Minutes for AMiBA Engineering Telecon

Meeting Date: 30-Jan-2003

Participants:
Australia: W. Wilson, M. Kesteven
USA: D. Kubo, J. Peterson, F. Patt, R. Martin
Taiwan: T. Huang, W. Ho, J. Lim, M.T. Chen, H. Jiang, P. Ho

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

I. New Action Items:

AI-30Jan03-1: Assigned to **Derek Kubo** - Schedule a telecon this week with Jeff Rapadas of Meridian Microwave to communicate our schedule concerns. Is there anything we can help him with?

AI-30Jan03-2: Assigned to **Ming-Tang** - Send mechanical review package by this Friday for review. Bob asked for an agenda as well. Telecon review will take place @ 8:30AM, Wed Feb 12 Taipei time.

Jackie or **Paul S.** - Please arrange for dial-in phone numbers for this meeting.

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.

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.

Still in process.

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.

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

IV. Miscellaneous Discussions:

MMIC: none

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

Minutes for AMiBA Engineering Telecon

Receiver: Ming-Tang – File size he is planning to send for the receiver mechanical design review will be ~10MB. Package will not include any calibration source discussions. 2 OMTs from ? have been delayed so he cannot test the noise coupler. Can't tell AT to make a 2nd noise coupler(?) until he is done testing the 1st.

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

LO/IF: Ming-Tang – for Prof. Chu – DC-to-DC converter is a change of spec. LO/IF has no room for DC converters so will have to put these within the Receiver Electronics.

Homin – Receiver/Correlator chassis has enough room for only 4 DC-DC converter circuits on the PC board (located behind back plane). These 4 supplies will probably have to be shared among the Receiver, IF/LO, and Correlator. Could be a problem with noise corruption. Individual modules should attempt to filter heavily with LC circuits.

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: Jeff P. sent a mixer to CT in Taipei around 2 weeks ago. Should be there by now. Derek or Ming-Tang to ask Jackie if she has seen this.

Derek – Talked to Jeff R. yesterday about the status. 001/002 modules were tested briefly and were found to have good responsivity at low frequency (2 – 4 GHz) and poor responsivity down to ~500 at 18 GHz. Jeff is having the modules reworked at 2Pi. Replacing delay lines and mixers due to some kind of improper assembly work.

Paul Ho expressed concern over the technical problems with the correlator and it's schedule delay. He asked that we schedule a telecon with him this week (see AI) and have him join us in the regular telecons.

Jeff P. – Mixer which CT was testing in Taipei was damaged or defective. Mixer was sent back to Rapadas who simply replaced the mixer diodes. Jeff P. did some quick tests and found the mixer to be quite good. He will send the files to Derek.

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.

DC power distribution: Ming-Tang/Homin – Ran a quick test with the Vicor DC-DC converters. Accopian linear (24V?) >> DC-to-DC converter (5VDC) >> ripple attenuator module >> load resistor (2A). Measured ~17 mV periodic spike, period of ~3usec at output of RAM. Spec for raw DC-to-DC converter output is ~100mV ripple.

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.

Dishes: none

Platform/Mount: Platform – Ted – Still trying to tie down hole patterns. Need enclosure size info from Ferdinand.

Mount – Bob – Telecon next Monday with Vertex. Should we purchase a spare jack-screw for $62k? Answer = no. Bob to ask for the recommended spares list Vertex mentioned during the CDR. Mike had a software question for Klaus in regard to the polarization(?).

Site Issues/Network: Bob – Working on ML site work. Need to hire a company to drill to conduct a geological survey. Also need to contract out the design (~$15k) of the foundation so that we can go out for bid. Schedule could be 1 month for design, 1 month for bid, 1 month for review which could take us into the summer. Bob will send out a summary.

Paul H. – was concerned about this schedule. It looks possible that we receive the mount and platform but not have the foundation complete?

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.

Minutes for AMiBA Engineering Telecon

Hilo Facilities: none

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

Schedule: discussed under individual areas (above)

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 received 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).

V. Other Inputs: none