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Plans for low and high power testing of 170 GHz Corrugated waveguide for ITER T.S. BIGELOW, J.B. CAUGHMAN, D.A. RASMUSSEN, ORNL, M.A. SHAPIRO, J.A SIRIGIRI, R.J. TEMKIN, MIT — A high power waveguide test stand for testing and qualifying corrugated waveguide components is being developed at ORNL. The US is committed to supplying 24 complete waveguide transmission lines to ITER. ITER has requested that the system be capable of operating at 2 MW cw due to the likelihood that a higher power gyrotron be developed. A number of prototype components have been procured commercially and studied at low power at MIT and ORNL. High power tests have been performed at 1 MW cw power levels at JAEA on similar components. A full-length prototype system test is desirable to confirm the overall performance of the system including such issues as losses, waveguide heating, mode purity, interaction between components, polarization control, vacuum pumping, and arcing. Plans are to perform these tests at a power level of 2 MW cw or higher using a resonant ring principle and a lower power gyrotron such as a 140 GHz 300 kw cw tube on hand at ORNL and a 170 GHz 500 kw cw tube that will be procured. Although progress has been delayed by funding for ITER projects, considerable work on completing the test stand, procurement of some prototype components, vacuum testing and some low power testing of components and a shorter resonant-ring have been completed. Work Supported by US DOE under contract DE-AC05-OR22725.

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