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High Resolution ECE Measurements on DIII-D[1] M.E. AUSTIN, U. Texas-Austin, D. TRUONG, U. Wisc.-Madison — In DIII-D plasmas, electron cyclotron emission (ECE) measurements with high spatial resolution, ∼1 cm or less, are possible due to typically large optical depth. To take advantage of this, a new set of eight channels has been added to the ECE radiometer with narrow bandwidth, closely spaced, fixed frequency filters to look at small scale T_e fluctuations. The high resolution ECE system uses signals from the three existing IF bands of the radiometer. Full band coverage is accomplished by mixing higher IF frequencies down into the 2-4 GHz filter range. Channel filters are 200 MHz wide, with centers separated by 250 MHz; these will provide resolved measurements down to 0.6-0.8 cm depending on the local electron temperature and B_T scale length. Calculations of the relativistically broadened emission widths will be given. Typical uses of the channels will be to map out the spatial dependence of Alfvénic eigenmodes, geodesic acoustic modes, and externally applied magnetic perturbations. First data has been obtained and initial measurements of T_e structures will be presented.

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