

Minutes for AMiBA Engineering Telecon

Meeting Date: 03-Nov-2005

Participants:

Australia: Michael

USA: Hiroaki, Ted, Joshua, Po-I, Faby

Taiwan: Homin, C.T., Kyle, Edwin, Patrick, Johnson, Eugene, Paul H., Pierre

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Minutes Recorder: Kyle

I. New Action Items:

II. Previous Action Items (still open):

(29/Sep/05)

Ted - Routing cable from ground up to platform. (See Site)

(08/Sep/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)

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

IV. Miscellaneous Discussions:

Platform:

Ted - Philippe is working on analysis of the photogrammetry. He replied to questions Michael raised in the email.

Michael - The platform warped once it is away from zenith position. The saddle shape is different from the 3-fold symmetry of the platform and mount.

Patrick - The weights are installed on the outer rim of the platform. Would the inner part of the platform be bent upward due to the weight? Some plots show the inner part having more deformation.

Ted - The inner part should have less deformation. I don't know how to explain it now. We need more analysis.

(29/Sep/05)

Philippe - I will spend some time to look into the safety issues of operation.

C.T. - I would like to ask the science team to finalize the configuration of 7-element receiver locations.

(22/Sep/05)

Ted - The cables will be mounted under the platform. I have some weight information and Joshua can order standard cable trays directly.

(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 - The PLC I shipped to Hilo should have arrived. The load sensor is still not acquired yet. I am going to Hilo next week.

(13/Oct/05)

Pierre - One year ago we asked Manfred to add a few relays and software in PLC to indicate mount is in parking position. We need to test its function whether the relay is closed when the mount is parked when next time I am in Hilo.

Pierre - I am working on improving the shelter. I plan to go to Hilo in November.

M.T. - A contract with ARL is being worked out now. We'll try to get them to come to Hilo in early Nov. They will stay for quite a some time.

Pierre - I have sent a mail to ASFI for calculations and detailed drawings.

(06/Oct/05)

Pierre - About hiring a civil engineer to inspect our shelter, we lack the drawings and documents. Will ask ASFI for them. The cost for the engineer to come and check is around 10k.

(29/Sep/05)

Pierre - Fabric is becoming more and more a problem.

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Ted - New lift cable is not installed yet because the pulley and tower need to be modified. It will take 1 to 2 weeks.

Mount:

Hiroaki - We got a new ACU software. So far it looks ok. It solved the stall command and late command problems. We also tested az=0 crossing but the problem remains.

Michael - This is a serious problem, please send the log file and plots to Vertex and describe our problem to get their attention.

Patrick - I suggest we summarize the problems again and list problems that need to be solved to Vertex.

Patrick - I sent out some analysis results of the first pointing with platform. I want to find the optical telescope tilt signature and the residual error. The signature looks good and the residual is small, rms~1.5 arcmin. However, the data is small, and we need more data for better analysis. For example, there is indication of drift but not very significant and can not be separated from the other error.

Patrick - Overall, the new result is much better than that with the dummy ring. With dummy ring, one of the jack length was not correct and that caused some error. There could still be other error like minor error in the anchor ring or cone surface which would have similar pattern as the optel tilt would have. So far, I believe the tilt of optel dominates the error.

(27/Oct/05)

Homin - The optical telescope mount should be made in Hilo.

MT - Ted is coming to Hilo soon. Please discuss with Dayton directly after you get here. (13/Oct/05)

MT - Michael has some communication with VA about network between ACU and TCS. I will forward the email to people who are interested in.

Hiroaki - I will also do some analysis on the current pointing data. (25/Aug/05)

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

Site:

Ted - Last week I was informed by Protty and Kyle that the central hole is still needed to install a receiver. I am now redesigning the fixture. It will block some holes next to the central hole. If any of the six holes next to the central one is needed, please let me know soon. (27/Oct/05)

MT - We are going to place another container in the site and make it into two sleeping quarters. (27/Oct/05)

MT - As for a new car, we seem to have reach a consensus. We also need emergency generator and lightning protection.

Pierre - I will talk to a electrician in Hilo about emergency generator when I am in Hilo.

(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) accomodation on site -> 2nd container for sleeping? Or visitor building for sleeping and 2nd container for office?
- (7) a new car

Receiver:

Eugene - The Rx are all ready. Now we are waiting for LO. The control circuit of the LO is being modified. We should have 4 sets at end of Nov or early Dec.

Kyle - The w-band isolator has 0.8dB insertion loss. Putting it in front of the 1st LNA will result in 20% increase of Tsys.

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Eugene - We only put isolator after the 1st LNA. So it is ok.

Pierre - How about heat dissipation of the LNA?

Eugene - The idea now is to use fan for cooling in the lab (Taipei or Hilo), and let environment cools it on site. We need to check the situation once we have a set working on site. If it is too hot on site, then we need to modify the design.

Kyle - Have we bought some temperature sensors for the correlator and IF system?

CT - This part is on-going.

(27/Oct/05)

Johnson - Chia-Hao packaged Rx5 and Rx6 for shipping next week. We tested the stability of DRO for 5hr. Although the case temperature of the oscillator increased from 26 to 31 degC, the power only dropped by 0.3dB. I think we can ship it out now.

CT - There are some homemade cables in the module. Remember to order some new ones to replace.

Johnson - We also tested the phase switch in IF/LO5. The result is different from Steven's. I used 2.4mm cable but Steven used 3.5mm cable. 2.4mm should give the correct result. I will use 3.5mm to double check the consistency.

Chia-Hao - I will order helium lines from Austin. It should be cheaper than ordering through Taiwan.

(06/Oct/05)

Pierre - 1-to-4 cold head power distribution box is finished in the lab. Need to more receivers to be connected and tested if it really works to cool down four Rx. If it work, then we can ship it up to ML.

(15/Sep/05)

Eugene - The Tsys were measured 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.

(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:

(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.

Correlator:

CT - I am looking into the software. On the other hand, I am also investigating how we are going to get more readout chips for expansion up to 13 elements. The original ones come from Prof. Chiueh TziDar's lab.

Ted - Po-I is preparing for the installation of correlator bracket.

(06/Oct/05)

C.T. - I want to test one baseline with electronically-tuned attenuator for LO to balance the power between phase states. One concern is if the control has some delay (like we found in prototype testing with a PIN attenuator in 21GHz LO), then the scheme would not work.

(29/Sep/05)

C.T. - We got three comments from the workshop:

1. automatic gain control (AGC) of IF power
2. LO power balance in phase switch
3. thermal stabilize the correlator and IF

Homin - Software to control VGA is ready. Once we have the total power detector reading, we can close the loop.

M.T. - Our problem is that VGA has different gain and phase response under different control voltage. Can we really use it to do AGC?

C.T. - Derek suggested to put some temperature sensors in the correlator box. We will discuss about it in more detail.

Calibration System:

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Pierre - I think we really should buy the motion control board and other things as soon as possible. Two months ago, the lead time seems short but not now.
(13/Oct/05)

Kyle - I will put together a schedule when the calibration should be online and when we should really push to finish the system.
(29/Sep/05)

Kyle - I will circulate the test results presented in the workshop for more comments. And we also need to discuss the next step of the calibration system.
(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:

Ted - I have sent drawing to Goretex and ask them make one cover for 60cm dish. I will probably get a reply tomorrow.
(27/Oct/05)

Ted - Philippe will visit Cotech (Along) in mid Nov when they are laying the primary on the mold. If not done properly, the thickness and structure will be affected.

Patrick - I have consulted Po-I about changing the interface between the dish and the equatorial mount (tripod) for beam pattern measurement.

MT - Since Po-I does not have time, and the design is not that difficult, I suggest we let people in charge of beam pattern to come up with the design. That means probably Locutus. Po-I can help if he has a problem.

Misc: