

Minutes for AMiBA Engineering Telecon

Meeting Date: 15-May-2003

Participants:

Australia:

USA: D. Kubo, B. Martin, J. Peterson, F. Patt, M.T. Chen, P. Ho

Taiwan: H. Jiang, J. Han, W. Ho, T. Huang, E. Hwang, P. Shaw, C.J. Ma, K. Lin

Minutes Recorder: D. Kubo

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

I. New Action Items:

AI-8May03-1: Bob - Paul H. asked Bob to contact Paul Clintworth regarding the MMIC exporting issue. If can't contact him directly then located his secretary.

AI-8May03-2: Ming-Tang/Jackie - Obtain CTI cold head quote for 7 with the option of purchasing 13 more later. Specifically ask for a discount (in writing) for the follow-up order of 13.

AI-8May03-3: Derek - Provide Homin with DC-DC converter board quantities (and DC voltages).

AI-8May03-4: Chao-Te - Provide status and estimated completion date (ECD) for the following:

- 1) DC Amplifier + Readout module for TP detectors (qty 7)
- 2) Readout module for self cal (qty 7)
- 3) 3rd Section PD (qty of 20 for front, 16 for rear)
- 4) 3rd Section Readout boards (qty of 20)
- 5) Data Acquisition 3U module (qty of TBD)
- 6) PC Interface 3U module (qty of 2?)
- 7) Backplane board for Data Acquisition 3U+1U chassis
- 8) Correlator PC

AI-8May03-5: Derek - Provide Mark Chen with requirements for 1st Section backplane board.

II. Previous Action Items (still open):

AI-8May03-1: Chao-Te - Follow up with Ming-Tang on how to proceed with fixing the current phase shifter problem.

MTC - Warwick says his staff is very busy and asked that AMiBA work on the modification of the phase shifter. CT expressed an interest in pursuing this. Two proposed approaches are: 1) add fine tuning screws; 2) change dielectric. Jeff P. suggested that the dielectric be raised to produce a higher than desired phase shift (e.g. 110 deg.) then physically trim a "V" groove to reduce the phase to 90 deg. Ferdinand suggested to test the phase shifter while cooled down using LN. It's possible that the phase shift will behave differently at low temperatures.

MTC - No feedback on noise coupler issues.

Bob asked that CT and MTC write up and send him a "plan of attack" so that this does not remain an open issue.

AI-8May03-4: Chao-Te - Proceed with putting together a correlator PC in Taipei to thoroughly test the readout chips. It is necessary to test the chips in the same manner and condition that we plan to use them.

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CTL not present. CTL has sent out a block diagram for the setup. This hardware setup will be used to characterize the readout chips DC offset at the operating clock speed (current setup is not at speed). This same setup can be used to functionally verify the operation of Prof. Chiueh's production chips (qty of 140 packaged devices) this fall.

AI-8May03-6: Paul Shaw - The Mauna Loa Observatory staff has expressed a concern about SARS in relation to the constant number of rotating visitors from Taipei. Please generate an e-mail about what is being done in Taida and recommendations on what we (AMiBA staff) should do here in Hawaii to prevent the possibility of spreading the virus.

Travel from Taiwan to Hilo has been stopped. Bob will call MLO safety officer to let him know this and other actions taken at Taida.

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

AI-8May03-2: Ming-Tang - Contact Prof. Chu and report status of the IF/LO boxes (1 per receiver) and the master LO distribution box.

MTC - Distributed written status from Prof. Chu via e-mail on 13-May-03.

AI-8May03-3: Bob - Summarize progress made during Boulder trip in e-mail.

Bob - summarized verbally - Dwgs scheduled for 75% complete at the end of this week is on track. Will go out to bid on this work. 90% is scheduled for 24-May, followed by a meeting on 28-May, 100% is scheduled for the following week. Cost quote for new and/or modifying our trailer (to house electronics) is in process (~\$8k?). Outer roll off enclosure - need to determine height dimension before getting cost estimate.

Ferdinand is working on the electrical utility hookup and asked for people to review the final 75 kVA number. This number seems good.

AI-8May03-5: Cheng-Jiun - Summarize the results of running the readout chips at 8 MHz and distribute via e-mail.

CJM has distributed his summary of the 8 MHz test via e-mail on 8-May-03. There has been several e-mail discussions on these results. Battery test shows version 2 to have a offset of 5 to 10. Version 1 has a smaller offset. Using an external oscillator (vs internal clock) did not change the offset but made it more stable.

New 44/88 Hz phase switching scheme produces about 5-10 counts, sometimes 20 counts for battery test. Older 2.2/88 Hz phase switch scheme produced about 1-2 counts for same test. These numbers are for the old DC amplifier board with the ribbon input cables.

IV. Miscellaneous Discussions:

MMIC: See AI at top.

Received JPL package (Ferdinand has it).

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Receiver: MTC - asked whether we should pursue purchasing 20 CTI-22 cold heads now to obtain a discount (~15 - 20%?) or just commit to 7 right now. Bob commented on our present financial state and eluded that saving a few thousand \$ for the 13-element system was not worth spending several tens of thousands now. MTC - we currently have 1 CTI cold head and need 1 more quite soon.

MTC - Mechanical dwgs and BOM for the receiver are completed (?). Currently in process for fabricating 2 sets of waveguides (for 1st 2 receivers). Dwgs for the 3U plug-in electronic modules are complete.

Ferdinand - submitted RFQ for CTI cold head (a while back) and received a quote. Taipei needs to get an official quote from their end to compare prices.

LO/IF: See closed AI above.

See AI assigned to MTC above.

Correlator: Derek - spoke to Ferenc Marki this morning: 1) He believes he can improve the somewhat sharp suckout at 3.5 GHz by modifying the IF wires to the 4 mixers. He will attempt to fix this on 003 before sending it to us. 2) I asked Ferenc to try to meet the Meridian \$1370/module cost and he said he will generate a new quote. 3) I mentioned that we will probably purchase this order from our Taipei office. Ferenc said he would prefer to have us purchase through RCUH because he doesn't have an export rep for Taiwan. Said it would save \$ in the end and he would discount the 5% RCUH overhead for our benefit.

Now that we have the correlator module delivery more or less firmed (~tentatively end of July), Bob asked that we re-baseline the correlator schedule. See AI's to CTL above.

Ferdinand - 3U + 1U enclosures for 1st section are in (qty of 3).

Jeff P. - Still proceeding with terminated mixer development. If the Marki approach does not pan out then this may provide an alternate solution for the Meridian 002 correlator module.

Chao-Te - Ordered 140 (packaged) readout chips. The new version will have the option of either locking the internal PLL (by connecting 2 pins) or running it open loop by injecting an external bias voltage. Bob was concerned that we still have an offset (of ~5-10) which we don't understand and can't remove. See AI above to Chao-Te.

Derek - Will have a video conference with Ted after this meeting on the mechanical design of the correlator frame.

Bob asked what the next step should be for the correlator. Derek - Working with Marki to see what he can do about the price and possibly flattening the responsivity at the low end. The decision on whether to purchase 55 modules from Marki also hinges on the comparison tests results between the Meridian and Marki modules in the prototype telescope.

Platform/Mount: none

Correction from Ferdinand (10-May-03)- should read - *"Bob/Ferdinand telescope foundation pad and infrastructure pad (for container) design for the foundation is expected to be 75% complete by May 16 and 90% complete by May 28 for the review"*

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meeting in Boulder. This will allow us to go get bids from contractors on the Island's. 100 % submittal scheduled for June 3rd, 2003."

DC Power Distribution: Homin - will send out summary of DC-DC converter tests next week. Bob suggested that it will be more efficient if Homin orders all the parts and has them assemble all at once in Taiwan (vs each individual user doing this separately). Derek to provide quantities to Homin.

Ferdinand - Spectrum analyzer is ready to be shipped from Hilo to Taipei.

Homin - will be performing noise test comparisons of his latest DC-to-DC converter board against a linear power supply.

Site Issues/Network: See closed AI-8May03-3 above.

Ferdinand - contacted HELCO (Hawaiian Electric & Lighting Co.) about the installation of a 100KVA power connection. They asked him many questions that he could not answer such as: a) is an additional transformer needed?; b) what is your estimated electrical consumption over the next 3 years; c) what is your building permit number?; etc.

2-Element Prototype Issues: none

Schedule: Paul Ho asked Bob for an updated schedule.

Enclosures: none