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ITER ECH Transmission System Test Stand and Prototype Component Development JOHN CAUGHMAN, TIM BIGELOW, DAVID RASMUSSEN, PHILIP PESAVENTO, JOHN WHITE, Oak Ridge National Laboratory — The US ITER Project Office is responsible for providing the ECH transmission lines for ITER. A conceptual design of the system uses a total of 24 transmission lines. Each line is designed to handle 170 GHz power at 2 MW operating in the HE11 mode. A number of prototype components have been procured, primarily from industrial suppliers, and testing of vacuum performance and mechanical alignment has been performed. A 140° miter bend was developed and tested at low power as an alternative to two adjacent 90 degree miter bends. A waveguide pumpout prototype and a compact waveguide switch have also been built. Components will be testing at high power (up to 2 MW) using a resonant ring configuration. Low power testing of a grating coupler for the resonant ring is underway. Work on installing a power supply and interim 400 kW 140 GHz gyrotron has progressed and procurement of a 170 GHz 0.5-1 MW gyrotron has begun. Low power testing and analysis of waveguide components is underway at MIT [1].

[1] M.A Shapiro, et al, Bulletin of the American Physical Society Vol. 54 No. 15 P 108.

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