

NATIONAL RADIO ASTRONOMY OBSERVATORY
GREEN BANK, WEST VIRGINIA

ELECTRONICS DIVISION TECHNICAL NOTE NO. 131

Title: MOISTURE ABSORPTION BY ECCOFOAM DIELECTRIC
MATERIAL: ADDENDUM TO EDTN #125

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MOISTURE ABSORPTION BY ECCOFOAM DIELECTRIC MATERIAL

ADDENUM TO EDTN #125

Richard F. Bradley

A recent test of the new 2.9-3.4 GHz receiver which incorporates the Eccofoam window design described in EDTN #125 revealed a slow drift of approximately 10 degrees in the receiver noise temperature while the receiver was exposed to environmental conditions on the 300-ft telescope in Green Bank. This increase in noise temperature was traced to moisture absorption by the Eccofoam material.

To correct this problem, a single sheet of household plastic wrap is placed over the exposed Eccofoam surface. The noise added by the plastic wrap itself could not be measured. The receiver was then installed on the 140-ft telescope, and tests reveal no noise temperature drift. Therefore, as advised by the manufacturer in Emerson and Cuming Technical Bulletin #6-2-4, it is crucial that a thin moisture seal be used over the exposed end of the waveguide window.