

Abstract Submitted
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Testing of the ITER-ECE prototype receiver and related components on DIII-D¹ M.E. AUSTIN, M.W. BROOKMAN, P.E. PHILLIPS, W.L. ROWAN, Univ. Texas Austin, S. DANANI, ITER-India — Real-world testing of advanced plasma diagnostic instruments and techniques intended for use on ITER is crucial to ensure their success. A prototype millimeter-wave receiver developed by Virginia Diodes, Inc. was brought to DIII-D to check its performance by measuring third harmonic ECE in high temperature plasmas. The receiver is state-of-the art, employing a waveguide based triplexer and a DRO-based local oscillator with an integrated tripler, subharmonic mixer and amplifier to detect emission in the 200-300 GHz range. Comparisons of ECE measurements with those from the DIII-D Michelson interferometer will evaluate linearity, sensitivity, and noise temperature. Also, transmission measurements of a double wedged quartz window, very similar to that proposed for the ITER vacuum interface, are given, showing no interference effects and good broadband performance. Additionally, results of the testing of a new high intensity LED light source for alignment of transmission line components are shown.

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