Minutes for AMiBA Engineering Telecon

Meeting Date: 26-Feb-2004

Participants:
Australia: Michael
USA: Paul Ho, T.H. Chiueh, Jeff, Ferdinand
Taiwan: Kyle, C.T. Li, West, Homin, Steven

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-12Feb04-1: Ming-Tang – To discuss whether we will do end-to-end test in Taipei, and whether that would require current amplifiers to be inserted to imitate the final amplifiers?

Ming-Tang – There are two possible approaches – either we can use those old RF amplifiers, or try some broadband IF noise source. Will discuss more with other people about exactly how the tests will be carried out. One concern is whether the result is valid if we don't use the final components in the end-to-end test. It would be easier to do the end-to-end test in Hilo with receivers.

Paul Ho – We can do as much test as we want in Taipei. But we will need to the end-to-end test in Hawaii anyway after everything is shipped to Hilo. If we found something wrong during the end-to-end test, we have to go back and retrofit things.

T.H. Chiueh – Is there a pseudo-setup to test LO, sub-harmonic mixers and subsequent IF in Taipei? Is there any plan to test the entire system before Rx #2 is shipped to Hilo with fake RF coming in?

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

AI-12Feb04-1: Ted/Philippe – Generate a load test plan for platform after the 2nd modification.

Philippe has circulated a test plan after modification is complete and platform is re-assembled.

Michael – The expectation is that the movement of receivers along the baseline should be much less than 1mm (within 30 um). We ought to be able to validate platform's model for various things. One way of testing the platform is photo-geometry?.
Paul Ho – We need to have Ted and Philippe generate this plan that people can discuss it thoroughly since they're going to perform the test soon in Vertex.

AI-12Feb04-2: Ming-Tang – Ask Michael to generate a plan for software interface and mount/platform pointing test.

Michael – Sent a note to Ming-Tang about the plan. Plan to go to Vertex in the end of April, early May after talking to Vertex people about their schedule for testing of mount. Right now we have the software to talk to Vertex's computer, and the software that imitates their machine. Then I can use the high-level program – the observation program = to drive the platform. In parallel, Vertex will perform their tests – first of all, the commission test – they will get their machine and codes to drive the platform; after that they have a week of calibration test that they attempt to establish the pointing model.
For the alignment, with 60-cm dishes, we probably have enough signal to noise that we can use radio objects. It would be better if we could start with a very good approximation to where we want to be.

We could have some jigs sitting in receiver holes and if there's a static-scan? technique To make sure they relate to each other properly. Then you can just drop the receivers in and that should be pretty close to what you want.

IV. Miscellaneous Discussions:

MMIC:

Huei – The chips have arrived in Taipei. They're in custom right now. We're applying the import tax waiving document.

Paul Shaw – They (Paul Clenworld) are ready to ship the chips by end of this week.

Receiver:

Homin – Tashun keeps testing those two receivers.

Homin – We're testing the vacuum receivers #3 and #4. Joshua is assembling electronic box for Rx #3. There is not much test to do here because we don't have the amplifiers. The amplifiers will be installed in Hilo. We plan to ship Rx #2 in April.

LO/IF:

Steven – Finished the temperature test of the IF/LO module in temperature chamber yesterday. The results showed the power deviation at 42 GHz over temperature range of –10 to 20 degree C should be 0.1 dB. Also tested the module with different 21 GHz input power levels from 5 to 14 dBm.

Steven – Will test the temperature vs. power variation next week in the temperature chamber with #2 IF/LO. Prof. Chu agreed to deliver IF/LO #3 and #4 in April. However we are still missing some components. Will check with him whether all components can be delivered in time. Also asked Prof. Chu's student to deliver the DRO as soon as possible that we can test it in the temperature chamber in the near future.
Derek – We placed the order of cavity filters for LO.

Correlator:

C.T. – Warwick and I continue testing the control circuits and software. For the IF cables, the company promised to fabricate some cables that we can test the total delay difference between them. If the result is within our specs, we can have them fabricate the remaining. Ted has got a quote for the correlator frame. But the price is a bit high. We're asking a quote from another machine shop.

C.T. – Have been testing the control circuits and software. I will ship those SiGe multipliers to Warwick that AT can double-check our results. For the total length tolerance of IF cables, 5ps corresponds to 1mm in cable length. I suggest we tighten the tolerance to be +/- 0.5mm.

West – The final length for each IF cable is 1 meter. They will use cables from Hover-Hill and connectors from Amphenol to manufacture the cables if we don't provide the material. Right now they will trim our 60" cables.

Platform/Mount:

Paul Ho – According to Philippe's email, CMA people have arrived in Vertex last week. They have disassembled the platform and started the modification. Everything is on schedule so far. The modification should be done in 2 weeks. Then Vertex is going to assemble platform and mount, and do some static tests.

Paul Ho – Platform people should be in Germany today. People from Along will be there as well. We will hire Along to do the FEA analysis of the platform.

Minutes for AMiBA Engineering Telecon

Calibration System:

T.H. Chiueh – The trip last week to test the calibration system wasn't successful since the lack of amplifier? Ferdinand will go up, perhaps tomorrow to do the test again. It's still the CW test. We are waiting for a component (connector) to test the photonic noise source.

Dish:

Kyle – Patrick and I tested the 60-cm dish. We fixed the receiver, and moved the transmitter. But this method somehow increase the noise. We have a good angular resolution, however, the amplitude is too noisy. We have a pretty good idea about the far-side lobe, but the 1st side lobe and main lobe is too noisy to say. The frequency of the source is drifting. We need to find out how to stabilize the source. We will repeat the test.

Michael – You should have a beam width about 20 arc-min between the 3dB points. I wonder whether you have missed the actual beam center, skirting along the 1st side lobe? We should expect 20 to 25 arc-min between the 3dB points, and the 1st side lobe were to be 17dB below the main beam. I wonder if you missed the broad side since I really can't see the central beam, which should be dominant. I would suggest exploring the tri-pod more that you can swivel the antenna to find the peak. One of my concern is whether the antenna is pointing in the right direction.

Site:

Ferdinand – Have sent out a memo for the alternative site (enclosure) design. Got two quotes from Ludwig. It's 55K US dollars for the current design, and 36K for the alternative design. The latest price for the clam-shell enclosure is on the order of 7500 dollars. The construction of alternative site design will take 4 to 6 weeks, compared with 10 to 12 weeks for current design.

Paul Ho – Still waiting to execute the contract. We need to make a decision soon. We can't wait much longer. I aksed Ming-Tang to contract the executor by the end of month. The construction should take 2 to 3 months that we should get started.
Paul Shaw – We have a short fall if we want to finish the 7 elements now. However, we still have money in our hands to execute the site work.

2-Element Prototype Testing:

T.H. Chiueh – We haven't done two items which could be important for the production type – one is the phase stability, the other is the possible change of spectral shape. We will use the translation stage to work on these two issues.

T.H. Chiueh – We went up to the mountain to check the LO power difference directly, not just the IF power difference between phase switching. New finding is that the power difference of 42 GHz LO will change with LO input power. We probably need to know what kind of input power regime that we want.

C.J. – We changed the 21 GHz LO power about 1 dB, and the 42 GHz power difference changed from 1.1dB to 0.5 dB.