

Part 5 Application
Exhibit: Experimental Description

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

Applicant, with a grant of this application, plans to test and measure the performance of non-conventional medium wave antennas in an operational environment (i.e. outside a laboratory or modeling environment) for which no amateur radio frequency allocation band presently exists.

As the wavelength of interest is in the "Medium Wave" frequency range below the domestic AM broadcast band, specific requests for licensing must be made in order to conduct meaningful testing. Such testing will also be at times performed together, and with the active cooperation of other individuals with similar interests and technical capability using a variety of tools, including on-the-air reports using digital modes e.g. WSPR, PSK31, etc., as well as making use of laboratory-grade test equipment e.g. field strength meters and signal analyzers for quantitative assessments of different antenna designs and radio equipment configurations.

Of particular interest are antenna types which are usable with substantially reduced land (or footprint) requirements. Antennas normally deployed at these frequencies make use of a suitable amount of land as a necessary requirement for the installation of (and the burial of) a 'ground radial field' which uses a non-trivial amount of material in the form of copper wire or copper mesh and screening in order to assure as high as practical 'antenna efficiency' usually expressed as a percentage.

Applicant has been a licensed Amateur Radio operator (callsign WB5WPA) for 37 years and an FCC licensed General Radiotelephone Operator (First Class FCC) License holder (Callsign PG1026418) for almost 40 years. Applicant has experience designing, constructing, maintaining and operating radio communications equipment.

b. The specific objectives sought to be accomplished.

Test and performance measurement of alternate configuration (topology) transmit-capable antennas with particular regard to antennas using common construction methods and common materials; a counter example of which would be a design requiring exotic components such as precision-machined, HV-rated vacuum-variable capacitors.

The comparison of alternate configuration antennas will be made in comparison with other known types and configurations operating concurrently and in the vicinity, with the cooperation of others involved in similar pursuits as well as measurements of radiated field strength at ground level and received signal reports at distance stations.

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 line not already investigated.

Little demonstrated work exists in the use of alternative antennas, which includes 'closed-frame' type antennas e.g. tuned resonant loops, or the relatively recent innovative design incorporating a radiating Helix and an associated design, the 2-D Planar-loaded DLM-type antennas (as pioneered by Robert J. Vincent and now at the University of Rhode Island pursuing research on these designs) on the lower frequency bands where 'open-frame' types e.g. end-driven, lumped-loading wire-type antennas (which also includes such structures as shunt fed towers) predominate.

Respectfully submitted

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Owner/Operator