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“The leader in microwave antenna innovation”

Program of Experimentation
RE: FCC Form 442 Line 7
442 File Number 0194-#EX-PL-2005
FRN 0011005089

Radio Waves requests an experimenter’s license to perform outdoor testing of antennas that the company develops and manufacturers in the USA for domestic and international commercial markets. This paper is provided to comply with parts a, b, and c of item 7 of FCC form 442: Application for Experimental License.

a) Description of the complete program of research and experimentation proposed including description of equipment and theory of operation.

Radio Waves proposes an outdoor antenna test range to measure antenna gain and radiation patterns. This test facility consists of A) A transmitter located on a tower about 3m high, and B) A receive antenna (the device under test) located several hundred feet away, about 3m above the roof of our existing manufacturing plant. The transmit antenna is a directional reflector antenna and the receive antenna is mounted on a turntable. During operation, the transmitter sends a CW signal to the receive antenna which is connected to instruments that measure antenna performance characteristics, notably antenna gain and radiation patterns. Antenna gain is measured using the “gain substitution method” where the signal level received by an antenna with known gain (horn or dipole) is compared with the antenna under test. Radiation patterns are recorded by rotating the antenna under test in azimuth and recording the signal level received vs. angular position. This data will then be stored electronically and plotted in a suitable format. These measurements are required to verify antenna performance and assure high-quality products that conform to customer and government regulations.

b) Description of the specific objectives to be accomplished.

The objective of the experimental facility is to develop and verify new antenna designs on an ongoing basis. In spite of recent advances in computer software and computer power, antenna design still requires significant empirical effort. This license will ensure Radio Waves has the resource to continue developing new, innovative, and cost-effective products for manufacture here in the USA.

c) Describe 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 line not already investigated.

Radio Waves is continually developing new products to satisfy new markets and the need to improve manufacturing efficiency. These antennas incorporate new design and manufacturing methods to achieve excellent performance at very low cost. One example is a reflector antenna that will use a new “hybrid cassegrain” feed system. Another is a sector antenna designed using an advanced technique known as a “genetic algorithm” to achieve very low sidelobe levels. Yet another example is the use of low-cost bonding and fastening methods that maintain excellent RF performance. Finally, Radio Waves employs a team of skilled engineers and technicians to ensure a steady supply of new, innovative products to meet the world’s need for high-performance, low cost, microwave antennas.