

See How Antennas Work

A VISUAL DEMONSTRATION

Speaker – Dale Clement, AF1T

"SEE HOW ANTENNAS WORK" is a visual demonstration of various phenomena related to radio communications and different types of antennas. It has been very well received and all who have seen it say it is worth seeing again. Originally, it was a one hour program for understanding the concepts encountered in studying for the entry-level Technician Class Amateur Radio License. Topics included Frequency, Wavelength, Polarization, Dipoles, Ground Planes, and Directional Antennas (Quads and Yagis). Working antenna models were set up to receive 432 MHz radio energy across a room, detected by small light bulbs. Audience participation helped to make this a success. Use of light bulbs instead of meters is more dramatic and less mathematical, an important consideration for newcomers. 432 MHz was chosen because of available equipment (a Microwave Module Transverter), and because practical antennas are small enough to easily transport. A one-half-wavelength dipole is about 13 inches (33 cm) long, and many antennas can be easily constructed from No. 12 house-wire and wooden supports. Going to a much lower frequency would result in larger antennas and require a longer room. Going to a much higher frequency would make construction tolerances too critical, especially when accounting for the wire leads to the light bulbs. The program was well received, and was later expanded to cover topics encountered in the General Class and Extra Class Exams. Quite a few model antennas were constructed; some of these (such as the half-square and Moxon rectangle) are normally used at H. F., where they would be too large to fit in a room. Many topics will be demonstrated, including phasing and stacking of antennas. These topics can be chosen by the audience if time is limited.

Dale P. Clement, AF1T, of Henniker, New Hampshire, has been involved with varied aspects of Radio Communications and Technology for many years. Dale's Electronics career has included employment in Short-Wave Radio Repair, Antenna Design and Development Engineering, Research, Design, and Development of Satellite Communications Circuitry, and Electronics Instruction. His RF experience spans the range from VLF through SHF Microwaves.

Dale owes much of his RF background to a nearly life-long enthusiasm for Amateur Radio. Home-built equipment first got him "on the air", and he still enjoys designing and constructing station gear and antennas. Pursuits include world-wide DX Contacts, HF and VHF Contests, Meteor-Scatter, Microwave Experimentation, and EME (Earth-Moon-Earth) Communications. Dale has a 10 GHz (3 cm) World-Record Rain-Scatter Contact, and a 902 MHz (33 cm) World Record Moon-Reflected Contact. He has an Extra-Class License (call sign AF1T), is a Life Member of the American Radio Relay League, and of the Radio Amateur Satellite Corporation.

Dale strives to be well-rounded. He is a graduate of the University of New Hampshire, where he studied geology (especially paleontology and geophysics), mathematics and engineering. His non-radio interests are many and include travel (with wife, W1MKY), hiking, folk music, calligraphy, and volunteer work.