Microwave Cold-Testing Techniques for the NLC, G.B. BOWDEN, S.M. HANNA, H.A. HOAG, R.J. LOEWEN, R.L. MILLER, R.D. RUTH, J.W. WANG, SLAC, Stanford, California, USA - The R&D program for the Next Linear Collider Test Accelerator (NLCTA) includes the development of microwave techniques for testing X-Band accelerating structures at different stages of manufacturing and assembly. In this paper we report on these techniques. Resonant frequency measurements on five representative stacks of the Damped Detuned Structure (DDS) are used to determine the precise dimensions required for the accelerating mode ($2\pi/3$). Coupling of higher-order-modes to the damping manifolds is also characterized using these stacks. Frequency measurements on individual cells and on 39-cell stacks permit quality control during and after machining. Finally, a bead perturbation technique maps the amplitude and phase of the electric field throughout the assembled structure under travelling wave conditions using a computer-controlled set-up. Results of these measurement techniques and their application to the design, manufacturing, and characterization of the NLCTA structures are discussed.