VLBA Electronics Memo No. 127

NATIONAL RADIO ASTRONOMY OBSERVATORY

Edgemont Road

Charlottesville, VA 22903

Nov. 26, 1990

To: VLBA Electronics Group

From: Dick Thompson

Subject: Retrofits to VLBA Racks and Modules.

This memorandum lists retofits required to VLBA racks of types A, B, C, and D, and associated modules. Change orders for most of these modifications have not yet been written, and the purpose of this memo is to obtain a complete list from which to write the change orders. Please scan the this memo and let me know of any modifications that may have missed. Serial numbers for which the modifications are required need to be checked in some cases.

Rack A

(1) Change in wiring to F 118 (330/610 MHz Adapter).
(2) Add reset wiring to connectors for modules that include the M/C card. (This may never be needed and could probably be omitted.)
(3) Change of quality ground for 28 V supply (?).

Rack B

(1) Add reset wiring to connectors for modules that include the M/C card. Early ser. nos.
(2) Add wiring for control of relays in T110 (43 GHz Converter). Ser. nos. 101-107.
(3) Add bracket for 4 type N adapters and 141 cabling for 43 GHz LO, ALT (alternate) LO, and ALT inputs. Ser. nos. 101-108
(4) Add 141 connection from OSP 7 of LO Receiver to type N 27 on lower bracket, for 2.083 kHz. Ser. nos. 101-106 (?).
(5) Add connections from LO receiver to Rack B Interface module for monitoring of Lock detector.

Rack C

(1) Reverse 115 V input power connections. Live side should go to power supply inputs that are fused. Ser. nos. 101-109.
(2) Replace five IF amplifiers (500-1000 MHz) with units that contain equalization network. Ser. nos. 101-107.
(3) Add 141 connection from OSP 10 of Round Trip monitor module to type N 5, for 2.083 kHz. Ser. nos. 101-106 (?).
(4) Add connections from LO Transmitter to Round Trip Monitor module for monitoring of lock detector.
(5) Check back panels of bin connectors that use coaxicon connectors. These panels should have the Haystack modification (metal cutout to allow closer fit of connectors). Replace as necessary. Ser. nos. 101-103.

Rack D

(1) Replace 5 V power supply and Wavetek Synthesizer (used for output rate generation) by VLBA-module-mounted types. This will require addition of a bin. Ser. nos. 101-102.
(2) Add sheet metal work required to duct air past VME crate (formatter). Ser. nos. 101-104.

F117 Front End Interface

(1) Add current/voltage monitor for noise diode, remove DIP switches. Resistor R54 becomes 2.2 k, and statio
exit
n computer reset lines added. Ser. nos. 7-10.
(2) Add reset lines. Ser. nos. 3-4, 7-19, 21-23, 26.

L102 LO Transmitter

(1) Major changes on Ser. nos. 1-6.
(2) Changes on phase lock board:
  (a) remove capacitor to ground from pin 12 of LH0022
  (b) remove capacitor across 51k feedback resistor of output LF41
  (c) change 7400 to 74LS00
  (d) change resistor in series with LED from 330 ohms to 1.5k
Ser. nos. 1-7.
(3) Phase lock board:
  (d) add 470k to -15 v from pin 1 of second LF411 input signal path
  (e) replace 5151-2500 filter plugin by dip header with 1k and 0.1 microfarads.
Ser. nos. 1-9.
(4) Modify detector amplifiers for high input impedance and negative output. Ser. nos. 1-6.

L103 Round-Trip Monitor

(1) Add PLL monitor and reset lines. Ser. nos. 1-2.
(2) Add power failure reset and switch inverter. Ser. nos. 1-3, 6.
(3) Add 2.083 kHz output. ser. nos. 1-3, 5, 6.
(4) Modify to reset counters at 3-sec intervals and increase averaging accordingly. Ser. nos. 1-3, 5-7.

L105 LO Receiver

(1) Major changes on ser. nos. 1-6.
(2) Changes on phase lock board:
  (a) remove capacitor to ground from pin 12 of LH0022
  (b) remove capacitor across 51k feedback resistor of output LF41
  (c) change 7400 to 74LS00
  (d) change resistor in series with LED from 330 ohms to 1.5k
Ser. nos. 1-7.
(3) Phase lock board:
  (d) add 470k to -15 v from pin 1 of second LF411 input signal path
  (e) replace 5151-2500 filter plugin by dip header with 1k and 0.1 microfarads.
Ser. nos. 1-9.
(4) Modify detector amplifiers for high input impedance and negative output. Ser. nos. 1-6.

L107 Switch Driver
(1) Switch wiring change. Ser. nos. 2-3.
(2) Reset lines added. Ser. nos. 1-4.

L108 Station Timer
(1) Add input pulse one-shot. Ser. nos. 1-3.

L121 IF Distributor
(1) Add feedthrough filters to control lines of IF switches to increase isolation. Ser. nos. 1-16.

M102 Rack-B Interface
(1) Change temperature sensor, Kelvins to Celsius. Change 5 V connector pin. Add reset lines. Ser. no. 2.

T101 330 MHz Converter
(1) Add channel interchange switch and ground wiring to lugs. Ser. no. 1.

T102 610 MHz Filter
Design revision of all serial nos. to date.

T103 1.5 GHz Converter
(1) Add ground wiring to lugs. Ser. nos. 1 (and 2-4 ?).

T104 2.3 GHz Converter
(1) Add ground wiring to lugs. Ser. no. 1.
(2) Add isolation filters in LO lines. Ser. nos. 1-4.

T105 4.8 GHz Converter
(1) Add ground wiring to lugs. Ser. nos. 1 (and 2-4 ?).

T106 8.4/23 GHz Converter
(1) Add ground wiring to lugs. Ser. no. 2.
(2) Right polarization to both channels, switch added. Change alternate LO from left to right mixer. Ser. nos. 1-2, 4.
(3) Remove filters defining the 23 GHz bandpass. (These are now included in the front end.) Ser. nos. 1 (and 2 ?).

T108 15 GHz Converter
New design required. Ser. no. 1 only constructed so far.

T122 Baseband Converter
(1) Readjust all units with serial nos. up through 20.

Front Ends
(1) 15 GHz front end to be redesigned to cover 12-15.4 GHz. Only one unit of earlier design exists.
(2) Replace GASFET amplifiers in early front ends with HEMT amplifiers. To be performed as front ends are brought in for retrofit.