

DEUTERIUM ARRAY MEMO #022

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS 01886**

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*Telephone: 978-692-4764
Fax: 781-981-0590*

To: Deuterium Array Group

From: Alan E.E. Rogers

Subject: Sensitivity of receivers to internal RFI

The analog electronics is contained in individual boxes. Strong signals from the PC and other internal electronics can leak into the receivers. The sensitivity to these signals was judged by radiating a signal from a signal generator with 8 inch monopole antenna placed within the PC section. The signal level was adjusted to produce an output level in any channel equal to the system noise (244 Hz resolution) without a preamp connected. The following levels were required:

Frequency MHz	Level dBm	Comments
9.4	>+13	None observed
49.4	>+ 13	Non observed
228.6	+13	Image response
327.4	+13	
506.6	>+13	Harmonic image
605.4	>+13	Harmonic image
784.6	+10	Harmonic image
883.4	+6	Harmonic image
1062.6	+12	Harmonic image

The receiver is more sensitive to the higher frequency harmonic images because the shielding is imperfect. Tape is used to help connect the box together and help seal the cracks between the boxes and their covers. Unfortunately there are no conductive gaskets available for the R.F. boxes.

Tests for the presence of internal signals of a significant level were made by integration of the spectra from each channel for 12 hours without the preamplifiers connected. With this integration time any signal above the noise floor is of concern. Without the copper taping of the R.F. boxes several signals are observed following a long integration:

Frequency (MHz)	Apparent freq	Source	Path	Fix
1062.5	327.500	Fiber optic transmitter	Near field radiation	Copper tape
228.625	327.375	Video card	Near field radiation	Copper tape
49.50	327.500	GrayChip	Currents between module	Copper tape