

Minutes for AMiBA Engineering Telecon

Meeting Date: 20-Feb-2003

Participants:

Australia: W. Wilson, M. Kesteven

USA: D. Kubo, J. Rapadas, J. Peterson, M.T. Chen, F. Patt

Taiwan: W. Ho, T. Hwang, P. Shaw, H. Jiang, P. Ho, C.T. Li, H. Wang, E. Hwang, J. Han, C.J. Ma

Minutes Recorder: D. Kubo

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

I. New Action Items:

AI-20Feb03-1: **Ted, Derek** - Need to provide hole pattern in platform for mounting the Correlator Frames. Forward this info to Ferdinand who is serving as the focus for the physical interfaces to the platform.

II. Previous Action Items (still open):

AI-13Feb03-1: **Ferdinand Patt** - Gather/determine hole patterns for all boxes on the platform. Will serve as focus on this issue and will have to work with others to gather info.

Awaiting info for correlator frame to platform interface. Will summarize this information and distribute before the end of the month.

AI-6Feb03-2: **Ming-Tang** - Test the different LO/IF slope equalizers for variations in group delay. Variations of delay (delay = $d\phi/df$) verses frequency from one equalizer to another is undesirable.

Johnson has measured the characteristics of the 4 custom slope equalizers. He probably needs to repeat the measurement for phase vs. frequency to unwrap the phase (so that we can see 10 deg/div detail). Ming-Tang will distribute this info by e-mail.

AI-6Feb03-3: **Michael** - What is our spec for group delay variations from one IF path to another? I.e., how well should they be matched? Is non-flat group delay is OK as long as they are all the same?

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.

Ted mentioned that he has a solution to this and will distribute this for review.

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

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IV. Miscellaneous Discussions:

MMIC: none

Receiver: Ming-Tang - Currently cleaning up the receiver package design. No OMT yet, MTC will write an e-mail to West G. directly. MTC and Ferdinand went to visit the VLBI (on MK) to see their use of the CTI-22 cold head. They looked at their power supply distribution scheme for the cold head as well as their stainless steel and superfex cyro lines.

Bob - Receiver mechanical design review was presented by Ming-Tang yesterday. Very productive and well done. Minutes from this meeting have already been distributed. Ming-Tang said Ferdinand provided some feedback since then so he (Ming-Tang) will distribute this additional info.

LO/IF: Ferdinand asked about the question of the phase switcher that CT asked about earlier via e-mail. Could the phase switcher phase be drifting with temperature? CT commented that Warwick believed that if the phase was near 180 degrees (at the final LO) then this shouldn't hurt us. Ferdinand then asked whether there are specs for the LO chain and Homin believed that there was not anything in regard to phase verse temperature.

Correlator: Jeff Rapadas - Shipped 001 to CT and it has arrived in Taiwan according to its tracking #. He shipped along an adapter (only 1) to attach to the IF output port. He believes that 002 will ship the 1st week in March. Derek asked what the responsivity was and Jeff said about 1000 V/W for lags 1, 3, 4, and a little less for lag 2. Jeff P. commented that driving at -7 dBm was probably putting the mixers into compression. Probably get a little more responsivity if you back off.

CT distributed the preliminary test results of Professor Wang and Ming Dar Tsai's SiGe Gilbert cell multiplier. They have 5 right now. So far the results look very good and CT will continue to run tests. Next major test is 1/f noise characterization. Jeff P. suggested to do this both without noise inputs and with uncorrelated noise inputs. Derek asked if the compression (output) can be characterized as well.

Ming-Tang asked CT to looking into fabricating enough of these multipliers for our AMiBA correlators (4 x 55 for 7-elements). Warwick was also highly interested in finding out more about this multiplier.

Jeff Rapadas - SN001 - channels 3 and 4 were dead but he has isolated this to a hairline open at both the power divider (common to ch 3 & 4) and one of the delay lines. This was repaired using a bonder and now all 4 channels are active! Jeff still sees a lack of responsivity at the low 2 GHz end which is similar in shape to the return loss measurement of one of the two RF ports. He will be replacing the glass bead on this BMA connector. Goal is to ship 001 to Chao-Te before the end of this week (absolute deadline is Feb 17th). He will begin testing of SN002 shortly.

Philippe asked Derek where the CG is for the correlator frame. Derek - approximately 10% higher than the geometric center.

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DC power distribution: Homin - Tested the DC-DC converters again with filters. Sees about 15mVpp of noise but some of this is from the O-scope. He needs to obtain a lower noise O-scope. He is encouraged by these results and thinks with more filtering and shielding he can get close to the low noise performance of linears.

Dishes: Ted - Spoke to Dr. Ong, will be using carbon fiber ring instead of stainless steel. Will revise the drawings. Dr. Ong also commented on the post assembly measurements of the dish. Ted will send this information out via e-mail.

Philippe - They (Ong?) are removing the ring. This ring is thicker than the thickness of the dish. The outside of the dish does not appear so smooth but the inside looks very smooth. In the circulated drawings, the white part is the re-machined epoxy. This particular dish may not be useable (due to extensive rework) and they will probably have to make a new one.

Ted - Do we need to measure the dish after the coating is done? Bob - Recommend to do one measurement after coating, assembly, and alignment are completed.

Platform/Mount: Ted - Philippe and Ted will finalize the platform design information before the end of February and will send this to Bob. CMA will begin to cut(?) in March. There is another platform meeting tomorrow and Bob will be part of this.

Philippe - Currently performing FEA stress analysis on the platform for all elevations/polarizations with added weights. May have to add some minor support structures but this shouldn't stop CMA.

Bob - When will the platform drawings be put together? Ted - approximately 2 weeks (from today). Still awaiting hole patterns (from AMiBA designers).

Philippe - Also waiting for Bob Romeo to send him details on how he is planning to make the holes in the stringers.

Mike - Control system work (for mount?) is done on his side. Remaining work is on their (Vertex) side. Bob - Need to work closely with them to make sure both side mesh together properly.

Site Issues/Network: Ferdinand - put a voltage event recorder at ML to monitor the 110VAC power. He plans to run this for about a month and then send out the results (outages, brown outs, over voltage, etc).

Paul H. asked about the camera at ML. Derek said that there is none right now. Paul suggested that we try to use NetMeeting instead of our current LiveVideo videocon software. Michael says he's successfully used Netmeeting in conference calls so it does work.

Bob is currently visiting NOAA in Colorado addressing the ML site issues. Ferdinand is investigating the geological testing issues of ML.

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Bob - Mauna Loa of Boulder has contacted A&E(?) firm to start drawings. No progress on agreements (of ??). Paul S. asked when the foundation will be completed. Bob will send out an answer via e-mail but estimated around the end of August.

Shelter - Bob is working on a quote for this.

Mauna Loa - They are currently very short of stored water (due to lack of rain) and asked all visitors to be very limited with water usage. "Yellow be mellow, brown flush it down".

Hilo Facilities: Ferdinand - Thinks that the Casey building in Hilo would be a good place to expand our AMiBA operations.

Schedule: none

Enclosures: Ferdinand - Ordered 2 enclosures.

V.Other Inputs: none