

Minutes for AMiBA Engineering Telecon

Meeting Date: 12-June-2003

Participants:

Australia: W. Wilson

USA: D. Kubo, B. Martin

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

Minutes Recorder: D. Kubo

[comments from this week](#), [previous weeks comments](#)

I. New Action Items:

AI-12May01-1: Bob - Follow up on MMIC items while Huei is gone (asked by Paul Ho).

AI-12May01-2: Derek - Perform noise tests of both Marki and Meridian correlator modules in prototype hardware (asked by Warwick).

AI-12May01-3: Ted - Send cable wrap design drawings to Philippe. He will look for fabricators in Europe.

AI-12May01-4: Derek - Send Ted an interconnect drawing for semi-rigid cable routing between 2nd section outputs and 3rd section inputs.

II. Previous Action Items (still open):

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

AI-5jun03-1: Derek - Generate schedule for parallel correlator activities on ML.

Added schedule to top portion of latest correlator master schedule and distributed via e-mail. Start integration of 1st Section to prototype in July, ends in October/November with finalized Readout boards.

AI-29May03-2: Paul S. - Integrate all individual schedule inputs onto a 1 sheet master schedule.

Will post on website and send e-mail pointing to link.

AI-29May03-3: Bob - Review Paul's master schedule to determine what are the leading schedule drivers.

Sent out comments to schedule to distribution. Master schedule needs some corrections and updates.

IV. Miscellaneous Discussions:

MMIC: Bob - Huei is not present but there have been a lot of e-mails exchanged to NGC. See AI above assigned to Bob.

Receiver: Chao-Te - Next test for phase shifter will be to perform a cold test in a dewar. Might have to order some custom waveguides to perform this test. Bob was a little concerned as to how long it would take to acquire these waveguides. Warwick commented that ϵ_r increases at -60C which should result in an even larger phase shift (presently 110-120 degrees, want 90 degrees).

Minutes for AMiBA Engineering Telecon

Paul S. - Cold head and compressor orders are now under way.

Bob asked Ming-Tang if there were any concerns with the schedule. Ming-Tang said his schedule is dependent on the delivery of several items including the cold head, vacuum chamber, and various waveguide components by this month.

Noise injection hardware - Bob raised a concern over CT's latest phase shifter report. Phase is off by +20 degrees but the amplitude now appears OK. Why are the results different from before where the offset was -20 degrees and there was a significant amplitude imbalance. CT believes he understands the reasons why this happened. Warwick suggested that since there now appears to be excess phase that one can trim away the dielectric to reduce it to 90 degrees. Someone brought up the issue that the phase shifter is designed for cryo application but is being tested at room temperature. How much will this affect the phase results? The dielectric will change with T as well as the physical dimensions of the cavity.

Ming-Tang - will attack the noise coupler problem after solve the phase shifter issue.

LO/IF: none

Correlator: Derek - Distributed an e-mail describing the history, technical issues, and test results of both the Meridian and Marki correlator modules. This combined with comments from Mike should provide the necessary justification to proceed with the order to Marki.

Tested 003 Marki module and distributed results via e-mail. Had some phase noise problem with available synthesizers so phase linearity data should be considered suspect. Results look similar to 002 but the undesired suckout at ~3.5 GHz appears to be gone. This 003 module is now on its way to CT in Taiwan. Sent 1st Section backplane info to CT last week.

CT is working on the XY module design and is attempting to resolve the old problem of how to de-emphasize the effect of the slope equalizer. Can't use coax with present power profile because the overall loss will be too great (unless can get more power from receivers). CT is sending more 1st and 2nd Section parts to Hilo for Peter to complete the 7-element hardware.

Derek - Submitted PR for Marki correlator modules. Warwick has been out of the loop for a while and asked if we've done enough tests to make sure this is indeed the right decision. DK - 2 sets of tests were done, one comparing the individual module performances, and the 2nd was comparing the performances (side by side) while operating in the prototype at ML. Cheng-Jiun will forward the ML test results to Mike and Warwick.

Derek - Originally stated that Meridian module had better phase response than the Marki module but this may not be true due to the different ways they were tested. The Meridian module was tested using one of the lag outputs as a phase reference for the other 3 lags. This method would tend to cancel any common phase behavior. The Marki module was tested using a different external reference mixer with a most likely different phase response. This latter method would tend to give much more pessimistic results.

Derek asked CT whether it was OK for him to change all of the TTL (LV-TTL) interfaces between the readout boards and data AQ boxes to differential TTL. CT thought this would be OK and the total number of pins will remain the same.

Platform/Mount: Bob - Ted is working on the cable wrap hardware design. Still working out the details of how many pieces it will consist of. Will it be welded or bolted

Minutes for AMiBA Engineering Telecon

together. Should consider having the design manufactured in Europe since it will have to go to Vertex for fitting with the CMA platform.

Bob - Had a meeting with CMA last weekend and 2 days ago. Schedule appears to be on track. Had a meeting with Vertex last night. No schedule change. Latest milestone of shipping anchors was due last Monday and it did happen. Vertex had some kind of a concern about potential viruses in the computer supplied by Mike.

Paul S. - Have not received shipment quote from Philippe (of platform from CMA to Vertex?).

Mike - PC is ready to send to Vertex. Need to work with Homin on how to get it there.

DC Power Distribution: none

Site Issues/Network: Putting (contractor?) purchasing packages together through RCUH. Paul Ho was a little concerned that Ferdinand will be away until the middle of July. Bob said he will be in contact with Ferdinand and will be taking over his tasks while he is gone.

Bob - Boulder - blueprints 99%, only a few changes left which should be complete by the end of this week. Paul S. asked for a copy of these drawings. A copy of the project manual will be available for contractors (contains rules?). Ferdinand has been looking for contractors here on Hawaii (Hilo, Kona) and Oahu. A separate contractor will be used for electrical work.

Ferdinand - Working with HELCO (Hawaiian Electric & Light Co.) for site power. Learned that the existing transformer has a 300kVA capacity and the current NOAA facilities consume between 20 to 50 kVA. Our AMiBA estimate is 75 kVA max so there is ~175kVA margin to spare. This existing transformer is located about 500 feet (150m) from the container. Overhead wires will not be possible due to interference with a nearby helicopter pad. Need a licensed engineer to stamp off the final power drawings.

Ferdinand - Excavation and foundation - Large contractor can do both but they may be more expensive and may not be available soon. Expect to send out bid packages next week. Bids may take about 1 month. Paul Ho suggested to contact John Maute for the names of small contractors. Paul Ho asked for approximate costs and Bob replied that the A&E firm estimated \$100-140k (probably on the high side). Would like to hire a qualified inspector to carefully review the quality of the contractors work at ML.

2-Element Prototype Issues: Bob - Asked if the 3 layers of demodulation is a practical way to solve the current offset problem. Answer was a weak yes. What do we need to do next? Warwick said he will work on the software change to flip the phase of the phase switch. Derek will start adding one item at a time to the correlator box and characterize offset, with nodemod and demod in TKCOR.

Schedule: none

Enclosures: none