

Minutes for AMiBA Engineering Telecon

Meeting Date: 25-Mar-2004

Participants:

Australia: Michael

USA: Derek, Johnson, Jeff

Taiwan: Paul Ho, T.H. Chiueh, C.J. Ma, Ferdinand, Huei, Philippe, Paul Shaw, Kyle, C.T. Li, West, Homin, Steven, Eugene

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Minutes Recorder: C.T. Li

[previous weeks comments](#)

I. New Action Items:

AI-25Mar04-1: Philippe - To find out what Vertex plans to do during the in-plant calibration test and how they plan to implement the pointing model.

II. Previous Action Items (still open):

AI-11Mar04-4: Ted - To check the progress of dish cover design.

Ted - Still waiting for the reply from Gortex.

Jeff - We used expanded Teflon material for windows at 30 um on sub-mm sky monitor at South Pole. It is quite transparent at 30 um, should be more transparent at milli-meter. But it's not particularly tough. You could put a piece of sample in front of receiver feed to see how much the system temperature increases, probably in 45-degree angle to avoid reflecting any noise radiated by the receiver back down to the feed horn.

Ted - I have the design to hold the material. Gortex's Taiwan branch can't find the same material. Will contact Gortex in the states.

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

AI-11Mar04-2: Ming-Tang *et. al.* - To check the delivery and shipping of receivers, IF/LO, and correlator.

Ming-Tang - We should be able to ship the 2nd receiver between April and May. The shipment of the rest of receivers will depend on the lab space available in Hilo and the delivery of IF/LO modules.

Steven - For IF/LO, we're still waiting for 3 components. One of the IF amplifiers will be shipped this week. Vendors can't give us a certain time when the LO multipliers (from 21 to 42 GHz) and 42 GHz amplifiers will be delivered.

AI-11Mar04-5: Ming-Tang - To check out how the manpower will be deployed during AMiBA integration.

Closed from last week.

Ming-Tang - It's not easy to predict at this moment. On receiver side, I expect one person to stay in Hilo for testing. C.T. should plan to stay longer in Hilo when the correlator system arrives to be tested with receivers. Ted and Philippe should consider coming to Hilo during platform and mount assembly and installation.

IV. Miscellaneous Discussions:

MMIC:

Huei - Chips are in Taiwan's custom right now. We should get them in a couple of days. Milton will open the package and take photos.

Huei - We're still waiting for them to ship those chips. Have Talked to Ming-Tang to send them an email again.

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Receiver:

Ming-Tang - We got all of our LNAs from JPL after Todd finished the modifications. Johnson has put LNAs in the 1st receiver in Hilo yesterday. He will proceed to do the room temperature test on the receiver chain.

Johnson - For Rx#1 in Hilo, we're still waiting for the LNAs from Todd. In a few days we will set up all of helium lines in CSO office.

LO/IF:

Correlator:

C.T. - We got the data acquisition electronic box back-planes back that we can connect further upstream to the readout. Correlator frames will come in around 10th of May. We're still trying to get another quote for the semi-rigid IF cables from correlator 2nd to 3rd sections because the return loss of samples from local cable vendors isn't very good. We start to ask the company in states to provide a quote. For the flexible cables used from receivers to correlators, correlator 1st section to 2nd sections. Ted has figured out the required lengths. We should be able to get a quote from Andrew. We still need Johnson to finish the rest of 3rd section custom power dividers. Johnson has put together 7 front and 5 rear ones, enough for the system test with 2 receivers. For 7-element, we will need total of 20 front and 16 rear ones with some spare.

Ferdinand - We have ordered a network analyzer with an E-cal kit to be used in Hilo, also a dual-channel power meter and sensors for it.

Derek - We also need to order the cables for LO distribution.

Michael - For the auto-correlation, the fringe pattern should be symmetric regardless of the shape of passband. For cross-correlation, since the signals are coming from two receivers with different band shapes, the fringes with plus and minus delays would be different. We could increase the effective bandwidth by processing the data from 4-lag correlators.

Platform/Mount:

Ming-Tang - Vertex has put the platform onto the hexapod. They're doing the low-level testing right now. There is an issue about changing of contract or work order.

Philippe - Konrade proposed to send two engineers, one mechanical engineer for 2-3 weeks to do the assembly of the cone, hexapod, and platform, and then another engineer for 2-3 weeks when the telescope is wired again. In exchange of this manpower, they would not go to the site for the calibration. Then the issue is how we're going to accept the telescope? Because in the proposition of Vertex, once the telescope is commissioned, we pay them the rest of money. Then there's another 6 months for calibration and testing. There will be no pressure on them anymore because everything is fully paid. Our idea was to change the contract, to make an amendment, to keep some money, and pay the whole at the end when we're sure the telescope are within specs. We will extend the 6 months to maybe 1 year. We would pay the remaining 55% of contract upon shipping from Germany.

Michael - We need to figure out how Vertex plans to implement the pointing model. We ourselves need to worry about how the mean platform deforms, and how we embed that into the pointing model. Since we have Along to do the FEA of platform, are we going to translate their result into the effect on pointing?

Philippe - Platform was mounted again on the Hexapod after being tested a week ago. The load test is more thorough this time. We repeated the load condition all around the platform. Stiffness has improved. Deflections were different around the end fitting. We have to shim few gaps with carbon fiber wedges. This time the platform was assembled very carefully. Vertex is doing some wiring this week. Everything should be ready by the end of this week to start testing. They will do all the basic testing till end of next month to do the servo testing. We gave Along a specimen of platform to test.

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Calibration System:

Ferdinand - The (photonic calibration) unit is ready. End of April is still the time for us (with John Payne) to go up to MLO to test the new photonic detectors to see if we got more power out. Before I got 60K of noise that we could inject into the system to check the receiver gain variation. The idea is to inject the noise behind the sub-reflector. We could use the translation stage to move the horn one or two wavelengths to change the relative phase between signals. We should be able to generate fringes.

Ferdinand - I put the photonic calibration system together, did a couple of tests over the past few days. Stability looks better than a percent over a week. After talking to John Payne, we plan to test the waveguide photonic detectors by the end of April on the prototype.

Dish:

Site:

Ming-Tang - After yesterday's meeting, we're proceeding in 3 parallel directions. Paul Shaw has presented the initial contract to the contractor. They had only some minor comment. We hope to finish amending the wording the contract today. There are also some minor issues about the drawing. Hopefully we can get everything finished up in this week.

Ming-Tang - We are still concerned about wording of contract. We will discuss it further with Paul Shaw.

2-Element Prototype Testing:

T.H. Chiueh - We did the translation stage measurement. The overall spectrum of IF can be seen as two bands. The bandwidths, locations and amplitudes of the bands have been analyzed. The phase stability has been analyzed. But the result is not conclusive yet. Our guess of the effective bandwidth is less than 10 GHz.

Funding:

Paul Shaw - We got partial approval of NSC funding for the operation and expansion of AMiBA for the following 4 years. However, we only got 35% percent, around 3 Million US dollars.