

# Minutes for AMiBA Engineering Telecon

Meeting Date: 02-Sep-2005

Participants:

Australia:

USA: Paul, Joshua, Johnson, C.T.

Taiwan: Patrick, Hiroaki, Keiichi, Eugene, Ted, M.T., Pierre, Homin

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Minutes Recorder: Kyle (from voice recording)

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## I. New Action Items:

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

(04/Aug/05)

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

(07/Jul/05)

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

(07/Jul/05)

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

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

(25/Aug/05)

**M.T./Kyle** - Buy a new optical telescope. (See Mount)

### IV. Miscellaneous Discussions:

Platform:

**Ted** - Training for photogrammetry starts 21/Sep. We will rent the equipment for one week from 26/Sep. I will talk to Gary(?) from the company in Florida about putting on targets.

**M.T.** - We only rent the equipment for one week, so we might want to put the targets on before the equipments arrive.

**Ted** - About the dummy-weight, I have sent all the designs have been sent to Dayton Jackson, including receivers, correlator and electrical boxes.

**Ted** - Chia-Hao and I came up with a design of the aluminum cover for the receiver holes on the platform. Will search for safety nets to cover the other empty areas on the platform.

**Joshua** - I have placed an order of 5m cable tray for testing. I ordered two different types, one made of nylon and the other of steel.

(11/Aug/05)

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

Shelter:

**Pierre** - I have ordered all the important things last week. For the load cells, I got a quote in Taiwan that has a lead time of 2.5 months, and I asked again for a quote from the same company oversea and the lead time should be better. I will go to Hilo this month, but the load cells will probably not arrive before I leave.

**M.T.** - I got two thick cables in Hilo to replace the existing cables in the shelter now.

**Ted** - The new cable should have five-times the breaking strength.

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

**Ted** - About the study of a new carbonfiber shelter, Bill Liu expressed that they need more time to study it because it will be big and can be tricky. Eventually they will provide a quote to us.

(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.

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- Build a new shelter, like the design for TAOS, with carbon fiber material. Will propose this new shelter design.

### Mount:

**M.T.** - I placed an order for a new C8 optical telescope. It should arrive soon.

**Ted** - The existing optical telescope mount, we can ship out by Monday.

**M.T.** - Stephan will arrive next week. Patrick is also going this weekend. They will begin solving the problems next week.

(25/Aug/05)

**Po-I** - I now have three designs of the optical telescope mount. In version 3 we will use thin aluminum material. The two screws structure can be improved in this version.

**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:

**M.T.** - Sam is looking for a new webcam and server.

**Ted** - The cherry-picker should arrive their company in Hilo on 3/Sep. We need to arrange to send it up to ML. But I will do the acceptance in Hilo the first thing when I arrive.

**Ted** - We need to consider who needs to be trained for operation of the cherrypicker. We can be trained for 3hrs in Hilo.

**M.T.** - We should all be trained.

**Ted** - We won't need a license to operate the cherrypicker. They also provide a longer, more detail training, about 6hrs. The person be trained with this course is qualified to teach other people.

**Ted** - We have a one-year on-site warranty. Their people in Hilo will go up to ML to service. After one year, we will need to sign a service contract.

(25/Aug/05)

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

**M.T.** - Cherrypicker order has been sent out to vendor. It will take one to two weeks to ship from Honolulu.

**M.T.** - Webcam is still down. We'll ship it back to Taipei since it was purchased in Taipei. We'll also plan to buy a new one of different type.

(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, accommodation on site?

### Receiver:

**Johnson** - Have tested Rx3 and Rx4 room temperature last week, and now both receivers are cool down. I measured the receiver noise temperature while I was tuning the LO power level. Interestingly, the best Trx I found does not occur when the mixer conversion loss is smallest. I will circulate the result after meeting. The Trx is measured with broad band power sensor, limited to 2-18GHz at IF.

**Eugene** - If the LO pumping level is not optimal, the mixer conversion flatness will degrade and you are measuring only a narrower band at the lower frequency part. When you underpump the mixer, the conversion loss is still low at lower frequency but is higher at high frequency, so you are only sensitive to the lower frequency part and its noise temperature may be lower and that's what you are observing.

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**M.T.** - I think we should do a narrow band noise temperature measurement using the noise figure analyzer in Hilo.

(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 am working on the active components measurement. I will go to EE department to further measure the S-parameter. I have examined the output spectrum of all the doubler in Taipei. Except the one with oscillation problem, no other module shows the spurious reported by Prof. Chiueh.

**M.T.** - Please check the noise floor level of your measurement. From prototype experience, the spur we are looking for may be 70dB to 80dB below the main peak.  
(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 have tested the new backplane and the clock signal looks ok. I will install it and test the rest of the correlator system. There are still some bugs with data retrieving and I need to debug.  
(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.  
(04/Aug/05)

**C.T.** - Po-I needs to go to ML when the bracket is sent. He will work with Ted to setup the scaffolding to prepare for the installation.

### Calibration System:

no update.

(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.** - Philippe will go directly to Florida for photogrammetry training and go to Hilo afterward. I will talk to him about the 1.2m dish.

**M.T.** - Keiichi, please contact Prototy to check on the status of the 60cm dishes. If the tests are done, we can ship them to Hilo. There is enough space to store them now.

(18/Aug/05)

**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:

(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.