

Abstract Submitted
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Performance Of The DIII-D ECH High Power Transmission Lines And Launching Systems¹ MIRELA CENGER, J. LOHR, Y. GORELOV, A. TORREZAN, D. PONCE, C. MOELLER, GA, R.A. ELLIS, E. KOLEMEN, PPPL — The Electron Cyclotron Heating (ECH) transmission system on the DIII D tokamak consists of corrugated coaxial 31.75 mm waveguide transmission lines and steerable launching mirrors. Total power injected into plasma can reach up to 3.5 MW, with pulse length up to 5 seconds. The ECH power injected to the tokamak from each gyrotron is measured on a shot-to-shot basis and shows individual average injected powers from a gyrotron into the plasma between 540 and 700 kW. The transmission coefficient including the waveguide line and the MOU is between -1.04 dB and -1.43 dB. The maximum ECH energy injected into DIII-D is 16.6 MJ. The HE₁₁ mode content is over 85% for all the lines. The four dual waveguide launchers have increased poloidal scanning speed, and can steer the RF beams 40 degrees poloidally in 200 ms, with real-time poloidal motion control by the plasma control system. A new method of in-situ calibration of the mirror angle was used in conjunction with the upgrading of the encoders and motors for the launchers.

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