

Minutes for AMiBA Engineering Telecon

Meeting Date: 29-Apr-2004

Participants:

Australia: Michael

USA: Ted, T.H. Chiueh, Derek

Taiwan: Huei, Ferdinand, Johnson, C.J., Paul Shaw, Kyle, C.T., Homin, Steven

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Minutes Recorder: C.T. Li

[previous weeks comments](#)

I. New Action Items:

II. Previous Action Items (still open):

AI-01Apr22-1: Philippe/Ted - To form a solution about how to deal with Bob Romeo, and decide whether he is responding to the components that we need.

Ted - Philippe has asked Bob Romeo about 4 items - de-lamination, loose weld nuts, finding out the loose weldnuts inside of platform, and end-fitting improvement. We got Bob's reply that he wanted us to ship the platform back to Tucson for repair. Philippe and I don't think we have enough time for this. We will have a meeting with CMA tomorrow.

AI-01Apr22-2: Philippe/Ted - To check on Along's analysis and come up with a conclusion on how to repair the platform.

Ted - We got Along's final result on Monday. Philippe and I tried to check it. We haven't got their model yet (what we got right now is their report and repair suggestion). For the next step, Philippe and I will come up with a concept design, and ask vendors to submit repair proposals.

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

IV. Miscellaneous Discussions:

MMIC:

Milton (or Huei) will send NJST an email about the change in chip counts. Derek will check it again when he is in Taipei.

Huei - NJST asked us (Derek and Milton) to initiate a document about the change in chip counts by email. We plan to have the initial test on those chips within a month or two.

Receiver:

Homin - For Rx#2, we're still waiting for shipping document. Johnson has finished the measurement of the noise coupler (by ITRI). The result looks good. Since Ferdinand is working on the optical noise coupling, we will hold on the noise coupler approach. We won't install the noise coupler for now. For the Rx/IF/LO cables, we decided to order some for 2 receivers. We think it's risky to order the total amount of cables that we need according to the computer simulation. It's much more safe for us to measure the cable length after the platform is available by rulers.

Homin - We're preparing the document for the shipping of Rx #2, 2 weeks in advance for Jackie to get a quote for the shipping. We're working on the alignment of Rx #3. 3 sets of phase shifter housing have arrived. We will start testing them. For the OMTs, NRAO people replied that they're having some problem with manufacturing. Right now we have 5, and we're waiting another 7.

Minutes for AMiBA Engineering Telecon

Johnson - I tested the noise coupler from ITRI. The maximum insertion loss from square to square port in the passband is about 0.3 dB, better than Nan-Jou's (about 0.5 dB). Its spectrum has better flatness than AT's or Nan-Jou's. I'll circulate the report for more details.

Ming-Tang - Rx #1 in Hilo has been cooled down. The output spectrum is much flatter than at room temperature. The overall slope is about 3 dB.

LO/IF:

T.H. Chiueh - We did some temperature test on the production IF/LO module. With a fan, when the temperature drops, the output power of 42 GHz LO could increase by 3 - 4 dB, which is not consistent with Steven's test done in the temperature chamber. However, later Steven told us that the 42 GHz LO has to be over-pumped. Maybe this temperature drift could be solved by over-pumping the 42 GHz module with a strong 21 GHz LO. For the production module, each LO has independent phase switch. From the test, it showed that the LO output will change by around 0.03 dB if the other is phase switched. Another finding is in production module, the IF power difference didn't change sign when the LO power is increased more than the optimum LO power level.

Ferdinand - If we over-pump the 42 GHz LO, we might generate some spurious.

Steven - Prof. Chu will calculate the maximum cable length that IF/LO modules can accept and give us the result today. The alternative is to ramp up the output power of the LO module. For IF/LO modules, there is one component (one of 5 doublers) that we might reject to accept.

Calibration System:

Ferdinand - We went up to MLO last Friday. After some modification, we got DC offsets due to correlation from photonic noise source signals. We're taking data right now for testing stability. I ordered two translation stages. I will modify one with a servo driven motor that we can generate fringe with respect to the other one. I will do some mechanical design to install them behind the sub-reflectors. I will test with the polarization scrambler to see if it improves the stability (the polarization scrambler is bypassed right now due to a broken fiber somewhere inside). The translation stage could move in z direction by almost 2 wavelengths.

Ferdinand - Something is not quite working with the photonic calibration system so far. Try to go up on Friday to do more work on it.

Correlator:

C.T. - The data collection is complete. Warwick will change the configuration of correlator software for 7 elements. I will manage to connect all the components that when Derek arrives next week, we can test the entire IF chain.

C.T. - Continue testing the datacq circuit. There are some procedures (or precaution) we need to follow to turn on the electronics. Otherwise you will get some glitch.

Platform/Mount:

Michael - The trip to Vertex is still on schedule. I'll be there next week to carry out the test to confirm that I can communicate correctly with Vertex antenna to drive the hexapod as we need. For the pointing issue, the main contribution - the optical telescope - is also in pretty good shape. C.J. has started to work on the CCD code to catch the CCD image and send the data back to the observation program. I have installed the next series of imaging program so that the observer can request to the CCD array for the image to be captured. Everything should move on schedule.

Minutes for AMiBA Engineering Telecon

T.H. Chiueh - Recently the science team has been communicating with Michael about the control program. In the end, when the telescope is going to do the pointing observation, we really need to create some artificial fringes, and that requires the platform to move around in a very well defined way.

Ferdinand - We had a meeting with Vertex about the test procedure. The in-plant test will start around 24th of May - the last week of May. It will take the whole week. If everything works fine, the mount should be accepted. Then we will disassemble, pack and ship the platform and mount.

Ted - So far we haven't received reply from Bob Romeo. Along sent us the analysis result two days ago. They also sent us their suggestion for repairing platform. We will check on their analysis and think about how to repair the platform. Along will send us a final, complete report later.

Ferdinand - For the mount, we received the testing procedure (or template) from Vertex. I will need one more week to go through this document.

Homin - C.J. is working on the interface software to optical telescope, and installed some software on the linux machine (the observation computer) in the lab.

Dish:

Ferdinand - For the prototype, Ted installed various washers to remove the large sidelobe of beam pattern due to mis-alignment between the 60-cm dish and the feedhorn.

Site:

Ferdinand - Ludwig is excavating along, hit the back rock, and clear up the telescope footprint. Maybe tomorrow they will start the drilling of the holes for the anchor board. We will know how thick the back rock is and if we need some additional filling of concrete or not. Ted has sketched some blue print for the equipment container and will send it out to 3 vendors.

Ferdinand - The construction has started. Maybe by Friday, we're able to pin point the exact site location on the back rock. Ludwig sent us a construction schedule. Everything looks very much on track. On Monday, we had a pre-construction meeting with the electrical sub-contractor. It went well and smoothly. Ted is working on the equipment container layout, making some blue prints. I got a quote for the shelter. The delivery is 60 days from reception of P.O. and down payment.

2-Element Prototype Testing:

T.H. Chiueh - We're taking data with Ferdinand's calibration system. Hopefully by next week, we will have some preliminary result about the stability of the calibration, with respect to the sky.

T.H. Chiueh - We looked into the beam pattern by looking into the Sun. For Rx#2, there appears to have two peaks. Maybe there is a mis-alignment between the feedhorn and the dish.

Administration:

Paul Shaw - We're having an overall income/outcome report to MOE the day before yesterday. We also have some up-paid P.O.s, including site contract. They will review all reports and get back to us soon. 2nd notice about the input for overall performance report from both science and engineering teams before end of May that we can compile them all together and submit to Taida.

Paul Shaw - According to the AMiBA funding agency, officially the phase I project is ended by end of March. There is a following review. By end of this month, we have to send the overall income and outcome reports for the past 4 years. We also need to submit the overall project report by end of June. By mid of Sept. the funding agency will come to have an overall project review, and performance, achievement inspection. We will appreciate all your inputs.