

PROGRAM OF EXPERIMENTATION

On March 20, 2000, the Commission granted an experimental license to Andrew Corporation ("Andrew") under Call Sign WB2XBW (File No. 0168-EX-PL-1999). Due to inadvertence, Andrew failed to file for renewal of that license which, by its terms, expired on April 1, 2002. The purpose of this application is to reinstate Andrew's experimental authorization.

The proposed use of the experimental station is the same as described in the application for Andrew's earlier license -- to operate a test range facility to allow Andrew, a leading manufacturer of antennas, to engage in ongoing testing of new antenna products. Testing is conducted in a controlled environment utilizing state-of-the-art radios and highly directionalized transmit antennas so that RF emissions are transmitted in a tight pattern to the receive antenna under test ("AUT").

The following is provided in response to paragraphs a., b. and c. of Item 7:

- 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, high performance directional microwave antennas used for point to point communications as well as earth station antennas with frequency bands of operation occupying most national and international spectrum assignments as well as 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 holds great promise of reducing 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, again reducing the zoning problems within wireless networks, 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 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 facility. At the test site, a transmit source is set up with a frequency generator connected to a directional antenna located close to the ground. At a specific distance away from the transmit source, there is a mounting facility where an antenna under test can be installed and then rotated in the principle plane connecting the transmit antenna and the antenna under test. The output from the antenna under test is connected directly to a receiving system. 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 and microwave 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 are present on many fronts that push forward the state of the art. In point to point microwave applications, Andrew's continuing work in the area of high performance antennas will lead to improved sidelobe suppression at wider angles, thereby improving interference rejection which leads to improved carrier to interference performance and / or more users per unit area. The development of low profile antennas leads to improved aesthetics and wider use in high frequency point to point applications. Development of multiband antennas enables fully loaded towers to still be used and increases traffic capacity in the network. Within wireless base station applications, 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, interference and uniformity of 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.

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