Characterization of Wave Polarization in the DIII–D 110 GHz ECH System\(^1\) H. IKEZI, J.L. DOANE, J. LOHR, C.P. MOELLER, D. PONCE, General Atomics — The heat absorption profiles of electron cyclotron heating power (ECH) and spatial location of the current drive in tokamaks depend on the polarization and injection direction of the microwaves with respect to the magnetic field in the plasma. In the DIII–D ECH system, a pair of grooved mirrors (polarizers) control the wave polarization, both ellipticity and tilt angle, of the beam which is injected into the tokamak. The polarization of the microwaves passing through a complex transmission system must be diagnosed. We have developed a polarimeter which measures the polarization direction angle, ellipticity, and field spin direction as a function of time at the MW level in the evacuated waveguide system. The polarimeter has been used for characterizing the gyrotron behavior and for testing the polarizer characteristics. Measurements with the polarizer also revealed the presence of some anomalies in the transmission line.

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