

Minutes for AMiBA Engineering Telecon

Meeting Date: 10-Nov-2005

Participants:

Australia: Michael

USA: Hiroaki, Ted, Johnson, Faby

Taiwan: Homin, C.T., Kyle, Edwin, Patrick, Eugene, Tzihong

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

Outside USA Dial-in = 1 847 330 4361

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 - I have sent out some more plots showing the difference of repeated orientation in photogrammetry measurement. I'd like to know if we need to do repeatability tests at more orientations.

Patrick - The RMS of the difference is about 100um to 150um, which is already close to the confusion limit of the photogrammetry method. For repeatability, it seems good enough.

Kyle - The relative displacement in z-direction is greater than 100um, either in the compact or extended configuration. We will not need to adjust the displacement, but we need to know how much it is. We will then compensate for the phase difference in visibility data. It is not clear to me whether it is practical or not to model the displacement, since it would require very large amount of data to construct the model. I would like to propose a meeting to get together and review the status of laser-measurement system.

Kyle - The idea is to physically compensate for the absolute platform deformation (delay; phase difference) once, with the phase shifter in If 2nd section power divider. After that, at each pointing, a correction in phase is made to the visibility data set according to our knowledge of the z-direction displacement.

Homin - I think the deformation would not change with time, it is better to build a model, instead of putting another system on the platform. You can also consider using a laser tracker system on site to measure the receiver position precisely to micron level.

Tzihong - Huan-Hsin and I sent out a report before, please read the report and circulate your comments in writing.

(03/Nov/05)

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.

(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.

Shelter:

(03/Nov/05)

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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.

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 - I am investigating the velocity dependent error during tracking. Michael asked Vertex some questions, and Patrick will send a report with our new test results to Vertex.

Hiroaki - When the weather is good, I will try the automatic pointing pipeline.

Ted - The optical telescope bracket design is sent to Dayton-Jackson. However, because of material and machining problem, it will take them about 1 month to finish.

Patrick - I think the schedule is ok, since there will be several weeks of installation on the platform and Hiroaki is going back to Taipei.

(03/Nov/05)

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.

(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 - We will pickup the cable wrap from Dayton-Jackson next Monday and start to route cable from cone to the platform. Expect to finish by end of next week. We will also install correlator box in parallel. After that Joshua will start putting cables on the platform. He needs some time to make all the cables. We will also install the electronics box while we install the cables.

Ted - One set of hard He line was installed yesterday. It can support up to 4 rx operation. The other set will remain in Hilo for Johnson's receiver test.

Ted - The receiver can be installed before mid Dec if everything goes well.

Ted - One of the lower u-joint cable was damaged. It's probably two month ago, but now it starts to cause problems for testing. So Joshua fixed it temporarily. We still need more spare parts for future.

(03/Nov/05)

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)

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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:

Johnson - Now we have cooled down 3 rx. By the weekend, we can cool down the 4th rx. Later I will warm up one rx to test the difference in Tsys with and without the noise coupler.

Johnson - Currently two receivers can be sent to ML with the original IF/LO without VGA. New IF/LO will be tested in the lab and to replace the ones on site later.

Tzihong - When you use power detector to fix the gain of IF, the detector will see $1/f$ noise and may not be accurate enough. If it does not work, you can still use RMS of the correlator output as an indicator, although it may be more complicated because of the effect from two Rx.

Kyle - The first two Rx on the platform can accept one polarization of calibration when the cal source is ready.

Tzihong - In the end, you will still need to take the two receivers down and do the necessary modification.

(03/Nov/05)

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

CT - This part is on-going.

(27/Oct/05)

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.

(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 - We are working on the DRO module, including all the wiring inside and generating the final interface document. After that, the module will be shipped to Hilo.

Correlator:

CT - I am looking into the backup plane of readout system. Simulation shows the FPGA should work. I will continue this after I get back from Hilo. I will depart next week.

(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

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

Calibration System:

Kyle - Pierre is going to order the computer and motion control components.

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(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.

1.2m dish:

Patrick - Locutus is designing the interface with beam pattern measurement setup.

Ted - Philippe will visit Cotech. He will probably show up in Taipei next week.

(03/Nov/05)

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

Misc: