Minutes for AMiBA Engineering Telecon

Meeting Date: 3-June-2004

Participants: Australia: <u>USA:</u> T.H. Chiueh, Jeff, Ferdinand <u>Taiwan:</u> Ming-Tang, Ted, Johnson, Kyle, Paul Shaw, C.T., Homin, Steven, West, Patrick USA Dial-in = 1-800-653-5390, 6668081# Outside USA Dial-in = 1 773 843 6301 Minutes Recorder: C.T. Li

previous weeks comments

I.New Action Items:

II. Previous Action Items (still open):

AI-Apr22-1: 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 - The photogrammetry testing is done. We're waiting for the result. We have sent the modification plan we have so far to Bob Romeo to give us a quote.

Ted - We are still waiting for photogrammetry result. Vertex is doing it this week. Then we will proceed with platform modification with Bob Romeo.

AI-Apr22-2: Philippe/Ted - To check on Along's analysis and come up with a conclusion on how to repair the platform. Ted - Along will deliver the model by next Monday.

Ted - They sent us their final conclusion about platform analysis. But they need one more week to finish their model.

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

AI-May20-1: Ming-Tang - To discuss whether 1.2m dishes are sufficient for operation next March, and whether we should re-enforce the platform more for even larger dishes (> 2m)? Ming-Tang - We still need Philippe to oversee the development. Due to the limited man power, we won't be able to pursuit this issue at this time. The main goal right now till next March is to set up the telescope.

AI-May13-1: Steven - To gather all the open issues about the IF/LO module. Steven - Will have a meeting with Prof. Chu about the problems with IF/LO module #3. We will start assembling module #4. Prof. Chu has agreed to solve the interference between two outputs for the correlation between IFs.

Steven - We found that two outputs of LO will affect each other. I will measure it again with a power meter to verify the magnitude, before I used a spectrum analyzer. I will try to see if modifying PIN diode switch bias can solve this problem.

IV. Miscellaneous Discussions:

MMIC:

Ming-Tang - We need to resolve some administration issues - how we plan to use those MMICs they develep, e.g. how to package them. I will make a suggestion to P.I. for them to continue their work for another year.

 \mbox{Derek} - I took a look at how MMICs are stored in Taipei. I think everything is fine as far as the handling of MMICs is concerned.

Receiver:

Homin - Rx #2 should be in Hilo custom right now. We're working on Rx #3 and 4.

Homin - Finally we shipped out the Rx #2 two days ago. Next shipment would be the control electronics and lots of cables.

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T.H. Chiueh - We measured Rx noise temperature around 40K with a power meter. The difference in output power between hot and cold load is 4.6dB. Ming-Tang tried to look into the hot/cold load spectra with a spectrum analyzer. The power difference between hot/cold load is larger at low frequencies (below 2 GHz); at higher frequencies (from 2 up to 20 GHz), it's between 3.5 and 4dB. For the spectrum, there are two humps located at 10 and 15 GHz with difference less than 0.5 dB.

Derek - The output power is low (-18 dBm with the hot load), while we're expecting -8 dBm. I talked to Ming-Tang about adding another amplifier somewhere. My preference is to put the amplifier back in Rx end to amplify the power before long cables.

LO/IF:

C.T. - The IF power from Rx is about 10dB lower. The possible solution is to use two IF amplifiers along each channel in IF/LO module.

Calibration System:

Ferdinand - Got the translation stage for the calibration system. I will need to design some fixture for it. I can put together some report.

Correlator:

C.T. - Johnson swept the IF gain profile of correlator system. We can find out the new slope equalizers that we need. We're wrapping up the system, checking every module, for the shipment.

Derek - Right now we have 13dB slope equalizers to make up for the cables within correlator IF, as well as the front-end cables - cables between Rxs and correlators, and all the losses thru all the components, except for the 3rd section power dividers (6dB slope). We need to use equalizers with larger slopes to flat out the total band.

C.T. - I corrected the timing for the phase switching. The large offset is gone. Right now the backend offset is about 2 counts, rms around 15 counts. The integration time for each data point is 0.226 second.

Platform/Mount:

Ferdinand - The mount finally moved at half speed, up to the limit of 30-degree elevation. Before I left last week, they started to install the laser tracker to measure the platform. We should be able to perform the acceptance test in Vertex by end of this month.

Ted - I got an email from Philippe and Ferdinand that Vertex will re-furbish two gear boxes. Vertex is proceeding the laser tracking measurement by moving the hexapod with half speed and monitoring gear box temperature. The acceptance test will wait until June 21. We will have another telecon with Vertex next week to decide the schedule for acceptance test.

Dish:

T.H. Chiueh - We checked the symmetry of the shoulder by rotating the 60-cm dish by 60 degrees. One side of shoulder disappeared. My suspicion is whether the interface between the dish and the mount has been manufactured properly? Another issue is to go for larger dishes (1.2m) to meet the deadline by early next year.

Site:

Ferdinand - For the shelter, the P.O. was placed yesterday. The shelter should be delivered in 8 weeks. The P.O. for equipment container was placed. It should take about 2 weeks for delivery. Ming-Tang - We're ready to pay the first 70% of payment.

Ted - Ludwig finished the concrete work last Thursday before I left Hilo. The site is almost done last week. The electrical work will start in June.

2-Element Prototype Testing:

T.H. Chiueh - We went up last night to look into the moon. The purpose is to check the antenna efficiency. The temperature of moon is about 300K, compared to

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150K of system temperature. We should expect 3 or 4 dB change in IF output when the moon passes by. We only observed 1dB. We put a white board on the bottom of the primary dish while looking at the moon. The image is not sharp, about 3.5 cm diameter, compared to feedhorn diameter of 2cm. Only 50% of light is collected by the feedhorn.

Administration:

Paul Shaw - For the overall report for the Cospa review on June 14, I got some inputs, still waiting for input for LO/IF, Rx, dish, mount/platform, site, calibration source, control/software...