Minutes for AMiBA Engineering Telecon

Meeting Date: 4-Apr-2003

<u>Participants:</u> <u>Australia:</u> W. Wilson <u>USA:</u> P. Ho, B. Martin, J. Peterson, M.T. Chen, D. Kubo, C.T. Li, W. Wilson <u>Taiwan:</u> H. Jiang, H. Wang, E. Hwang, J. Han, W. Ho, T. Huang, P. Shaw, C.T. Li

Minutes Recorder: D. Kubo comments from this week, previous weeks comments

I.<u>New Action Items:</u>

AI-3Apr03-1: Ted - Find out coating material and thickness for dishes.

AI-3Apr03-2: Bob - Estimate shipping costs for shipping CMA platform to Vertex in Germany.

AI-3Apr03-3: Derek - Distribute IF coaxial cable data sheet info for platform routing.

<u>AI-3Apr03-4:</u> Derek/Ted - Begin dialog for correlator mechanical frame design details.

AI-3Apr03-5: Chao-Te - Provide revision details to Prof. Chieuh for 4-channel readout chip. Final inputs must be completed by the end of April. Next fabrication run is in June(?).

II. Previous Action Items (still open):

AI-20Mar03-1: Ted/Philippe - Get together and generate a quick sketch of the planned cable (DC power, cryo, coax, and data) routing. Will have a group discussion on this matter the following week. Next platform review is scheduled for April 1.

Scheduled to be completed next week.

AI-6Mar03-1: Bob - Ask Fred L. if he can help AMiBA with the TRW InP MMIC testing problem. Can't export to Taipei for testing. Also contact Todd Gaier in regard to telling him our MMIC delivery needs.

Still on going.

III.<u>Closed Action Items (as of this meeting):</u>

<u>AI-13Mar03-3:</u> Johnson - Locate single packaged mixer from Jeff Rapadas (non biased one) and send back to Rapadas for investigation as to how to flatten responsivity vs. frequency.

Done.

IV. Miscellaneous Discussions:

<u>MMIC:</u> Bob & Huei to discuss export issue this coming Monday, 9-10am Taipei time. Expected LNA noise temperature for chip mounted in a block is 60K. Huei ask Warwick about the testing of the SiGe mixer. Warwick said they have not gotten to it yet but plan to do so in the near future.

?? - Someone mentioned that another SiGe Gilbert cell multiplier is being designed. This new design has a goal of lower 1/f noise (we haven't characterized the 1/f noise of the present ones). These chips are scheduled to be available in 3-4 months.

<u>Receiver:</u> Ming-Tang - 2 OMTs are in the Taipei lab. Johnson is conducting the measurements. Next test is to measure the noise coupler performance. Estimated completion date is next week. If coupler performance is good then ATNF will fabricate 6 more right away. Estimated installation date for the noise coupler + OMT into prototype receivers is end of May(?).

Ming-Tang asked Warwick about the phase switch signal. Warwick - Each receiver will require 2 pairs of differential TTL signals (4 wires). These signals will emanate from the correlator PC. The 19-element system will require 38 pairs of phase switch signals. There may be an interface panel somewhere between the correlator PC and receivers.

See completed AI above for OMT discussion. MTC - Will discuss how to test the OMT with Johnson.

 $\underline{\rm LO/IF:}$ Ming-Tang - for Professor Chu - $\underline{\rm LO/IF}$ hardware schedule is still the same as presented in December.

<u>Correlator:</u> Derek - received Marki 4-lag correlator module last Thursday. Testing is in process. So far the responsivity looks good and flatness from 3.5 GHz to 18 GHz is approx 4 dBpp. Warwick asked for output impedance measurements to done next.

Bob asked Ted to support the mechanical design of the correlator frame. This is in lieu of West being tied up with the receiver work. Ted is a logical person to do this because the correlator frame has a somewhat complex interface with the platform. Bob asked for Derek and Ted to try to work remotely to save on travel costs.

Prof. Chieuh - Current tests at ML - Out impedance of 4-lag correlator mixers appear to be different for channels 1 & 2 vs 3 & 4. First 2 channels appear to be ~100k while the last 2 are around 50-60k Ohms. Currently seeing relatively higher RMS outputs than expected but have not tracked this down yet.

4 loose IF input SMA connectors were discovered in the correlator box. These connectors are hidden from view and can't be access unless the amplifier plate is removed. These were torque before the plate was reinstalled.

Warwick is currently reprogramming the FPGA which controls the phase switch and demodulation sequences. After this is done we should be able to phase switch faster (at \sim 45/90 Hz).

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Assembly of SN001 for the 1st Section 3U module assy has been completed. 13 more to go.

Plan to send single packaged mixer back to Jeff Rapadas for his evaluation on why the mixer produces the non-flat responsivity vs frequency.

<u>Dishes:</u> Dr. Ong brought the 60cm dishes to Taipei last week. Bob mentioned that there is some kind of clear protective coating (polyethylene?) on the primary and asked about it's effect on the signal. Thickness ~8 to 10um. Jeff P. thought it would be a good idea to keep this coating to protect the aluminum from oxidizing.

Bob was to provide Dr. Ong with details on how to measure parameters of the dish.

<u>Platform/Mount:</u> Bob Romeo reported that he is still on schedule to deliver the platform in June. Bob pushed around the idea of having the platform shipped Vertex in Germany for integration with the mount. This alleviates Vertex from having to make a mockup load to test the mount. Vertex would have to provide the lifting fixture for the platform. Paul H. asked how much shipping costs would be (Arizona to Germany).

Bob / Michael - Had meeting with Vertex at end of last week. Everything during the meeting appeared to go well. However, Klaus' e-mail after the meeting was a bit worrying. They are not converging on an understanding our (pol tracking?) system. Their unusual interpretation of the control algorithm may be based on their previous involvement with ALMA or the Hexapod Telescope (which were unusual?).

DC Power Distribution: none

<u>Site Issues/Network:</u> none

Bob - Design work for the ML site got hung up on payment terms. Bob hopes to sort this all out soon. Ferdinand has been investigating firms (in Hilo?) to do steel work supply cranes at ML. He's been asked to provide information about the road up to ML.

Ferdinand - GPS receiver - Having to go through another round of purchasing hoops due to the cost coming higher than originally expected.

<u>2-Element Prototype Issues:</u> Warwick - Total power RMS changed by a factor of 3 with respect to time. Correlated DC offset changed with time as well. Chao-Te is presently generating a summary report for their activities here 2 weeks ago.

Schedule: none

Enclosures: none

V. Other Inputs: none