VLB ARRAY MEMO No. 525

VLBA Electronics Memo No. 58

NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia (860113)
January 13, 1986

To: VLBA Electronics Group

From: Dick Thompson

Subject: VLBA Electronics Meeting, January 9, 1986

Attendees: Balister, Bradley, Beale, D'Addario, Dill, Greenberg, Mauzy, Moffet, Norrod, Schlecht, Simon, Srikanth, Weinreb.

The use of indicator lights to monitor the activity of the monitor and control bus and the associated interface cards was briefly discussed. Driving voltages for five such lights (LEDs) are provided on the interface cards. It was suggested that these lights are generally not needed for each interface, and need not be provided on the module front panels. There is some possible benefit in being able to monitor the bus activity at one point in each rack, so the lights may be included in a few special cases. It was agreed that they need not be included in the 2-16 GHz Synthesizer or Front End Control modules.

S. Weinreb discussed some problems of fringe rotation at the antennas, in particular the point that if frequency offsets are applied to the 100 MHz reference waveform from the maser, the responses of all phase lock loops which respond to the frequency-offset waveforms must be designed so as not to violate Alan Rogers' one microsecond epoch criterion (see VLBA Memorandum No. 491). Since, however, the rate of change of fringe frequency is quite small, (of order 200 Hz in 12 hours at 100 MHz), the loop responses may not be important. Further discussion revealed some lack of understanding of what the scientific requirements are. For example there seems to be no clear statement on the residual fringe-frequency range that must be accommodated in the correlator or in subsequent processing.

The monitor and control circuitry for the front ends is to be modified to add two wires for parity information in the interconnection between each front end and its control module. Also the output voltage of the temperature sensor will be monitored directly (i.e., before linearization).

Srikanth brought up a problem arising from the dichroic reflector system for simultaneous operation at 5 and 15 GHz. The design requires that the 15 GHz feed be moved upwards by approximately 3 cm. No problems from such a change could be foreseen. The dichroic reflector contains dipole structures that reflect the 15 GHz frequency but are transparent at 5 GHz. This design is different from the prototype dichroic reflectors for the VLA, which contain holes to pass the higher frequency.