Meeting Date: 15-August-2002

<u>Participants:</u> <u>Australia:</u> absent <u>USA:</u> R Martin, D. Kubo, J. Peterson, P. Ho <u>Taiwan:</u> H. Wang, T.D. Chiueh, T.H. Chiueh, M.T. Chen, C.T. Li, Y.J. Hwang, H.M. Jiang, W. Ho, C.C. Han, P. Shaw, F. Patt, P. Wu, T. Huang

Action items:

- <u>Platform</u> >> Bob/Philippe: Complete bidding package for the platform. Bob has circulated 1st draft to Philippe, Ted and Paul(?) for comments. This action item will be closed when it is agreed that the bidding package is complete.
- Antenna Coupling >> C.J. Ma/K.Y. Lin: Generate a test plan to characterize the antenna coupling. This test involves injecting a signal into one antenna and measuring the coupled output on an adjacent antenna. Ideas discussed:
 - a) Need to identify and acquire feedhorn (85-105 GHz) to inject signal into dish
 - b) Can use existing Milliwave Gunn oscillator for CW source (mechanical tune), +13 dBm
 - c) Probably best to use receiver to see coupled signal
 - d) Coupled signal will be down by an expected 100 dB
 - e) Use 2 receiver test stand or use prototype mount?
 - f) Best place to test will likely be Mauna Loa

This action item will be close when a test plan has been generated and distributed for review. This item has been deemed lower priority than activities involving the prototype on Mauna Loa.

- 3) <u>Prototype Schedule</u> >> Bob: Bob has generated and distributed a schedule of activities. Proty asked that network activities be added to this schedule. Ming-Tang also added that names be added to each task. I suspect this schedule will be an on-going item but I will close it out as soon it has been revised with the 2 requests.
- Prototype Mount >> Bob, Philippe, Ted, Ferdinand: The modification to the mount is presently in process at Jackson Machine works in Hilo. It is expected to be completed at the end of August. Open items:
 - a) Ted/Philippe to update drawings to match modifications
 - b) Ferdinand/Ted/Ming-Tang to investigate and solve "loose worm gear" issue.
 - c) Bob/Ming-Tang to determine where to mount the various components on the mount (should not be a problem).

This action item will be closed when items a), b), and c) are completed.

- 5) <u>60 cm Dish</u> >> Bob/Mike K./Jeff P: Assignees need to discuss and resolve the following issues first via e-mail, then followed by a face-to-face meeting during URSI conference:
 - a) Modify design for focus adjustment
 - b) Discuss shield issue, look at report on shield describing worse ground pickup with cylindrical shield

This action item will be closed when items a), b), are completed

- 6) <u>Mauna Loa Network</u> >> C.J./K.Y. Lin: The network connection in the visitors building is up but drops out about 2 times per minute. Darryl of Mauna Loa is aware of this and will fix the problem on his end. The following items still need to be resolved:
 - a) Generate a list of tasks and hardware items to get the prototype computers networked properly.

Minutes for AMiBA Engineering Telecon

Summaries:

From Bob Martin:		
	Rough Prototype Site Work Schedule:	
	WEEK	ACTIVITY
	Aug 12-16	Prototype mount mods final RX assessment in TPE
	Aug 19-23	Ship RX, etc from TPE to Hilo URSI meeting (Martin, Kestevan, Peterson) mount mods continue
	Aug 26-30	SPIE meeting Kona (MTC, FP, others?) mount mods complete 8/30 VA PDR 8/26-27 in Germany (Kestevan, Raffin, Martin, Huang)
	Sept 3-6	9/2 = holiday Reinstall prototype mount after mods. electrical enclosure and compressor hut site installation RX shipment arrives??
	Sept 9-13	continue above site work begin RX & other electronics installation
	Sept 16-20	Continue RX installation work begin optical telescope pointing tests
	Sept 23-27	continue previous weeks work and check out
	Sept 30- Oct 4	begin system tests
	I'm reluctant to	project the scheduling much further ahead until we know how the

The next step is to assign people to these various time periods. Many of you already know what areas you will be needed for. Let's discuss further at a technical meeting.

From Ming-Tang Chen

next few weeks go.

Gentlemen,

I am trying to summarize the stability test that I have done so far. Part of this summary results from the work and discussion among Mike Kesteven, Warwick Wilson, C. T. Li, and I.

1. The receivers output have been monitored extensively. Two prototypes have different stability characteristics On Rx-2, the most critical parameter affecting the output power seems to be the environmental temperature. The problematic component should be the Spacek post-LNA. On this receiver, the power out will drift down as much as 2%, for 0.1% increase in room temperature. On Rx-1, such temperature variation has not been observed. We use, of cause, a different component for post-LNAs in this receiver.

Due to a much stable system on Rx-1, I thus can see the power variation of the NRAO pre-LNA caused, presumably, by the cryogenic temperature "spikes". There is about 0.5% power drop due to 0.5% cryogenic temperature rising. It is hard to tell whether the long-term drifting in cryogenic temperature is correlated with the output power, but it is clear to see the power change during a temperature spike, which typically span a period of an hour or so.

The cryogenic temperature in both receiver seems to be quite stable. Occasionally, we will see sudden spikes for less than 1% in cryo temperature, and cause gain variation on the NRAO LNA.

2. The correlator output, as expected, is responsive to the gain variations from both the receivers. The phase variation from other components, such as LO, appear to be stable. In a typical day within the lab environment, we can get less than 1% of variations in fringe amplitudes in 5 hours, and less 10 degrees drifting in phase.

3. We should be able to further improve on the system stability by replacing the Spacek post-LNAs with our better ones. However, at the moment we only have three good post-LNAs, not enoug for all four receiver channels. We need more LNAs soon, for this purpose, and for our next two receiver units.

4. We have not test any calibration technique. Hopefully that would improve on the stability issue.

4. It is my sense that we have learned much knowledge on the receiver systems in the past few months. We have characterize the systems as much as we can in the lab, and been familiar with the system as much as we can. A factor we have to consider is that most of the key components would be different in the next version of receivers. Thus it may not be as helpful to the project to keep these two prototypes in the lab for further improvement. It may be much important for us to move the receivers to the site to learn the experience of what is ahead of us.

Comment?

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From Derek Kubo

Dear AMiBA members:

We have started the electrical design of the DC Amplifier board which resides in the correlator module. There will be 4-channels of amplification, one for each lag. We made the decision to go with the non-biased mixer approach 2 weeks ago because it yielded the same SNR as the biased approach. No low noise bias lines to deal with. But the non-biased mixers have a non-desirable feature of high output impedances on the order of 75 kOhms (actual impedance depends on RF drive to mixer). This adds some additional constraints to the design of the DC amplifiers for optimal low noise performance. Please see attached "dc_amp_status081402" PDF document for details.

Regards,

Derek (for Correlator team).