

Minutes for AMiBA Engineering Telecon

Meeting Date: 04-Sept-2003

Participants:

Australia: Mike Kesteven

USA: Bob Martin, F. Patt, Jeff Peterson

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

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Minutes Recorder: C.T. Li

[previous weeks comments](#)

I. New Action Items:

II. Previous Action Items (still open):

AI-14Aug03-1: Warwick - Become directly involved with offset issue (assigned by Paul H.)

Kyle - Don't have new test results yet.

Warwick - From the recent test results, which show quite large RMS (~ 400), it seems correlators have been driven very hard, that might cause the non-linearity in the correlator. Suggest testing the offsets with different IF power.

Kyle - Offsets also changed as swapping two IF inputs with the same IF power.

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

AI-21Aug03-1: Summary of open issues/design questions - Need to settle on the site, on the cost, as well as the new location. Is there any impact on the project? For testing, to come up with a plan next week to check whether we have missed anything, e.g. trying the observing program, testing the dishes, etc.

Discuss the calibration system, also the very tight specs on the phase switches,

Kyle - Will have the analysis of long-term data, and the leakage into drift scan mode next week.

AI-21Aug03-2: Homin - After putting DC converter together with receiver, it came out more noisy than before. The reason is that the DC converter is too close to the back plane. Cable is picking up radiation from the DC converter. One of the solutions is to make an Aluminum shielding to cover the DC converter. Will re-locate the bias connector in the next batch run of back plane. If all the schemes fail, suggest using a deeper box (need some discussions with Bob).

Bob - Had a meeting last Friday. Came to some modification directions. Ferdinand are following up some sketch to send out.

Bob/Homin - Joshua made another cable with shielding. The results turned out better. Homin will send drawings and description around. Bob will schedule a meeting to discuss more on bias and back plane.

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

As the general discussion below

Ferdinand / Bob - Circulated a copy of site layout that it's more clear for everybody where the telescope will be. The new location is 6 feet lower, not 6 meters. Also check with the new location of the telescope **if** when the platform is 30 degree elevation, the outermost dish will **not** look into the lava field during the operation when platform comes up. Also sent out a document regarding the interference with the container. The enclosure rolls off away from the road, that way you can put the enclosure up before erection of the telescope. We can use it to protect things in bad weather. The trigger to the new design is the high cost of excavation.

AI-28Aug03-1:

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Ferdinand/Kyle - Have been discussing through emails. Will come out a test plan for 60-cm dishes next week.

Ferdinand - found one part on MK for 60-cm dish testing, got approved that we can use it if people on MK do not used for antenna alignment. Looked around the site to find where we can do the dish testing. A part of the scanner could be used to turn the dish around over the transmitter. Looked into doing a test, having the transmitter on Subaru, and the dish on one of the pad on MK. It's a bit more delicate because both SAO and SMA will be involved. If everything is set up right, we will be done by a week, considering setting everything up and having it well planned. Jeff mentioned putting the dish up on the test mount, doing some simple test, things like the side lobe level, drift scan. Later we want to try the calibration system, putting the calibration probe behind the sub-reflector.

IV. Miscellaneous Discussions:

MMIC:

Huei/Bob - Export license decision seems to be soon. Wrote a paper about SiGe multiplier, and liked to have Warwick and Paul Roberts comment.

Huei - Waiting for the approval of export license. Haven't got reply about dicing. Will send another email to inquire. There should be enough amplifiers for 13-elements after 2nd iteration.

Receiver:

Ming-Tang - Checking on mechanical alignment between room and cold temperatures. It doesn't have any problem to reach the right temperature. Need few weeks to do several other tests.

Ming-Tang - Have cooled down the receiver. Will start monitoring the temperature. Also check the alignment. For the LO cables, vendor will provide the correct products soon.

LO/IF:

Correlator:

C.T. - Planned to send design of another two PCBs (tp & xy) to outside firm for detailed layout. Mark and I will work on the other 4 PCBs design then. We plan to have all of the designs finished by the end of this month.

Warwick, C.T. - Have a design for data acquisition. The next step is to implement it. There are about 4 or 5 PCBs that have to be designed. It will take about 4 weeks total for someone working on it full-time. Mark Chen can help on this issue. We can also sub-contract the layout to external firms.

Updates from Derek -

1) Received more correlator modules from Marki, we now have a total of 40. Marki owes us 15 more to complete the order of 55.

2) The DC amp board was turned by the fab house (no charge). I have received 40 and they kept 60 for assembly. Peter sent them the parts last week and 55 boards are currently being assembled. Expected completion date is 1-2 weeks from this writing. Once we receive these boards we will integrate them with the Marki correlator modules, align the pots, then send them to Taipei for responsivity and phase characterization (vs frequency).

3) Peter sent the mockup correlator frame to Ted last week. He also sent Ted our dummy front and rear power divider modules + 15 Marki correlator modules with DC amp modules (no PCBA) attached. Still missing are the BMA to SMA adapters which are due the 1st or 2nd week of Sept (need these to interface the Marki modules to the PDs).

4) I received the 4 new batch readout chips from CT. They are in my office and Peter knows where they are just in case a pair of observers come to Hawaii during my absence.

5) 2nd section plate assemblies are nearly complete but we are still missing some components (amps on loan to Prof Chu, short some pads, etc.) Shortages are on order. Plan was to integrate the 2 spare plates into the prototype but this might not be a good idea until the offset issue is settled (don't want to add in a new set of potentially parameters).

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Platform/Mount:

Bob - Some pictures of the mount came in, showing 6 jackscrews mounted. The entire mount assembly is working on wiring. Philippe is going again next week to check on it. For platform modification, have managed to zero in on design last week. Bob Romeo ordered some material. From October 6th to 17th, Bob Romeo will go to Vertex to work on Platform modification, assembly, and mounting platform onto the mount. Testing probably won't start until 20th of October.

Bob - For mount, talked to Philippe this week. He is in Germany this week. Philippe saw them put two of the jackscrews into the cone.

For Platform, will have discussion with Bob Romeo about the modifications tomorrow. Need to have the material, drawing, and PO, also need some time for fabrication, to have the modifications done by end of September.

Calibration System:

Ferdinand - Sent out an email about the calibration specs. It is to be faster with the calibration system than any atmospheric change. For the calibration system, got few components, few more in order. At this point, we are not ready to put that onto the telescope. There are still few components missing, like the polarization scrambler, which should be there in next two weeks. It's also important to check the cross-talk or coupling between two dishes. We have the possibility to use either photonic or coaxial approach.

Mike - If you were doing point source study, then the calibration is very important. For CMB, substitutional? calibration, e.g. against Jupiter, would in fact suffice, given the way we're looking at very weak signal, and a fractional change of magnitude of the signal. It certainly has to be an attempt to. However, wouldn't see it's such a high priority. In the perspective of very rapid change of calibration, if centered the frequency of phase switch, then we're in trouble, doubt the calibration would pick it up either. It's important to characterize receivers, we do need the calibration system. My suspicion is if receiver's long-term anchored within, say, within 2 or 3%, that is minor perturbation on the CMB final results.

Ferdinand - For calibration system, parts have been ordered. Things are coming together. Has discussed with John Payne, Paul Shaw about the general issues. The first approach is behind the secondary.

DC Power/ Distribution:

Enclosures:

Site:

Bob /Ferdinand - Have been Trying to look for area to re-design. Tried to look for alternative of how to break this up, and keep the cost down. Ferdinand got another quotation for excavation. Don't understand why the price is so high. Mountain work is most formidable. Looking into renting our equipment with the driver/operator. Will drive over to Kona to visit a big rental place.

Dishes:

2-Element Prototype Issues:

Schedule: