Minutes for AMiBA Engineering Telecon

Meeting Date: 14-April-2005

Participants:
Australia:
USA: M.T., Kyle, Jeff
Taiwan: C.T., Chao-Hao, Joshua, Patrick, Pierre, Eugene, Homin, Steven
USA Dial-in = 1-800-653-5390, 6668081#
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Minutes Recorder: Kyle

I. New Action Items:

II. Previous Action Items (still open):

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

IV. Miscellaneous Discussions:

Platform:
No update.

Site:
Kyle – The webcam is fixed. Problem is in the server. We have to reset it to factory settings.

Helium line:
Chao-Hao – Cool down 3 chambers to 9K – 10K for two days. We will add a fourth cold head to the test later. **M.T.** – The test is to see if the helium line distribution manifold we designed works or not. And since we still have a few weeks time for testing, you should test more thoroughly and also test the other one. **Pierre** – The contamination from the borrowed compressor was due to saturation of absorber capacity. We should be careful about our absorber in Hilo. **M.T.** – They need to be changed every 10k to 15k hours. I don't think they have run that long. **C.T.** – How do we know the time? **M.T.** – There is a timer on the compressor. **C.T.** – Should we purge the other helium line before testing? **M.T.** – Yes. Pass high pressure helium through the helium line for 5 – 10 min should be enough. You can also call CTI for their opinion.

48V power distribution:
Joshua – All done and ready for shipping. **Pierre** – Suggest to hook up an oscilloscope and check for surge (with load). **M.T.** – Please come to Hilo in early May. **Pierre** – I'm putting together circuit for cold head control. Still missing a few things that could be ordered from Taipei. **Kyle** – I also sent out the DC power requirement to Joshua. Do we have difficulty on this issue? Homin – Where do you want to put the calibration system? Kyle – On the platform. Homin – You should talk to Ted about it. Kyle – I did copy it to Ted. C.T. – Could you draw some power from IF/LO? M.T. – I think you should specify the voltage and current requirement. Kyle – It is in the email I sent out. Last I heard from Joshua is maybe too much current? I listed both 26GHz system and 13GHz system. For 26GHz system, most current is on +12V. I need 4A for 7 elements and 10A for 19 elements. Pierre – 10A on 12V is 2.5A on 48V, assuming 100% conversion efficiency. It can fit into one 48V power supply. Even if it needs two PS, it's fine.

Dish:
M.T. – Few weeks ago heard from Prof. Chiueh that he had ordered one 1.2m dish from ALONG. **Patrick** – The plan is to make primary first and check. If the primary shape is not correct, we modify the secondary shape to match the optics.

Correlator:

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C.T. – The shipment will go out this week. I want to go to Hilo at end of Apr and stay for one month. I wish to test for two weeks before packing and moving the lab.

Calibration System:

Kyle – C.T. fixed some software problem in the correlator pc so I was able to proceed with the test on 13GHz calibration system. The result shows at IF freq 16GHz and 10GHz, the performance is similar to that from the 26GHz. However, at IF = 4GHz, I suspect there is spurious signal leaking from the fundamental frequency from doubler. On the other hand, I am still communicating with Pacific Millimeter Products (PMP) for a more suitable harmonics generator. He provided three designs. One is an even harmonics generator suppressing odd harmonics and another is an odd harmonics generator suppressing even harmonics. Both are capable of being used as a frequency quadrapler and a 4^{th} harmonic mixer. A third design improves the conversion loss for the odd harmonics mixer. I'll summarize these discussions in email.

LO/IF:

Steven – I will ask Kyle to bring back two variable attenuators for 42GHz LO to test power difference due to phase switch measured by power meter and VNA.

Receiver:

Kyle – Since gate voltage is still clamped after Johnson removed the protection PCB within the vacuum chamber, we decided to directly power the LNA with external power supply. We found the bias can meet the value on the datasheet quite nicely. The problem should be on the F38 card. Later Johnson removed the limiting diodes from F38 of Rx3 and now all 4 LNA's from Rx3 can operate at the bias listed on the datasheet. For Rx4, although two of the LNA are listed with low Vg (~0.2V), the actual Vg was clamped by the diodes on F38. We power them up with external PS and found the actual Vg is close to 1V. So there are at least two mistakes found on the datasheet. I will do the same modification to F38 for Rx4 later. **Pierre** – Removing all the protection diode may not be very safe. Does the drain current increase? **Kyle** – No, the drain current and voltage are the same as the datasheet. Just the gate voltage is different from the datasheet JPL gave us. **C.T.** – Should we inform Tod Gier(?) about the mismatch? **Kyle** – I think when Johnson is back, he will have more information and perhaps he or M.T. could communicate with Tod. Another thing is that the IF power level with correct bias is about 10dB stronger than before. The mixer output is about -40dBm. In this case, maybe we won't need a variable gain amplifier in the IF path.

Misc:

M.T. – Need floor plan from rental agent. Maybe Debbie could go over and measure it directly.