

Module; ALMA Test Correlator sampler

Responsible engineer; Ray Escoffier

Number required for test correlator; 4 (two per antenna)

Form factor; two-wide VLBA module with a rear 80-pin card edge connector for power, 100 MHz clock and the digital outputs and an SMA connector accessible from the module rear for the RF input.

RF input; 1.6 GHz to 2.4 GHz, 50 ohm, -14 dBm

Clock input; 100 MHz sinewave, about 2 VPP, terminated in 50 ohm to ground.

Control signal inputs; none

Digital output; sixteen 2-bit ECL output lines (outputs are single ended and require 50 ohm terminations to - 2 VDC at the load).

Schematic; GBT/Tucson drawing 35208L020 (L020D01.SCH)

DC Power; + 5.0 VDC @ 0.03 Amp  
 - 5.2 VDC @ 1.9 Amp  
 +12.0 VDC @ 0.06 Amp  
 -12.0 VDC @ 0.01 Amp  
 +15.0 VDC @ 0.1 Amp

Cooling; ? CFM at ? C

Comment; The samplers can be housed two ways. At present, there is a VLBA bin with all 4 samplers mounted in the correlator rack. There are also two extra VLBA bins, at present un-wired, to be used when the samplers are moved to the antennas.

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 System; ALMA Test Correlator

Responsible engineer; Ray Escoffier

Form factor; one 24 inch EMI shielded rack

Clock input; 100 MHz sinewave, 50 ohm, 0 dBm (SMA connector)

Data input; sixteen single ended 2-bit ECL signals from each of 4 samplers (inputs have 50 ohm termination resistors to - 2 VDC).

Sync input; 1 PPS (TTL logic level, 50 ohm input)

Computer communication; Ether net

AC Power; 30 Amp 240 VAC 3-phase circuit for digital logic  
 117 VAC circuit for VME crate

Cooling; requires refrigerated air from computer floor (system dissipation is about 1 kW)

Comment; In the present configuration with the samplers in the correlator rack, there are four 8-signal cables between each sampler and the sampler distribution card. When the samplers are moved to the antennas, interface

from the fiber optic system will be via special multi-signal cables.

## ALMA Test Correlator

MODE	BANDWIDTH	PRODUCTS	LAGS	DELAY RESOLUTION	DELAY RANGE
1	800 MHz	OR X 1R OL X 1L OR X 1L OL X 1R	512 LEADS AND 512 LAGS " " "	8-SAMPLES " " "	10 $\mu$ SEC " " "
2	800 MHz	OR X 1R OL X 1L	1024 LEADS AND 1024 LAGS "	8-SAMPLES "	10 $\mu$ SEC "
3	800 MHz	OR X OR OL X OL 1R X 1R 1L X 1L	1024 LAGS " " "	- - - -	- - - -
4	100 MHz	OR X 1R OL X 1L OR X 1L OL X 1R	4096 LEADS AND 4096 LAGS " " "	4-SAMPLES " " "	80 $\mu$ SEC " " "
5	100 MHz	OR X 1R OL X 1L	8192 LEADS AND 8192 LAGS "	4-SAMPLES "	80 $\mu$ SEC "
6	100 MHz	OR X OR OL X OL	8192 LAGS "	- -	- -
7	100 MHz	1R X 1R 1L X 1L	8192 LAGS "	- -	- -