

Minutes for AMiBA Engineering Telecon

Meeting Date: 26-June-2003

Participants:

Australia: W. Wilson

USA: D. Kubo, B. Martin, P. Ho, J. Peterson, C.J. Ma, K. Umetsu, M.T. Chen

Taiwan: H. Jiang, J. Han, W. Ho, T. Huang, P. Shaw, K. Lin, H. Wang, C.T. Li

Minutes Recorder: D. Kubo

[comments from this week](#), [previous weeks comments](#)

I. New Action Items:

AI-26June01-: **Homin** - Determine necessary interface details for 4U chassis to mount backplane, DC-DC converter, various I/O. Goal is to make a firm decision on whether to go with this box by July 17. Should place final order for boxes shortly after (qty of 9 + 2 spares?).

AI-26June02-: **Chao-Te** - Characterize Marki module 003 to verify latest modification (absorber hat over mixers) has not affect performance. If there is a problem we should tell Marki ASAP.

II. Previous Action Items (still open):

AI-19June01-: **Ming-Tang** - Check schedule for IF/LO hardware from Prof. Chu.

In process.

III. Closed Action Items (as of this meeting):

AI-12Jun03-4: **Derek** - Send Ted an interconnect drawing for semi-rigid cable routing between 2nd section outputs and 3rd section inputs.

Derek distributed interconnect package to Ted and Chao-Te. Arranged 2nd Section PD outputs such that they are always located on the same side of the frame as the 3rd Section PD inputs. This shortens the required lengths of semi-rigid cables but don't know by how much. Currently have 60in (1.52m) cables on hand but this may now be too long. Either coil up excess or remake cables.

IV. Miscellaneous Discussions:

MMIC: See LNA discussion in Receiver section below.

Receiver: Chao-Te - Phase shifter tests - sent out waveguide designs for fabrication, Estimate to complete ~ 1 to 2 weeks.

Ming-Tang - Receiver status - Estimated delivery for cold head is 1st week of July (Taipei). Other parts are coming in as well. Began testing JPL LNA in Hilo. Have 2 versions of LNA, original one requires a gate bias of near 0V while the new versions require 1.0-1.2V. The protection circuit needs to be changed to accommodate the new gate voltage. Will talk to Todd G. to see if he can make all LNA assemblies with the same gate voltage.

Ming-Tang - 4U chassis backplane - New chassis does not have the normal ledge to mount the backplane boards. Will investigate whether can just purchase this from chassis supplier.

Minutes for AMiBA Engineering Telecon

Ming-Tang on Rx status- Preparing to perform MMIC amp tests in Hilo; expect to received 2 cold heads 1st week of July, rest in August; waveguides to be delivered by the end of June; 2 compressors 6 weeks ARO, translates to early August in Hilo.

Chao-Te - Cold phase shifter tests about 2-3 weeks away. Waiting for fab of waveguides. Chao-Te has not yet made plans for his visit to ATNF as of yet.

LO/IF: see open AI above.

Correlator: Derek - will provide estimated Hilo cost expenditures to Paul S. within 2 days. Just ordered 55 DC Amplifier module housings (aluminum) from Dayton Jackson in Hilo. Estimate to complete is end of July. Also submitted fabrication package for finalized DC Amplifier boards to board house. Changes include: the addition of the 4 DC blocks (1uF chip caps), buried one input trace (due to noise pickup), mechanical adjustments to line up pin interfaces to correlator module.

Bob asked about the schedule for the new Readout board, and his desire to see it tested with the prototype telescope hardware. Chao-Te and Warwick both commented that the new design will not interface with the current prototype hardware. Nevertheless, we might be able to make some kind of interface adapter to allow the old and new designs to work together. Warwick asked Chao-Te about whether we will use a Xilinx chip in the readout. The will defer this discussion offline.

Derek - Marki received PO last week (for 55 modules). Housings and boards all ordered. ECD for 1st 10 is July 11. SN003 prototype revision involved milling a rectangular cover or "hat" out of solid absorber for each mixer. Reserved 1500 diode quads for AMiBA. As an aside experiment, Marki has asked Metalics to make a custom diode quad out of detector diodes. To his surprise, this mixer seems to work very well but only between ~3-10 GHz.

Derek asked Chao-Te to characterized 003 ASAP. CT said he has not received it yet. Derek will provide tracking number to CT. We would like to know if there are any problems introduced to the module with Marki's latest "absorber hat" addition.

Derek asked Ted and CT why the rear power divider dimension was increased? Ted said he will send the reason/dwg via e-mail. Also, Derek said he received the DC-DC converter board from Taipei. CT asked that Derek use this to power up his electronics as a test. Peter is sending a blank 1st Section plate with face plate, DIN connectors, brackets, etc., plus mechanical drawings. We would like for CT to use the same parts for his XY and TP Readout modules.

Platform/Mount: Bob - Philippe visited the mount component testing in Dresden. Tests are proceeding as per schedule. Ferdinand is checking on Vertex progress. Computer tests with drive interface has made progress. Had platform meeting with CMA 1.5 days ago. Proceeding according to schedule as well. Shipping of platform to Germany is in place, Philippe is following up (with the details).

Bob - Weekly meeting with CMA on the platform. Latest issue was with the cable wrap. Received quote for shipping platform from Tucson to Germany - paperwork is in process. Philippe is researching lifting devices for the platform. Vertex - Ring was shipped from Poland and is due to be shipped to Hilo. Testing of actuators is proceeding in Dresden. Philippe to go there on Monday. Considering to made a video of the assembly procedure.

DC Power Distribution: none

Minutes for AMiBA Engineering Telecon

Site Issues/Network: Bob - RFQ for site work went out today. Process will be open for approximately 1 month. Identified independent inspector, Neil Ericsson, to inspect the site work (rebar, concrete core samples, etc.)

Drawings (for foundation?) are in Bob's office. Ready to go to bid next week. RCUH recommends that the bid packages stay out for 30 days.

2-Element Prototype Issues: Cheng-Jiun and Keiichi have arrived from Taipei on Tuesday. Warwick asked for the new IP address for the correlator PC (let's make sure everyone involved knows what this is if it is changed). Derek - Cheng-Jiun and I installed version 2 readout chips (non laser cut) to replace the existing 2 chips (2 channels were dead on one, the other was the 17-ch version). We found that if we set the clock to 5.4 MHz then both chips and the old 17-ch TP detector chip locked. Verified this by monitoring the master clock output pin of the chips. Derek asked Warwick whether using an external clock into the correlator box was OK. Warwick said it was OK as long as the Data Acquisition board and the Readout boards were receiving the same clock. Cheng-Jiun is presently characterizing the setup with the new readout chips starting over again with the battery tests.

Discussed methods to characterize SNR while in Hilo and came to the realization that since the DC amplifiers are now AC coupled (via 1uF cap/1MOhm load) we must phase switch the IF signal. Conclusion - wait to characterize final SNR at ML using actual receivers.

Mike brought forth a concern about processing the 4-lag data outputs from the correlators and obtaining the complex visibilities. It seems that the limitation of having only 4-lags combined with the non-ideal amplitude/phase variations could present a problem. The first question is "given ideal amplitude and phase conditions, do we have an algorithm to process the 4-lag data to obtain the desired visibilities? Does it work?" The second question is "with the addition of complex amplitude and phase variations, is there an algorithm to remove or reduce these effects". (Mike, did I quote you correctly?)

Schedule: none

Enclosures: See discussion under Receiver section and new AI.