VLBA ACQUISITION MEMO #174

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To: VLBA Data Acquisition Group

From: Alan E.E. Rogers

Subject: Suggestions for BBC production

1] Construction improvements

a] Filter/amp board

Labor could be saved by merging the various sections of the filter/amp modules into one board. This could be done with difficulty on the AT&T 6300, but could be easily accomplished using a 386 machine.

b] Submodule layout

Another iteration on submodule layout would make the module easier to assemble (Bob Simon may already have made some layout improvements).

c] PC board updates

All the pc boards could probably benefit from are some minor revisions/layout improvements.

2] Component handling precautions

a] SD5002 switches

Despite the protective diodes built into the 5002, these DMOS switches should be handled using the standard precautions needed to prevent static discharge damage.

3] Design changes

Acquisition Memos 148, 162, and 165 outline some design changes which have been made since the manual was issued in October 1988.

4] Component testing

a] Resistors

All resistors should be checked with an ohm meter, and those out-of-tolerance component should be used only in non-critical places. This is especially important for the resistors in the video phase shifter, active filter, and gain control sections.

b] Capacitors

All capacitors should be checked on a capacitance meter and out of tolerance components avoided. This is especially important for the capacitors in the video phase shifter and active filter sections.

c] Mixers

Consideration should be given to building a test set for checking mixer balance prior to installation into the SSB mixer submodule.

5] Submodule testing

It may be advantageous to test the sub-modules individually before assembly into a module. The filter/amp submodule can be tested by substitution into a working BBC.

6] Test instruments

5 MHz source with 3 or more buffered outputs
High quality multi-meter
High quality capacitance meter
500-1000 MHz sweeper
350 MHz 4-channel oscilloscope
Frequency synthesizer locked to 5 MHz
Computer with MCB interface, test software and printer
A spectrum analyser can also save some time

7] 5539 op amps

Consideration should be given to using Analog Devices, AD5539s instead of the Signetics, NE5539, as Analog Devices claims to have better, more consistent, performance.