

Minutes for AMiBA Engineering Telecon

Meeting Date: 08-August-2003

Participants:

Australia: W. Wilson

USA: B. Martin, F. Patt, M. T. Chen, P. Ho

Taiwan: H. Jiang, J. Han, W. Ho, T. Huang, P. Shaw, H. Wang, C.T. Li, C. J. Ma

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Minutes Recorder: C.T.Li

previous weeks comments in fine print

I. New Action Items:

II. Previous Action Items (still open):

AI-24July03-1: Bob/Ferdinand: Resolve site bidding issue.

Bob/Ferdinand - Contact a local architect (Neal Erickson), he is going to help us with the site bid, asked him to re-estimate the site work based on the blue prints we got, maybe modify few considering the high altitude and other factors, next he will help us selecting and finding new contractors, will have a meeting with him next week, will have some pictures for him to look at where the site is.

Another company didn't bid is because they will not be able to do the work in time, they don't have enough engineers, man power to do three jobs, so they decided at last minute not to bid.

The idea of hiring an architect is to reduce the package in order to deal with sub-contractors. Some small companies just gave up because of big package. They are willing to work as a sub-contractor with a main contractor.

Paul Ho thinks we still need a prime contractor, not to assume the risk ourselves.

Ferdinand thinks without a prime contractor, we may save some money, but we have to do the coordination, with the help of the local architect.

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

AI-17July03-1: Chao-Te/Derek: Finalize the backplane details for the 1st Section and begin detailed design.

CT - will follow Homin's design for Rx back plane and proceed according to Derek's ideas for Corr backplane, no open issue need to be resolved, need to find the time and implement it.

Derek, Homin, and Ferdinand to discuss this before the next meeting.

CT - Planning to modify Homin's backplane board for the correlator. Derek - wanted to stay involved with the electrical/mechanical details. Bob suggested that Derek, Homin (presently in Hilo for SMA) and Ferdinand discuss these details before the next meeting.

IV. Miscellaneous Discussions:

MMIC:

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Huei - received email from Paul Clinworth the same status as last week, send email to Boris Hiken following dicing issues, working on new proposal to Paul Shaw.

Huei - Did not receive a status e-mail from NGC this week. Bob will follow up with an e-mail to Paul Clintworth.

Bob - Has arranged for a weekly status to be sent (by NG?) on Tue or Wed. Had to cancel the TRW PO and reissue a new one to NG because too much time has passed by.

Receiver: Ming-Tang - cooling down receiver this week, found a minor problem in mechanical structure, need to revise couple of heat straps. Setting up the testing in Hilo for receivers to come, got a compressor in to be able to run 2 receivers at the same time, gather some accessory, 2nd testing table.

Phase shifter: Ted - still waiting for components (delivered Aug. 8th), then will start waveguide assembly, need more OMTs, used as adapters between square and rectangular (WR-10) waveguides

Noise calibration: Ferdinand - got a quote from NEL for 26000 for a photo-detector, after talking to John Payne, it's possible to get few NEL or NTT devices from him as a loan, or two from RAL, also need controller for the laser, and temperature controller for the laser, getting some quotes, maybe some inconsistency of connectors from laser, will have most of the parts, and fire them up by Sept., all look coming together.

Need to have waveguide to illuminate into sub-reflector output will be a square waveguide, 45-degree, the generation and output will be linear, not circular-polarized.

Chao-Te - Still waiting for W/G parts (should be ready 1st week of Aug) to perform the tests on the phase shifter. Receiver assembly is still in progress in the receiver lab.

Ming-Tang - Status - problem with plating (of cryo chambers?), waveguide parts have been in customs since Monday. Noise injection - tried Warwick's suggestion but ran into a problem with the physical orientation. Need to make another custom waveguide for the VNA (and receiver).

Schedule - current estimate is provide 2 new receivers with new noise injection scheme approx 2 months from now (late Sept). Should not bother with trying to upgrade the 2 prototype receivers. These 2 receivers will be installed into the prototype and Bob will try to mesh this with Ferdinand/John Payne's noise sources.

Paul S. - Received e-mail from John Payne about the shipment of 10 OMTs from NRAO this week. This should bring the total number of OMTs to 14 (13+1 spare). Should we ask John about the possibility of them making 6 more for the 19-element system?

LO/IF: Ming-Tang - Prof. Chu has finished the 1st set, they're writing the documentation for it.

Correlator:

CT - finalize the readout schematic design, finalize xy and total power cards design by this week, so that next week we can contact the local PCB vendor to work on the detailed layout.

Warwick - failure of data acquisition board is in FPGA (the Xilinx chip), no indication at all why it might fail, some of the signals were actually sent straight out from the chip to the outside world, there's a chance if those external signals coming from the readout board got a high voltage that might cause the damage.

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Update from Derek (via email) - a) received 14 more modules from Marki, so far we have 29 of the 55 we ordered. b) Peter has finished the mockup frame but still have some tolerance issues to solve c) Peter is assembling the 2nd section plates. On ML, a) DA board is working b) 1 Laser-cut (LC) readout fully working, 2nd LC chip has only 1 (of 4) channels working c) next we will integrate Marki SN001 + DC amp module into the system, the other channel will use Marki SN002, but there is only 1 RO channel working so it may not be so useful.

Derek - Sent Data Acquisition board to Warwick on Monday.

1st Section: Kyle started characterizing the first 11 (of 16) 1st Section IF modules using CSO's VNA. Amplitude and phase look quite consistent between modules even though there is a lot of parabolic phase. Max delay difference seen so far is 16ps (~3mm in Teflon). SN012-016 are still missing parts borrowed for the prototype, expect these to come in within 2 weeks.

2nd Section: Waiting for Peter to return from supporting the SMA to complete the 2nd Section assemblies. Peter has been gone for almost 2 weeks.

Correlator Frame: Waiting for Peter to return to modify the mockup frame. There is a problem with one of the dimensions.

3rd Section PD: ETC mid September.

Readout Board: Sent out schematics for review by the correlator team.

Kyle/Cheng-Jiun presently debugging a new problem with the Data Acquisition board which began sometime last Friday after departed the mountain. This issue has stopped all planned tests for now. Cheng-Jiun, Kyle, and Derek will try to resolve this with the remote assistance of Chao-Te (and hopefully Warwick).

Derek - Finally was able to sweep the first 4 1st Section IF Distribution modules last Thursday. Distributed the data via e-mail. Confirmed with Jeff P. that large parabolic phase (smile down) is not a concern since they are all the same. Also swept our first prototype 2nd Section assembly. Response looks good as well.

Derek - Lost Peter's help to the SMA again this week. This continues to hurt the correlator schedule. Derek stuffing the 1st final DC amp board before subcontracting the rest.

Platform/Mount:

Mount

Ferdinand - got some updates, re-assembly of the cone is much better, got a much better flatness and reference? than we had in Poland. U-joint testing will be finished, U-joints will be picked up Monday and shipped over to Duisberg. The next thing to do is assemble lower U-joint, cone, upper U-joint, and jackscrews. They will ship the cone with the lower U-joint attached (preferable).

Platform

Bob - it is getting completed, it will go out as current schedule (next Tuesday), encounter bad results during load testing, it seems the connection between inner piece and 6 outer pieces is not stiff enough on the inner piece, Phillippe is looking into design change or modifications, CMA is going to add on the proposed solution in Germany, then re-test there.

Ferdinand - Vertex mount - Saw jackscrew testing for 1 day. They had to interrupt the tests to cool their small test motor. Setup looked generally good. Next tests will be the U-joints. Philippe visited recently (before ~~after~~ Ferdinand's visit) and said these tests have begun but no results yet. ETC is about 2 weeks. Ferdinand went to Poland and saw the giant support cone. This cone should be in Duisberg right now. Asked that a video-cam be installed (~1 frame/2 secs) to record how they handle the large metal pieces. Visited the assembly hall which is close to Vertex. They have an ISDN line for Mike to control the mount remotely. Motors are tilted inwards - Don't want cables tangled. Drive cabinet looks OK.

Bob - CMA platform is currently in assembled state. Final gluing today, inspection and testing tomorrow. Thereafter painting, then ship from Tucson to Duisberg. Estimated arrival in Duisberg is end of August. Integrate platform onto mount 1st week in September. Cable wrap - Viola is building cable wrap in France. No tax will be charged.

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Bob - summarized status and distributed via e-mail. Estimates that CMA will ship platform to Germany Aug 4 (slipped from July 22) but this shouldn't affect the integration with Vertex (because they slipped too). Platform should arrive in Germany on Aug 29. The Vertex mount schedule has slipped by 3 weeks. Bob thinks that the mount (and platform) will ship from Germany sometime in early November (originally early Oct). Paul S. believes it will be closer to the end of the year. Paul Ho EXPRESSED his concern about these slips, in particular with Vertex.

DC Power/ Distribution: Homin - working on observation software, Mike suggested we need two identical computers, one on the mountain, the other one in Taipei for development

Ferdinand - Peter is going to buy a few rack-mount power supplies with panel meter for use in the lab in Hilo, and up in the summit.

Homin did a test w/ the low-frequency spectrum analyzer, he sent out couple of JPG files that you can actually see how much noise voltage (or spike) is (about 0.1 mV around 300 KHz), as usual power supply gives out noise about few mV, next step is to do the test on the two new receivers.

Enclosures: none

Site Issues/Network:

Bob - Received only 1 bid for the site work and it was much higher than expected. More on this issue later.

Ferdinand - Wallace Oki, electrical consultant, will have the 1-wire diagram and permits complete at the end of next week.

Dishes: none

Ted - Alone (Dr. Ong's company) started the 5 60cm dishes and will send the schedule to him next week. The 2 dishes will be shipped to Hilo next week after he receives the boxes.

2-Element Prototype Issues:

Shipped Data Acquisition board to Warwick for FPGA replacement.

Ran into a major problem last Friday evening. See discussion under correlator section.

Schedule:

Paul Ho - Schedule performance will be an important parameter for our upcoming proposal.

Paul S. - Will be sending out a formal proposal (to NSC?) in late August for the expansion of AMiBA. Need to show: a) that we can control our budget; and b) how much progress was made. Paul will be distributing the current draft proposal for review by others. Paul wants others to provide an accurate budget estimate (for expansion) and photos to show progress.