

## **Exhibit 1**

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

Andrew Corporation is currently in the process of developing a wide variety of passive antennas for use in a number of different telecommunications applications. The antennas under development include, but are not limited to, a comprehensive range of omnidirectional and sectorized antennas incorporating state of the art pattern shaping techniques for wireless base station applications and which cover a number of different frequency bands of operation. Research work is underway into dual slant polarized antennas as used for newer applications in wireless communications. The use of dual polarization has been shown to reduce the number of antennas mounted on a cellular base station tower, thereby improving the aesthetics and reducing the delays associated with the zoning and planning process when conventional, larger structures are involved. Other advanced antenna developments for which the experimental license is required include dual band antennas, where two or more antennas can be placed in one package reducing zoning problems, and variable electrical downtilted antennas, where a phase shifting system internal to the antenna can be used to permit the varying of the electrical downtilt of a sectorized base station antenna. This latter feature is of particular use to wireless network operators since it enables them to make critical system adjustments in a shorter time, thereby reducing cost and improving service to their customers.

Equipment to be used at Andrew Corporation is based around conventional, but state of the art, outdoor far field test range facilities. In order to optimize the dynamic range of the systems to allow >40 dB front-to-back ratio measurements, the test sites are configured with a directional receiving antenna located close to the ground. At a specific distance away from the receiving antenna, there is a mounting facility where an antenna under test can be installed and then rotated in the principle plane connecting the receiving antenna and the antenna under test. A frequency generator is connected to an antenna under test and a receiving system is connected to the directional antenna located close to the ground. A control system synchronizes the recording of the received signal level as a function of rotation angle. A variety of computerized software is used to post-process the recorded antenna radiation patterns. Such software permits the display of the radiation pattern in a variety of standard formats, overlaying of patterns and required specifications, overlaying of patterns together with those previously recorded, etc.

- b) The specific objectives to be accomplished

The objectives of the experimental license are to develop, measure and verify the performance of Andrew Corporation's range of antennas for use in a great number of wireless applications. A conventional, yet state of the art, antenna test range

facility is required in order to conduct advanced experimental development (in many cases we have found that no suitable theoretical predictions exist), validate antenna performance and demonstrate reliable and repeatable production antenna performance to a wide customer base.

- c) How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art or is along lines not already investigated.

Andrew Corporation is at the forefront of antenna engineering development and manufacturing expertise in the world. Antenna developments within Andrew Corporation are present on many fronts that push forward the state of the art. Such innovations as Smart, switched-beam arrays can improve both coverage and capacity in the network using existing antenna sites. Likewise, development of multiband antennas enable fully loaded towers to still be used and increase traffic capacity. Development of dual slant polarized antennas will mean reduced planning delays for operators enabling the network to offer improved service and reduced costs to their users. Development of high performance antennas incorporating techniques such as electrical downtilt, upper sidelobe suppression and lower null fill improve coverage respectively. These features ultimately permit service providers to offer improved performance leading to increased call quality together with decreased blockage at reduced cost to their users.