RF System Upgrade of the JET Alfvén Eigenmode Diagnostic System* P.P. Woskov,[1] M. Porkolab,[1] P. Blanchard,[2] D. Testa,[2] A. Fasoli,[2] L. Ruchko[3]
[1]*MIT Plasma Science and Fusion Center, Cambridge USA*
[2]*CRPP-EPFL, Lausanne Switzerland*
[3]*University of Sao-Paulo, Brazil*

One of the outstanding questions for toroidal burning plasmas is the interaction of fast particles with intermediate-*n* Alfvén eigenmodes (AEs) which could reduce confinement of fusion product α particles and fusion gain. To experimentally research this problem a unique 8-coil inductive antenna system has been implemented on JET to study fast-ion interactions with AEs in the 50 – 500 kHz range and *n* number in the 5 – 25 range. The present single 5 kW amplifier used to power all the antennas is being replaced by eight 1 kW transmitters that will independently power each antenna to improve access to the intermediate-*n* AEs and also system reliability. Independent digital drivers are also planned to make possible multi frequency and arbitrary phase studies of multiple modes and traveling modes. Laboratory testing of two 1 kW amplifier units is underway on a mock up JET antenna at MIT with long cable runs simulating the JET setup. Upgrade system details will be presented. Aspects of this design may be applicable to higher power RF distribution and phase control systems to stabilize instabilities near the plasma edge.

*Work supported by USDOE.