VLB ARRAY MEMO No. 567

VLBA Electronics Memo No. 77

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NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia
August 13, 1986

To: VLBA Electronics Group

From: Dick Thompson

Subject: VLBA Electronics Meeting, August 7, 1986

Attendees: Bagri, Balister, Beale, Campbell, Lilie, Mauzy, Napier, Norrod, Oty, Schlecht, Simon, Thompson, Walker.

A memorandum on Electronics Documentation (VLBA EM No. 76) was recently issued, and engineers are urged to start the process of writing reports on the modules, front ends, and similar units as soon as possible. Block diagrams and circuit diagrams, at least, should be available by mid-September when the equipment is shipped to the VLA site. I will be responsible for writing an overall system report similar to VLA Technical Report No. 29. Carolyn Williams will assign numbers to new reports.

A draft memorandum on electronics packaging has been circulated before being distributed in final form. Please let me have any comments on it. I will add a note on the pin and socket designation of the miniature coaxicon connectors, which is not obvious by inspection.

Adjustment of power levels of the RF and IF signals was briefly discussed. The tolerance on the gain of the front ends is typically ± 3 dB. The loss in the cable from the front end to the converter module depends upon the cable length, and cannot be precisely specified at this time. The maximum loss should be about 9 dB, which corresponds to 29 ft of 0.25 inch spirofoam line at 15 GHz. The gain of the IF sections of the converter modules can be adjusted over a range of approximately 20 dB to provide -38 dBm in 500 MHz at the inputs to the cables that run to the electronics room. Sufficient IF gain is provided in the electronics room to compensate for cable loss and terminating pads, and to allow the levels to be adjusted to -40 dBm in 500 MHz, which is the nominal input level for the IF distributor.

At Green Bank, progress is continuing on the 4.8 GHz front end, which is the last front end required to complete the initial-installment set of electronics for Pie Town. The first measurements of noise performance with the system cooled will be made next week (the week of August 11), and construction and testing is expected to be completed by the end of the month. In Charlottesville, the wiring of the three electronics racks is almost complete, and system testing will start early next week.

The final topic for discussion was the mounting of the electronics racks in the antenna vertex room. Mounting the racks to the ceiling has the advantages of minimizing the lengths of the RF cables, keeping the center of mass of the rack closest to the mounting point, and keeping the floor uncluttered. Mounting the racks on the floor has the advantages that the provision of mounting structure on the ceiling is avoided, and it is not necessary to provide a stepladder or raised floor to allow access to the upper parts of the racks. Opinions expressed were all in favor of mounting to the ceiling, and the decision was made to follow this procedure.