

INTERFEROMETRICS INCORPORATED

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October 23, 1989

To: VLBA Data Acquisition Group
From: John C. Webber and Richard R. Grenwis
Subject: Circuit board changes in DAR

In Data Acquisition Memo #174, Alan Rogers outlined some changes which could profitably be made to some of the boards in the DAR. Based on our experience with building baseband converter and other DAR components to date, we have identified 4 items which it makes sense to update. We have completed the circuit board consolidation and revision; indeed, for some of the work the speed of a 386 machine is essential because of the complexity of the boards. We have new layouts and will shortly be getting new boards made for the following:

1. Filter/Gain assembly

The filter assembly consists of an input section, 4 filter sections, and 2 gain sections. We have consolidated this into a single board 3 × 8.9 inches in size. Jumpers previously required between sections have been replaced with solid traces. Unpopulated areas of the bandwidth gain compensation section have been eliminated. Some adjustments have been made in pad spacing and component location to ease clearances and make exact fits to the sizes of available components. The number of mounting holes has been reduced but kept compatible with the existing mounting bar. The drill hole sizes for the SMC connectors have been modified so that no additional drilling after manufacture will be required.

2. Sampler assembly

The sampler assembly consists of a clock distributor and 9 sampler sections. We have consolidated this into a single board 3 × 12 inches in size. Jumpers previously required between stages have been replaced with solid traces. The transmission lines for the clocks are now solid. The terminating resistors for these lines can now be mounted on the component side. The extra capacitors on the back side can now be mounted on the component side. Some adjustments have been made in pad spacing in a few cases. Some traces have been slightly moved to increase trace separations. The drill hole sizes for the SMC connectors have been changed. Mounting holes have been changed as for the filter assembly.

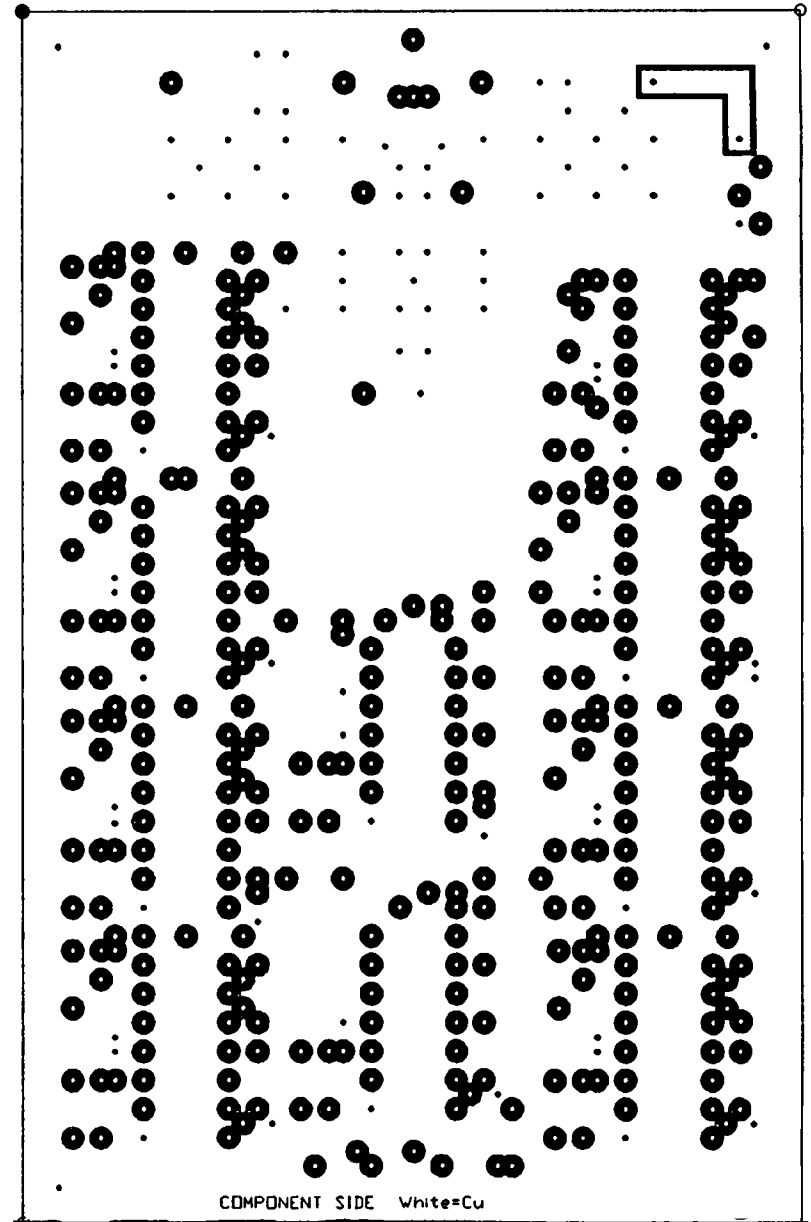
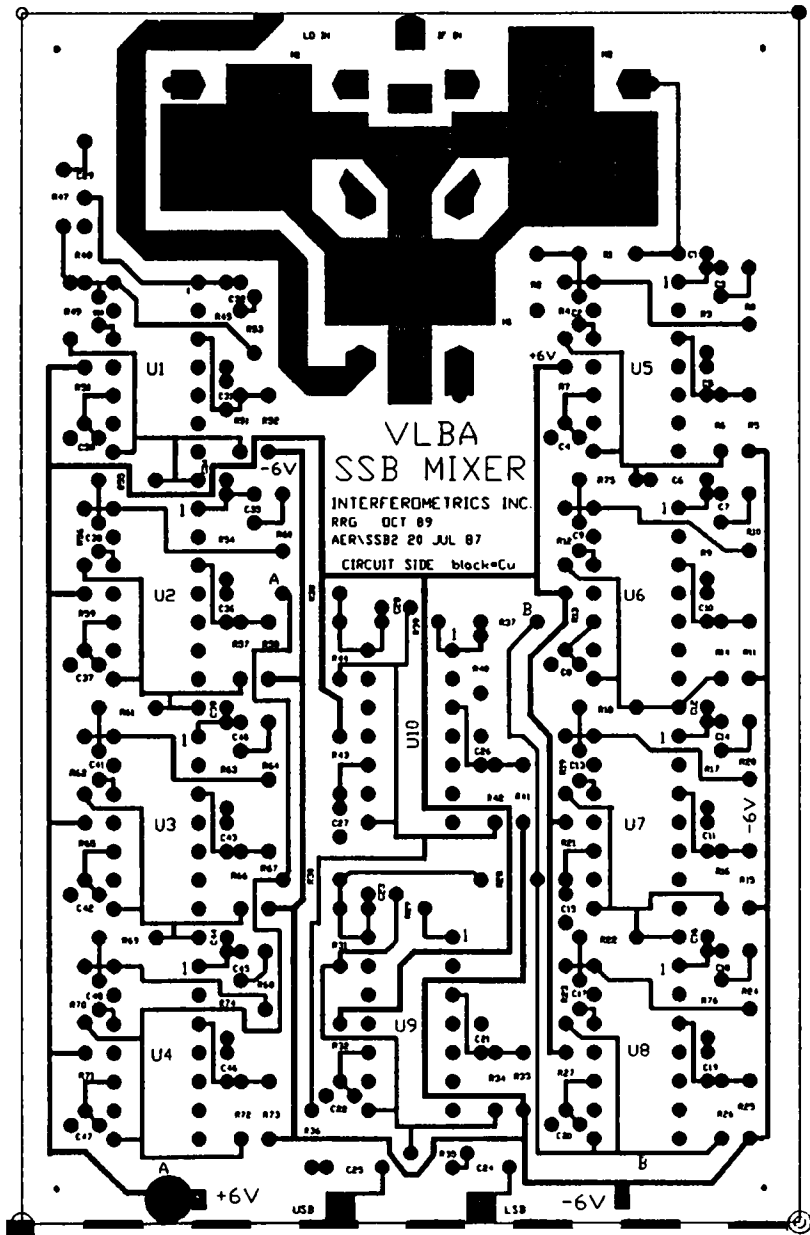
3. 5 MHz/ 1 pps distributor

The 11 amplifier sections for this assembly have been consolidated into one board 3×11 inches in size. Jumpers have been replaced by solid traces. Superfluous SMC connector pads have been eliminated. Two 4-wide sections of the 11-section board each have an SMC connector provided so that one large board will yield two 4-amplifier boards usable in the 5 MHz distributor. Extra pads have been added so that the board is easily populated for 5 MHz or 1 pps distribution using standard resistor values. The mounting and SMC connector holes have been changed as above.

4. SSB Mixer

There have been some design changes and improvements since the board was laid out. Our new design moves a few components to gain space for these changes. Components previously tacked to the circuit side may now be mounted on the component side. We have added a piece of stripline to carry the L.O. signal in place of the piece of semi-rigid cable; if this works, it will reduce assembly time. We have also added a ground plane with many through-holes on the component side beneath the mixers so that a good ground should be possible without cutting holes in the board after manufacture. Provision has been made for an input matching network on the I.F. input splitter.

These changes are intended to reduce manufacturing costs and increase reliability. We anticipate having the boards ready in several weeks and, after checkout, we will make them available to NRAO.

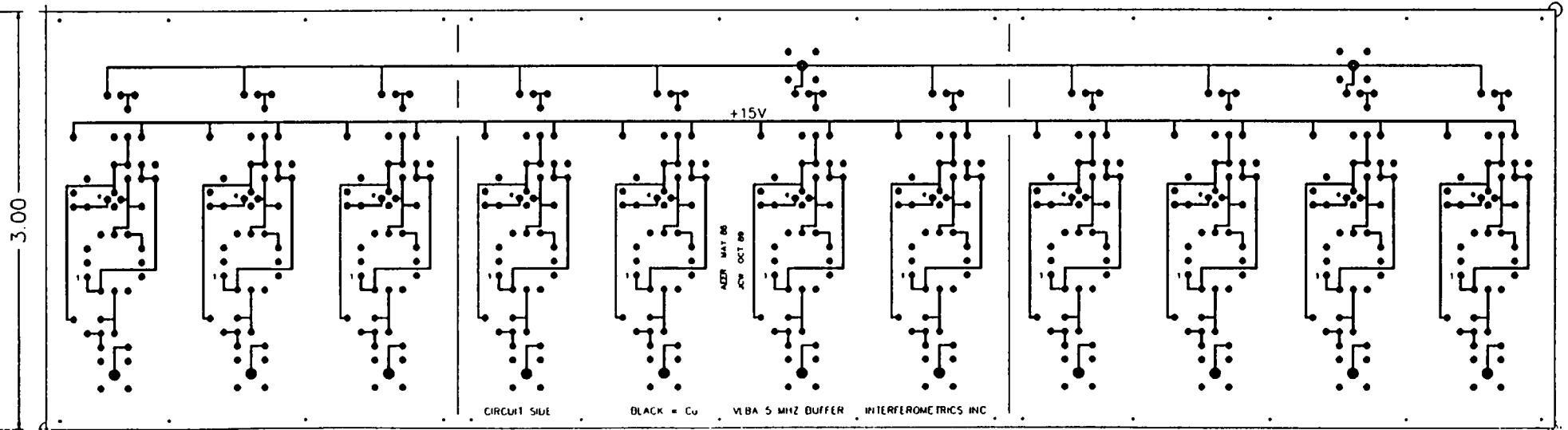
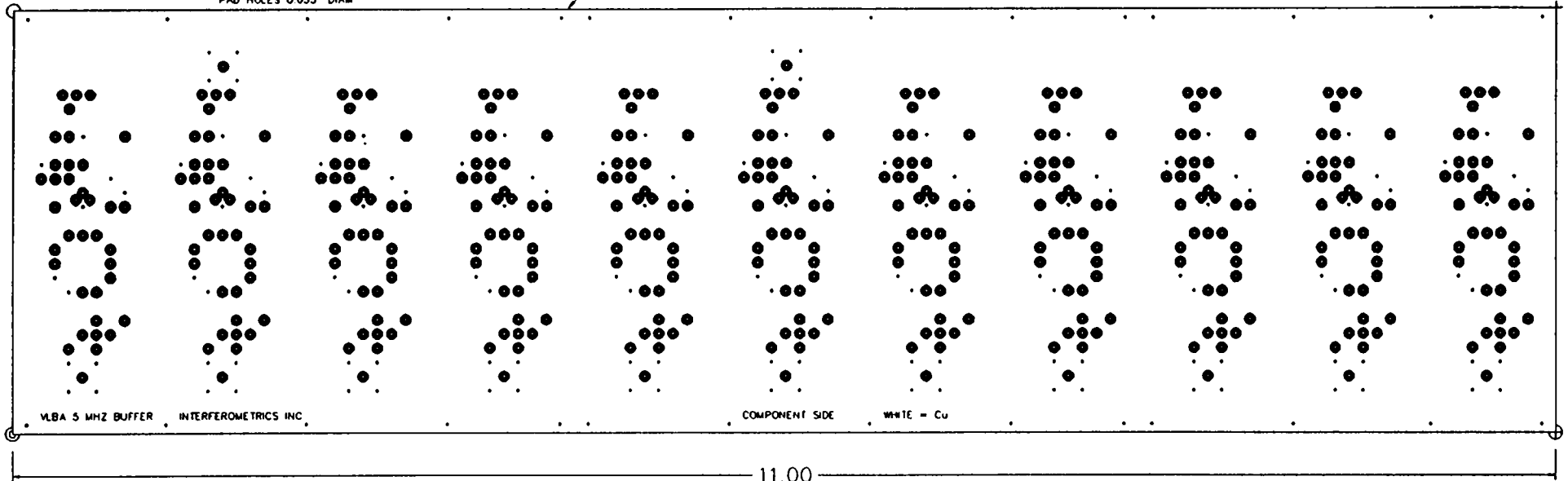


SMC CONNECTOR HOLE DEFINITION (13 PLACES)

- — 4 CORNER HOLES 0.060" DIAM
- — CENTER HOLE 0.040" DIAM

PAD HOLES 0.035" DIAM

MOUNTING HOLES 0.079" DIAM (28 PLACES)

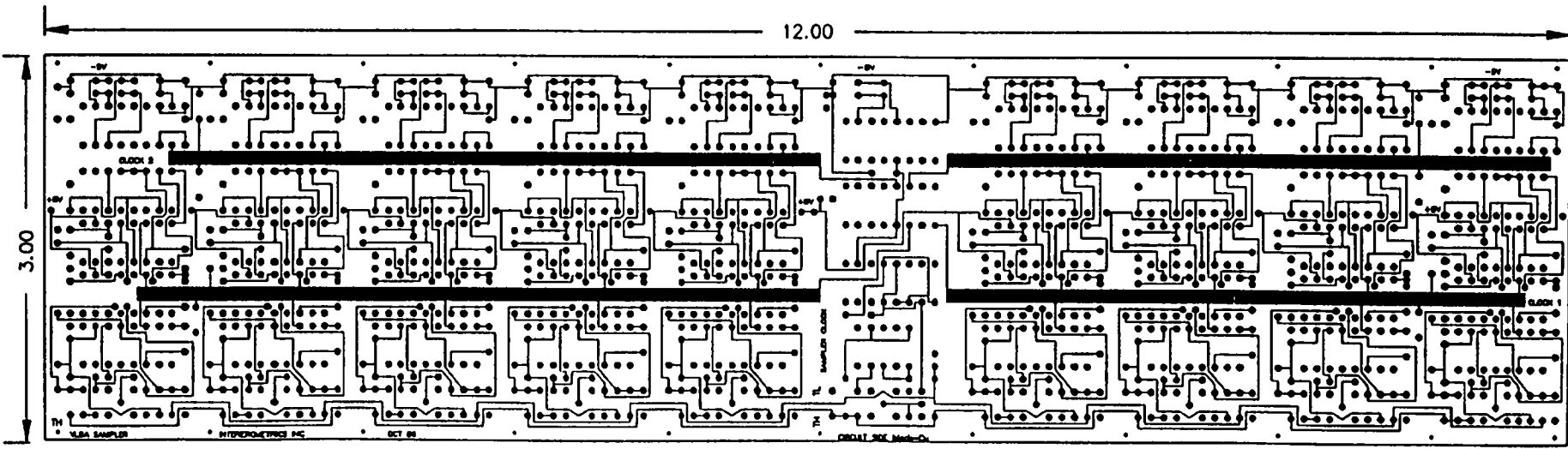
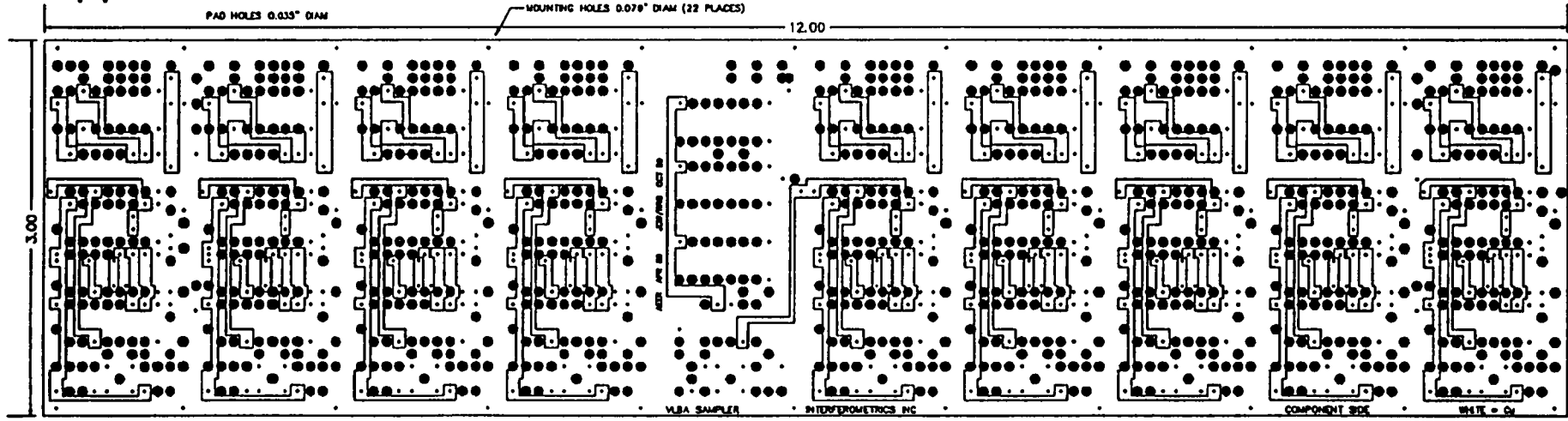


SMA CONNECTOR HOLE DEFINITION (10 PLACES)

- CORNER HOLES 0.060" DIAM
- CENTER HOLE 0.040" DIAM

PAD HOLES 0.035" DIAM

MOUNTING HOLES 0.070" DIAM (22 PLACES)



SMC CONNECTOR HOLE DEFINITION (4 PLACES)

- — 4 CORNER HOLES 0.060" DIAM
- — CENTER HOLE 0.040" DIAM

PAD HOLES 0.035" DIAM

MOUNTING HOLES 0.079" DIAM (16 PLACES)

8.90

3.00

COMPONENT SIDE
WHITE = Cu

INTERFEROMETRICS INC

