## Minutes for AMiBA Engineering Telecon

Meeting Date: 14-Aug-2003

Participants: <u>Australia:</u> W. Wilson <u>USA:</u> D. Kubo, P. Ho, J. Peterson, M.T. Chen <u>Taiwan:</u> H. Jiang, J. Han, W. Ho, T. Huang, P. Shaw, C.T. Li USA Dial-in = 1-800-653-5390, 6668081#

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

## I.New Action Items:

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

AI-14Aug03-2: Bob - Ask Conrad of Vertex to send pictures of the mount to both Pauls for the proposal. Ditto for the platform and cone and jackscrews.

AI-14Aug03-3: Ted - Obtain and distribute test results of platform material test coupons from Dr. Ong.

### II. Previous Action Items (still open):

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

Ferdinand sent out an updated site layout plan via e-mail and asked for people to review and comment. Paul Ho asked what the impact of these changes could be (beside lower excavation and cost). New position is 6m lower.

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

## IV.<u>Miscellaneous Discussions:</u>

MMIC: Export license is in process... dicing of wafer is in happening in parallel.

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

<u>Receiver:</u> Ming-Tang - Ran into problem with LO cable order. Cables were made wrong and will have to be remade (at no cost). Also discovered a problem with the 2 JPL MMIC amps, the bias connector fell apart. Will contact Todd G. about this problem.

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, 2<sup>nd</sup> 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 - 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.

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<u>LO/IF:</u> Ming-Tang - Prof. Chu has finished the 1st set, they're writing the documentation for it.  $2^{nd}$  assembly is being worked on.

Correlator: Derek - Have 30 Marki modules in Hilo, + 1 engineering model (+1 EM in Taipei). Mockup frame is done and will be sent to Ted tomorrow. Shipment will include 4 front and 4 rear dummy power dividers. We will also send Ted 15 correlator modules + empty DC amp modules for fitting in a separate box. Sending Jonathan slides too.

Problem with DC amp boards, fab house made an error and will refab 100 more for free. New boards should be ready for shipment tomorrow and plan to go into assembly next week. Peter is designing cover plate for DC amp module and will have 55 fab'd at Dayton Jackson.

Peter has begun assembly of our 3U+1U chassis. DC-DC board is now installed. Plan to integrate this box with the prototype but don't know where to put it.

1<sup>st</sup> Section Celeritek amp is running uncomfortably hot. We might try to redesign the heatsink to see if this helps.

Still waiting for some parts to complete the 2<sup>nd</sup> section.

Chao-Te - Received sample 3<sup>rd</sup> section housings. Plan to begin layout of readout board soon. Going to ATNF and will work with Warwick to verify designs.

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.

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 sill have some tolerance issues to solve c) Peter is assembling the 2<sup>nd</sup> section plates. On ML, a) DA board is working b) 1 Laser-cut (LC) readout fully working, 2<sup>nd</sup> 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.

### <u>Platform/Mount:</u> Ted - Working on new stiffener design to replace Bob Romeo's design.

#### 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 Ujoint, 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, Phillipe is looking into design change or modifications, CMA is going to add on the proposed solution in Germany, then re-test there.

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 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.

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Enclosures: none

Site Issues/Network: See open AI above.

Dishes: Ming-Tang - 60cm dishes have arrived in Hilo. What should we do with it next? Ferdinand has plans to install the photonics noise diode into the secondary as a test. These dishes can be installed on the prototype but the optical telescope will have to be lowered. There still should be enough unblocked aperiture to permit pointing on bright stars. Ming-Tang would like to see a schedule and plans for these 2 dishes.

<u>2-Element Prototype Issues:</u> Kyle - Ran into a problem where the LO power of one of the phase switches differed by ~2.7 dB between the 2 phase states. This resulted in a large AMing of the associated IF which was related to the very large offset of ~1000. The LO power disparity was improved by changing pads and the offset also was reduced. This issue will be discuss further in the science meeting.

Jeff suggested that we be able to tune the LO power for the 2 phase states to achieve perfect balance. The new 42GHz phase switch will have a mylar tuning sheet (set once) which may suffice.

<u>Schedule:</u> Paul S. - Expansion goal is to complete the 13-elements by the end of 2004, and 19-elements by the end of 2005. One problem is that the NSC funding might not be available until April 2004.