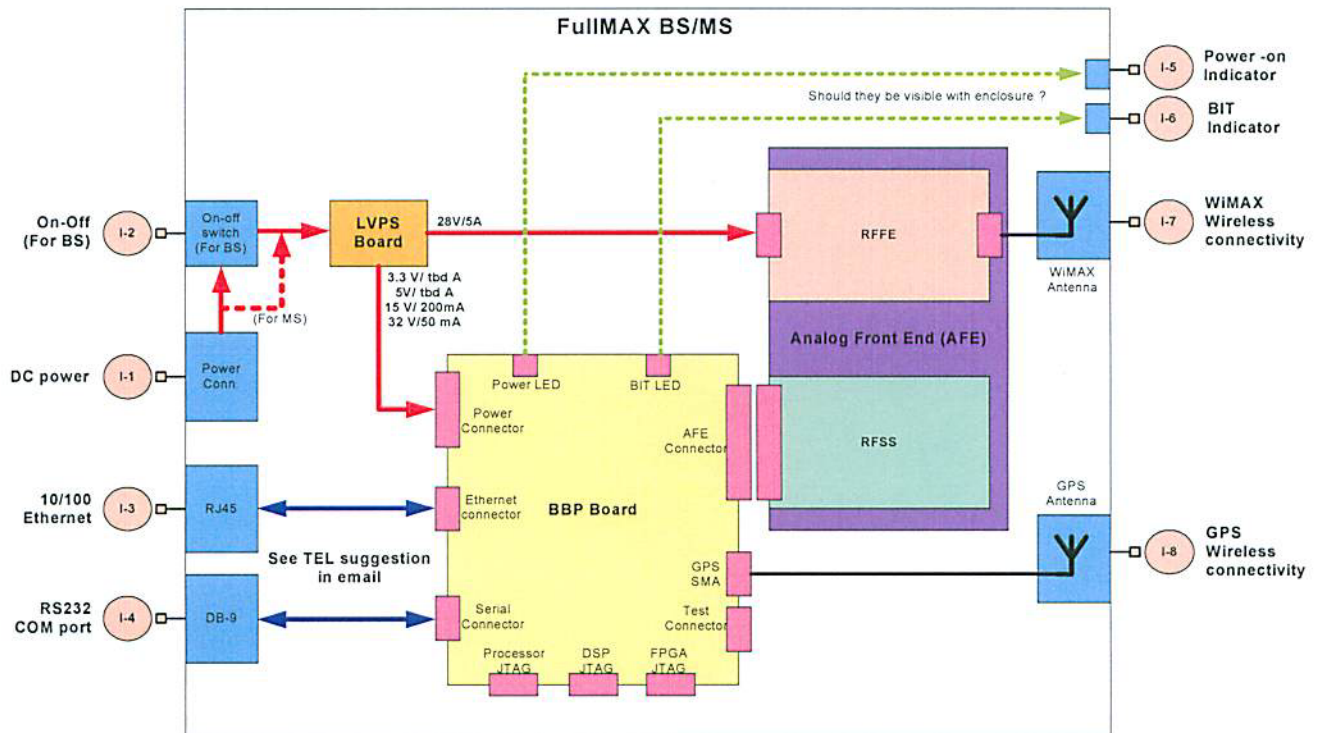
Full Spectrum desires to test the capacity of its technology to support the requirements of electric utilities that are looking to deploy broadband mobile and fixed IP data communications to remote portions of their networks in order to enable new smart grid applications including two way control of automated voltage regulators, capacitor banks, automatic metering backhaul, etc. Additionally, Full Spectrum intends to test the capacity of its technology to support mobile data communications to vehicles for remote intranet access to graphical information systems for trouble shooting and automatic vehicle location to optimize service vehicle deployment during power outages. These new applications require communications using Internet Protocol over a wide coverage area (up to 20 miles from a tower site) in varying terrain with high Quality of Service.

- a) Full Spectrum will be testing a TDD, Point-to-Multipoint (PtMP) broadband wireless system using the WiMAX-e (IEEE 802.16e) air interface protocol with modifications to the WiMAX-e MAC and PHY to support low band VHF frequencies in narrow channel sizes. We will be testing mobile and fixed data rates and range from a utility tower site to support smart grid applications. We will be test channel sizes of 200 kHz, 400 kHz, 500 kHz and 1 MHz. Standards based WiMAX uses microwave frequencies with low power at 2.3 GHz, 25. GHz and 3.5 GHz with a minimum channel size of 1.25 MHz. Using low frequencies in narrow channels allows for wide area coverage with minimal tower infrastructure.
- b) The System consists of Base Stations Radios (BS's), Mobile Stations Radios (MS's), Fixed Stations Radios (FS's) and a Network Management System (NMS). (see Diagram 1 below)



- c) The System will support both fixed and mobile applications. A Base Station Radio will be installed with a 120 degree sector or omni antenna. Existing backhaul facilities will be used to connect the Base Station Radio to a network operations center. Fixed and Mobile Station Radios will be installed in several locations in the tower's serving area.
- d) The System will operate in unused contiguous channels sizes between 200 kHz and 1 MHz between 42.96 MHz and 44.60 MHz and 47.68 MHz to 49.58 MHz. Exhibit A shows the specifications of the Base Station Radio. Exhibit B shows the specifications of the Mobile and Fixed Station Radios. Exhibit C shows the Base Station antenna specifications. Exhibit D shows the specifications of the Mobile and Fixed Station Antennas. We will be testing our software defined radio with a flexible RF front end that enables to configure center frequency, channel bandwidth and applicable FCC rules.

Full Spectrum Software Defined Radio Hardware Diagram



Full Spectrum recognizes that its use of the requested frequencies is secondary to other uses of the spectrum and that Full Spectrum must accept interference to its experimental operations and cannot cause interference to other operations. In the event of a report of interference, Full Spectrum will promptly cease operations until the source of interference is identified and eliminated. Prior to deploying any frequencies in any area of operations, Full Spectrum will determine whether there are any users of the spectrum that could be adversely affected by the proposed operation and will coordinate the proposed use with other users that could possibly suffer interference.