

VLBA Electronics Construction Plan for 1992

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The attached table, in two parts, is an update of the similar table in VLBA Electronics Memo No. 122 which was issued one year ago. The new table gives the status of construction of the electronic system at the beginning of 1992, the final year of construction of the project. Also included in the table is the status of construction of VLBA hardware for the Green Bank contract with the U.S. Navy (two 14-BBC Data Acquisition Racks), the Green Bank Telescope (one 8-BBC Data Acquisition Rack), and the OVLBI Ground Station being constructed at Green Bank (modified Front ends for 8.4 and 14 GHz, a Formatter, and various other modules).

Construction.

The numbers of the various units that remain to be completed are shown in column 16 of the table. Front ends are almost complete except for the 14 GHz and 43 GHz units. In the case of almost all of the remaining Converter Modules (other than the Baseband Converter Modules) the components are mechanically assembled and only wiring and testing remain to be completed. Of the 50 remaining Baseband Converter modules, many are largely complete but require adjustment to be brought up to specification. It is expected that all of the other remaining units will be completed by mid-year except for the Pulse Calibration Generator Modules (L110) and the Pulse Calibration Phase Monitor Modules (L111).

For the Pulse Cal. Generator, the design is essentially complete at this time and a prototype should be ready for testing by early March. The unit that generates the pulses in this module is being made at Haystack Observatory. For the Pulse Cal. Phase Monitor, a conceptual design exists and Dr. Ravindra will be working on a prototype with a goal of testing the design by about mid-year. Construction of the required numbers of these two modules should be completed in the final quarter of 1992.

Retrofits.

A number of the units that were constructed early in the project need to be returned to Charlottesville for retrofits. This should be accomplished without affecting the operation of the array since spare modules are becoming available as construction nears completion. The units concerned are as follows.

T102, 610 MHz Filter Module, serial nos. 1-4.

T108, 14 GHz Converter Module, serial no. 1.

F117, Front-End Interface Module, serial nos. 1, 3, 4, 7-19, 21-23, and 26.
(these all have revision letters earlier than F).

L102, LO Transmitter Module, serial nos. less than 14 need to be checked, and those with frequency offset of the 500 MHz output should be returned for retrofits.

L103, Round Trip Monitor Module, serial nos. A1, A3, A5, are currently back for retrofit, A2, A6, A7 also need to be returned.

L105, LO Receiver Module, serial nos. less than 14 need to be checked. All those with frequency offset of the 500 MHz input should be returned for retrofits. Old style 500 MHz phase-lock boxes should be replaced.

L107, Switch Driver Module, serial nos. 1-4. (nos. 5-10 and 12-14 will be retrofitted in Socorro by R. Weimer.)

L108, Station Timer Module, serial nos. 1-3.

L121, 5 MHz Distributor Module, early units with only 10 buffer stages should be returned for addition of 4 more stages.

M102, Rack B Interface Module, serial nos. 1, 2, and 4-9.

P101 and P102, 15 V Power Supplies, some early units (rack sets 1,2 and possibly 3) do not have overvoltage protection. Contact W. Wireman for details.

Rack A. When Rack B is fully populated with modules, the +15 V current is 11.4 Amps, which is too close to the maximum for the P101 that supplies it. It is therefore proposed to add another P101 to Rack A, in bin C, slots 9-12. This will share the Rack A load with the P101 that presently supplies Rack A. We have built enough P101 modules to put another one in each Rack A and still have spares. Rack A serial 111 will be retrofitted in Charlottesville, and we will supply instructions for field retrofit of serial nos. 101-110.

Rack C. A field retrofit to accommodate the Pulse Cal. Phase Monitor Module will be necessary. Instructions will be made available when the design of the module is complete.

Rack D. The first two units of Rack-D (serial nos. 101 and 102) require addition of a power supply bin and metal parts to control air flow around the Formatter. Currently one of these racks is the test unit at the AOC and the other is at Los Alamos. It is suggested that the present Los Alamos rack should become the second AOC test rack, and retrofits to both racks be made at the AOC.

Formatters. All of the original-design A/D Buffer boards will be replaced by the new design incorporating digital switching and pulse cal. extraction circuitry. The new boards should be available early in the second half of the year.

[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			VLBA				Navy Contract		GBT		OVBI		Highest Ser. No.			
Unit Name	Type No.		No. for Array and Lab	No. of Spares	Total Reqd.	No. built by end 1991		Total Reqd.	No. built by end 1991	Total Reqd.	No. built by end 1991	Total Reqd.	No. built by end 1991		No. to be built in 1992	Unit
330/610 MHz Feed			10	1	11	6								11	5	330/610
1.5 GHz Feed			10	0	10	10								10		1.5 GHz
2.3 GHz Feed			10	0	10	6								10	4	2.3 GHz
4.8 GHz Feed			10	0	10	10								10		4.8 GHz
8.4 GHz Feed			10	0	10	10								10		8.4 GHz
10.7 GHz Feed			1	0	1	1								1		10.7 GHz
14 GHz Feed			10	0	10	2								10	8	14 GHz
23 GHz Feed			10	0	10	10								10		23 GHz
43 GHz Feed			10	0	10	4								10	6	43 GHz
2.3/8.4 GHz Dichroic			10	2	12	6								12	6	8.4/23
330/610 MHz F.E.			10	1	11	11								11		330/610
1.5 GHz F.E.			10	1	11	11								11		1.5 GHz
2.3 GHz F.E.			10	1	11	11								11		2.3 GHz
4.8 GHz F.E.			10	1	11	11								11		4.8 GHz
8.4 GHz F.E.			10	1	11	10				1		0		42*	2	8.4 GHz
10.7 GHz F.E.			1	0	1	1								1		10.7 GHz
14 GHz F.E.			10	1	11	3				1		0		12	9	14 GHz
23 GHz F.E.			10	1	11	10								11	1	23 GHz
43 GHz F.E.			10	1	11	6								11	5	43 GHz
330 MHz Conv.	T101		11	3	14	9								14	5	330 MHz
610 MHz Conv.	T102		11	3	14	9								14	5	610 MHz
1.5 GHz Conv.	T103		11	3	14	14								14		1.5 GHz
2.3 GHz Conv.	T104		11	3	14	8								14	6	2.3 GHz
4.8 GHz Conv.	T105		11	3	14	14								14		4.8 GHz
8.4/23 GHz Conv.	T106		11	3	14	14								14		8.4/23
10.7 GHz Conv.	T107		1	0	1	1								1		10.7 GHz
14 GHz Conv.	T108		11	3	14	5								14	9	14 GHz
43 GHz Conv.	T110		11	3	14	7								14	7	43 GHz
F.E. Interface	F117		89	10	99	99						2	2	101		F.E. In
330/610 Adapter	F118		11	3	14	11								14	3	330/610
Maser Interface	L101		11	3	14	14								14		Maser I
L.O. Transmitter	L102		11	3	14	12				1		1		15	2	L.O. Tr
Round Trip Mon.	L103		11	3	14	14				1		1		15		Round T
L.O. Receiver	L105		11	3	14	12				1		1		15	2	L.O. Re
2-16 GHz Synth.	L104		33	5	38	38								38		2-16 GHz
Switch Driver	L107		11	3	14	14								14		Switch
Station Timer	L108		11	3	14	14								14		Station
Rack B Interface	M102		11	3	14	14								14		Rack B
* Includes 30 for the VLA																