

# Minutes for AMiBA Engineering Telecon

Meeting Date: 15-Sep-2005

Participants:

Australia: Michael

USA: Joshua, Johnson, C.T., Kyle, Ted, Chia-Hao, Patrick, Locutus, M.T.

Taiwan: Hiroaki, Eugene, Homin, Paul S., Paul H.

USA Dial-in = 1-800-653-5390, 6668081#

Outside USA Dial-in = 1 847 330 4361

Minutes Recorder: Kyle (from voice recording)

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## I. New Action Items:

### II. Previous Action Items (still open):

(08/Sep/05)

**Pierre** - Interlocking mechanism between the hexapod and the shelter. (See Shelter)

(04/Aug/05)

**Po-I/Ted** - Design a sturdy optical telescope mount (including fixure of the CCD). (See Mount)

(07/Jul/05)

**Pierre** - Top priority to improve the shelter. (See Shelter)

(07/Jul/05)

**Philippe** - Photogrametry measurement preparation. Dummy load preparation. (See Platform)

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

### IV. Miscellaneous Discussions:

Platform:

**Ted** - Schedule of photogrametry still holds.

**Ted** - Nylon cable tray should arrive tomorrow and we plan to test it on Friday before I go for the photogrametry training.

**M.T.** - We want to test carefully and make very sure it works before we proceed to order more. If necessary, Chia-Hao and Joshua will continue to test after you leave.

(02/Sep/05)

**Ted** - Chia-Hao and I will search for safety nets to cover the other empty areas on the platform.

(11/Aug/05)

**Paul** - Kyle, organize a separate meeting in Taipei with some engineers to sort out the issues with laser measurement system.

Shelter:

**Ted** - Joshua fixed the limit switches on the shelter and now they work fine.

**Ted** - I plan to replace the lifting cable but need some interface brackets. I have sent the drawing to DaytonJackson but they are busy so will deliver together with our dummy weights on Sep/23.

(08/Sep/05)

**Pierre** - I have received some stuff for shelter control but still missing the I/O module. More importantly, a second quote I got for the load sensors still requires 8 weeks lead time. I will order it right away and can work in early November.

**Pierre** - The current interlock mechanism between the hexapod and shelter is not very good. I can improve it by providing a PLC output to Vertex and can work with Stephan to implement it.

(02/Sep/05)

**M.T.** - Pierre, please get a quote from the shelter expert.

(25/Aug/05)

**Ted** - I met the ARL people in Taichun and we discussed about our shelter. Two comments:

- Add more motors in case a cable failure happens. Add some structures to keep the fabric folded. Will study more and come up with a quote.
- Build a new shelter, like the design for TAOS, with carbon fiber material. Will propose this new shelter design.

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### Mount:

**Ted** - Po-I sent out his design and received some comments and will modify accordingly. The bracket of previous design has arrived and Patrick brought it up to ML to be installed tomorrow.

**Patrick** - With this mount, the optical telescope will stick all the way out of the hole on the platform and will exert torque on the mount and platform.

**Ted** - The new design will hide the telescope inside the hole and will also solve the torque problem.

**Patrick** - There's a discussion about using 1.2m baseline for the 60cm dishes. That conflicts with the plan to put optical telescope in one of the 1.2m hole. I will put it to one of the 1.4m holes, which is also close to u-joints.

**Ted** - I will show you later where you can put the optical telescope box.

**M.T.** - Joshua will pull a new temporary cable of 48V for the optical box.

**Patrick** - Stephan found a possible cause of the R-crash and is fixing it. We plan to test it tonight or tomorrow.

**M.T.** - We will have a progress meeting tonight. We will ask Stephan to stay and solve all the problems before he leaves. And we need the optical telescope to test the progress, so the telescope mount is an important issue now.

**Patrick** - I think we should do an initial pointing run while Stephan is still here to be sure it is not as bad as when we had the dummy ring.

(08/Sep/05)

**M.T.** - I have placed an order for a new C8 telescope. It should have arrived Hilo or will arrive soon. This second one is just for insurance since I don't expect the original one to have any problem due to reassembling. As for a 2nd CCD system, it is not an urgent issue now. We can think about it. SBIG discontinued ST-237 that we are using, and there are some thoughts about upgrading to a different CCD anyway. We can take this offline.

(25/Aug/05)

**Patrick** - In my last email to Michael, I asked him about the "program track". It has not been tested before and should be tested this time.

**Patrick** - Some temperature sensors have loose wires that need to be soldered. Someone onsite or in Hilo can do it.

**Hiroaki** - I have circulated some questions about initialization of the pointing schedule and got some comments back. I will implement them and send the subroutine to Michael and it will be integrated into "a\_boss".

### Site:

**Joshua** - I have the way to mount the webcam so that it will be able to see more area on site. After I install it tomorrow, everyone can go to the address and give it a try.

**Ted** - The cherry-picker has arrived Hilo. We will have a training tomorrow morning. After that I will ask the vendor to ship it to ML.

(25/Aug/05)

**M.T.** - The military people will move out from the "blue room" but we don't know when that will happen.

(11/Aug/05)

**M.T.** - Open issues in general on site:

- (1) spare parts for the mount. Philippe will be in charge of it.
- (2) helium lines and cables routing to the platform
- (3) lightning protection
- (4) emergency generator
- (5) how do people access the platform. Cherry-picker, ladder?
- (6) camping car, accomodation on site?

### Receiver:

**Johnson** - I did narrow band noise temperature measurement on Rx3 and Rx4. The result is between 50 to 90 K but with some variation with frequency like resonance.

**Eugene** - The tests were done with noise coupler installed and seems to be higher than the earliest measurements done on Rx1 without a noise coupler. We need to repeat the test on Rx1 with noise coupler to see whether it increased the temperature or not.

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(04/Aug/05)

**M.T.** - Todd Gier is working on our LAN. We will have complete 28 LNAs some time. For spare LAN, as Prof. Huei Wang suggested, we may consider sending the chips to Wisewave for packaging.

**C.T.** - We might need to ask Todd Gier to send us the housing the bias circuit drawing.

(07/Jul/05)

**Johnson** - We expect to ship Rx5 and Rx6 in mid Aug after IF/LO is finished.

(09/Jun/2005)

**Pierre** - Two quick fixes to the LNA power supply card.

1. Reverse the protection diode instead of removing it should provide a protection at 3V.
2. The polarized capacitor at output is reversed and I suspect it is dead. They should be replaced.

### LO/IF:

**Eugene** - I asked Mark to rearrange IF/LO wiring inside the module so it can be easier to be maintained. And I will also inspect the phase switch section for the problem CT and Johnson reported. We will either change the IC from 7406 to 7404 or add pullup resistors at the output.

**Homin** - If 7404 works, it should be the simplest way.

(08/Sep/05)

**Eugene** - Johnson reported the modules in Hilo need two hours after switch on to reach stable performance. I think it indicated thermal isolation and the device need time to heat up and establish equilibrium. I think the thermal link should be improved to protect the devices.

(18/Aug/05)

**C.T.** - There are some open issues we need to close. Hopefully this part can be finished in one or two weeks.

### Correlator:

**C.T.** - I tried to debug phsw and demod because we could not get fringe and it seems the phsw and demod do not match. What usually happens is one of the phsw does not work but now both seems to be working. They just don't match. I will further check it. After I make it work, Kyle can use it to test for a few days to get new data for the calibration system.

(18/Aug/05)

**C.T.** - After bidding process, we just placed order for the bracket. It will take about three weeks. We will test it in the lab first.

### Calibration System:

**Kyle** - I tested the performance of the new multiplier and it is consistent with the vendor's test results. I also found the proper input power level to maintain a constant output power level.

**Kyle** - Another thing is I did some simulation to check how dense should we sample the phase space for each frequency. The result shows the dependence of fitting result error on sample number and SNR of the signal. We need at least 6 samples for a full cycle under better condition and as many as 10 samples if the condition is worse. Details will be posted later.

**Kyle** - I have also drafted a control flow chart. I will also circulate it for more ideas and inputs.

(18/Aug/05)

**Kyle** - Pierre found a quote for the motion controller and the PC/104.

**M.T.** - We should discuss it offline. There should be another person to work on this part since Pierre will be working on the shelter part. There may be some changes to the design and so we should hold on the ordering.

### 1.2m dish:

**M.T.** - No update about 1.2m dish. Keiichi informed that the 60cm dishes are still in Taipei. Not very urgent.

**Paul S.** - Dr. Ong wants to know whether he can proceed to make the 1.2m dish.

**M.T.** - Philippe will be in Florida next week, Ted please ask him about it.

**Paul H.** - The 1.2m budget is supported by the first year and is already extended and will expire by Sep. We might not want to tell NSC we can not spend the money. So please contact Philippe and ask him to make a decision.

(18/Aug/05)

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**Patrick** - We can ask Cotech to do more simulations.

(11/Aug/05)

**Paul** - I want Philippe to lead a review and eventually derive a conclusion whether to make a prototype and how do we do it. Patrick, help Philippe accomplish it.

**Philippe** - I think we need a complete report from Cotech with all that we asked.

### Misc:

**Paul H.** - We have been working on the preparation of presentation. I am setting up the agenda.

**Paul S.** - We plan to connect to AS HQ for video conference, but it is likely some people will not have compatible equipment so telecon is the backup.

**M.T.** - We got the conference room, and Debbie is handling accommodation and transportation.

**Paul H.** - Are we going to give the advisers a tour to SMA? Perhaps we can consider going from ML directly after the AmiBA site visit.

(08/Sep/05)

**Hiroaki** - I am still working on the initialization of the pipeline. I will report when it is ready.

(25/Aug/05)

**Paul** - There will be an advisory meeting next month. We would like to have as much of progress as possible before that. I will send an email later and hope everybody take a look and check the schedule.