

## Minutes for AMiBA Engineering Telecon

Meeting Date: 23-Jan-2003

Participants:

Australia: W. Wilson

USA: D. Kubo, J. Peterson, C.J. Ma, K.Y. Lin, T.H. Chiueh, P. Wu

Taiwan: T. Huang, C.T. Li, W. Ho, C.C Han, M.T. Chen, H.M. Jiang

Minutes Recorder: D. Kubo

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

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### I. New Action Items:

AI-23Jan03-1: Assigned to **Homin Jiang** - Was asked by Ming-Tang to briefly summarize (for the record) the reason why AMiBA went to 48VDC primary DC power on the platform.

AI-23Jan03-2: Assigned to **Ted(?)** - 60 cm dishes will block the view of the optical telescope. Need to find an alternate location and method of installation.

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

AI-17Jan03-5: Assigned to **Derek Kubo** - Provide PN of Jonathon slide candidate to Ted (for Correlator frame slide).

Still in process.

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

AI-17Jan03-1: **Assigned to all** - Philippe sent out an e-mail on 15-Jan-03, subject: "re drawing". It had 2 attachments, a platform drawing with box locations and a table describing box sizes, quantities, and weights. Philippe highlighted areas in red which require immediate attention.

Philippe was not present but Derek said he would send him an e-mail to ask him whether he is missing any info. Will post new AI if further info is necessary.

AI-17Jan03-2: **Assigned to all** - Ted sent out an e-mail on 15-Jan-03, subject: "Document of cable route". It had 1 attachment which described Ted's proposed approach for routing the various cable assemblies. At the end of the document, Ted asked a number of questions to be answered by others.

Ted has most of the info he needs on this and is expecting correlator cabling info from Derek shortly.

AI-17Jan03-3: Assigned to **Ming-Tang** - Bob asked that a mechanical review package of the final receiver design be generated and distributed by January 31. This package is to be reviewed by pertinent individuals with a discussion following on the Feb 13<sup>th</sup> engineering meeting.

Ming-Tang asked that this AI be rephrased for clarity. Ming-Tang had originated the mechanical review package and agreed to complete and distribute

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this on Jan 31. Details of generating this package are currently in process. The review for the updated receiver design will be held on Feb 12 (Taipei time), the day before the normal engineering meeting.

AI-17Jan03-4: Assigned to **Derek Kubo** - C.T. asked Derek to provide the new IF output pin spacing info so that he can modify the current mechanical interface to fit the new 4-lag module.

Answered via e-mail. C.T. has already obtain the necessary sockets to interface to the 4-lag correlator outputs. Mark is working on the adapter board now.

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### IV. Miscellaneous Discussions:

MMIC: Ming-Tang - Prof Wong will e-mail Bob on the issue of measurements. Initial measurements of the TRW chip are very good.

Receiver: Ming-Tang - Will provide Warwick with results of noise injection coupler after translation to English.

LO/IF: Ming-Tang - Prof. Chu had some issue with the 48V DC power scheme but this has been resolved by putting some(?) of the DC-DC converters within the Receiver/Correlator enclosure box.

Ming-Tang will also ask again for clarification of the slope equalizer within the IF/LO box. Ming-Tang's current assumption is that the IF/LO slope equalizer does not compensate for the long RF coaxial cable following to the receiver.

Correlator: Derek - Spoke to Jeff R. yesterday and today. He received 3 modules from 2Pi last Friday and performed some functional tests. 2 modules look OK, the 3 has a potentially bad mixer.

Jeff has been driving the modules at 0 dBm which is probably about 10 dB too much. At this high drive is seeing an equivalent mixer responsivity of around 300 or 400 Vrms/W which is quit a bit lower than expected. Some of this might be due to compression.

Jeff is also seeing some resonances at 10 GHz and believes this is coming from the mixers themselves. He's suggesting to tune these out but mentioned that this may reduce the responsivity as a consequence. Derek is waiting for test data to advice Jeff as to what the next step will be.

Prof. Chiueh and Proty are currently here in Hilo and are planning to return to Taipei next Wed morning. They volunteered to hand carry the 2 modules to C.T. if we can get them to him on Monday or Tuesday.

Warwick - Wants to discuss with C.T. about the schematic for the readout board in an offline session.

Derek - Rapadas is currently having 3 4-lag modules assembled at an outfit called 2Pi Microwave. He is intending on having this place also perform the production build of 55 modules. Jeff expects the modules to be completed by this weekend with tests to begin thereafter.

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Derek asked Ted what the purpose of the gas springs were. Ted said they are tension springs which are intended to counter the weight of the correlator frame. Similar to what is used to hold up SUV tailgates except tension instead of compression.

DC power distribution: See new AI above. Homin said he has ordered a 5VDC and RAM module (from Vicor) and expects to receive them next week for testing. He currently doesn't have a 48VDC source in the lab but will figure this out later when he gets there.

Warwick mentioned that there are -48VDC supplies available for standard PCs. We can buy a standard PC and retrofit the AC supply with the -48V supply. The interesting thing is that he recalls the minus voltage as being quite important, possibly for some electrolysis reason. We'll need to figure this out.

Ferdinand reviewed Ted's proposed cable routing. He suggested to use a "Y" configuration instead of a "ring" to distribute DC power on the platform.

Dishes: none

Platform/Mount: none

Bob: How soon can Ted provide final design details to CMA? Answer: Don't know and will resolve this offline.

Site Issues/Network: Proty - He and C.J. Ma are working on the automated backup for the prototype machines on ML. Current scheme is to backup the correlator PC contents onto the monitor PC, and the monitor PC contents to Taiwan. This will happen every day. In order to free up space on the monitor PC, data which is older than 2 weeks will be deleted.

Proty - Discussion forum for ASIAA is now open (courtesy of Benson Lin). He suggested that observers could cut & paste the end-of-night report into the discussion forum for discussion. Proty will write up a summary on this.

Hilo Facilities: Derek - New offices (x3) in Casey building across the street from the SMA offices has 3 phones and internet connection working.

Schedule: Proty - Asked about moving over one of the 30 cm dishes (& receiver packages) to where the optical telescope is currently residing. This smaller baseline will increase the sensitivity to a level which should permit us to detect the CMB. Ming-Tang mentioned that an alternative to this is to wait until the 60 cm dishes are available (scheduled to receive in Taiwan end of Jan). The larger 60 cm dishes will provide better sensitivity without having to move a receiver packages to where the optel is. It was decided that we would wait for the 60 cm dishes rather than modify the existing 30 cm positions.

Ming-Tang - Will the 60 cm dishes block the path of the optel? Answer is yes. We will have to find another location and scheme to mount the optel (see new AI).

Bob asked how the delay of the 4-lag module delivery is impacting the planned upgrade for the prototype on ML. After some discussion, we decided that the 2

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new correlators will be installed during the last week of February. This is predicated on us receiving working modules from Rapadas.

This would also be a good time for Ming-Tang to install the 2 noise injection couplers into the receivers. Also, Ted may consider to install the clock drive motor at this time although this should be the lowest priority. Motor has been received but there is still some work which is necessary before installation.

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V. Other Inputs:    none