

National Radio Astronomy Observatory

Socorro, New Mexico

May 23, 1984

To: VLBA Electronics Group Members

From: A. R. Thompson

VLBA Electronics Memo No. 14

Subject: VLBA Electronics Group Meeting, May 17, 1984

Attendees: Balister, Bradey, Brundage, D'Addario, Kellermann,
Mauzy, Moffet, Norrod, Thompson, Walker, Weinreb.

Front Ends

Sander Weinreb reported that the 8.4 GHz front-end is now complete and cooling down satisfactorily, but a noise temperature measurement has not yet been made. The couplers for the solar calibration will be 30 dB rather than 20 dB to reduce insertion loss, and this may result in the need for an amplifier for the calibration signal. More information is needed on the solar calibration requirement. Some samples of HEMTs received from TRW looked good when tested at room temperature.

Roger Norrod reported that work orders for nine Dewars are being placed with the Green Bank machine shop. A. J. Tuck Company will deliver the L-band orthomode junction at the end of July. Circulators for 5 GHz amplifier development have been ordered.

Local Oscillator

Bob Mauzy has received an H.P. sampling mixer and will build a pulse generator to test it. There was some discussion of Hydrogen maser specifications and the degree to which environmental control is necessary. Al Moffet recommended that the maser be in a separate room, the temperature control for which can be improved if necessary. There was general agreement on this, and some discussion of whether IF amplifiers and samplers should be in the same room.

Areas in which further Information is Required

Solar Observations: How high antenna temperatures should we be able to handle? Do we need solar calibration on all antennas?, all frequency bands?

Phase Calibrator: What are the specifications on the phase and group delay stability for the components that carry the phase calibration signal?

Maser Front-Ends: If the best modern design is used, how much more difficult would masers be to handle and maintain than paramps or HEMTs?

Critical Dates and Target Dates:

- May 25 - Information on optimum limits of 22 GHz band to be communicated to S. Weinreb (K.I.K., R.C.W.).
- June 30 - Specifications for Hydrogen maser complete (S.W.)
- July 31 - Receipt of 1.5 GHz orthomode junctions. Dewar and other components for one 1.5 GHz front-end complete at this time. (R.N.)
- July 31 - 8.4 GHz front-end ready for installation on the VLA. (S.W., H.D.)
- Aug. 31 - Test of Hewlett Packard sampling mixer complete (R.M.)
- Dec. 31 - Working breadboard of 2-16 GHz synthesizer (R.M.)

Plan for Design of Front-Ends (Revised 4/17/84)

<u>Band</u>	<u>FET Design</u>	<u>Front-End Design</u>	<u>Design Completion</u>
0.33 GHz	Exists	A.R.T.	June 1984
0.61	R.H.	A.R.T.	June 1985
1.5	Exists	R.N.	June 1985
2.3	R.N.	R.N.	Feb. 1986
4.8	R.N.	R.N.	June 1985
6.1 *	R.N.	R.N.	July 1987
8.4	M.P.	S.W., H.D.	June 1984
10.7 *	M.P.	S.W., H.D.	Dec. 1984
15	Exists (M.P.)	H.D.	June 1985
22	Paramp?	?	Oct. 1985
43	Maser?	?	Oct. 1985

- * It is not yet clear if both of these bands will be implemented on all antennas.