Reflectometer Measurements of Electron Edge-Density Profile for ICRF Coupling Studies on NSTX J.B. Wilgen, G.R. Hanson, T.S. Bigelow, D.W. Swain, P.M. Ryan, ORNL; J. R. Wilson, PPPL - A microwave reflectometer has been installed in the HHFW antenna on NSTX to measure the electron edge-density profile during ICRF heating experiments. Plasma loading of the ICRF antenna on NSTX is very sensitive to details of the electron density profile in the plasma edge region. A broadband reflectometer covering the frequency range of 6-36 GHz, has been developed to provide the capability for probing the density range from 1.0 $x10^{17}$ m^{-3} to 1.6$x10^{19}$ m^{-3} with a single instrument. A pair of circular waveguide launchers, fed by broadband coax-to-dual-ridged circular waveguide adapters, was used to provide externally adjustable wave polarization to match the pitch angle of the magnetic field lines at the edge of the plasma. Quasi-ordinary mode data acquired using 800 microsecond sweep times has been used to reconstruct edge-density profiles. These initial measurements of edge-density profiles acquired during ICRF heating experiments have been incorporated into ICRF modeling code calculations of plasma antenna loading.

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