



SMT IF Upgrade 2006

Engineering Minutes

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An engineering meeting was held Thursday afternoon, 10 Aug 2006 to discuss the SMT IF upgrade and the 1.3 mm side-band separating receiver. Attending the meeting were Dr. Lucy Ziurys, Tom, Folkers, David Forbes, Gene Lauria, George Reiland, Martin McColl, and Robert Freund. Project status and schedules were discussed.

Dave reported that he had contacted Larry Jones of Micro-Tronics about the mechanical aspects of connector compatibility with the new 10.4 GHz bandpass filters used in the IF Converter modules. He was assured that there were no problems. Dave proposed that Gene be appointed the point person when dealing with Micro-Tronics on technical issues. There were no objections.

Gene reported that Mark Metcalfe plans to finish the 1.3 mm cartridge work before leaving on vacation. He further reported that there were no cartridge issues and that work was progressing on the spacers. Gene stated that 3/16" thick and 0.005" thick OFHC shim material had been ordered. He was concerned that the thin material hadn't yet been received even though it was supposed to have been in stock. Bill Hale will be asked to contact the vendor.

Mark is scheduled to be gone for one week, beginning on 25 Aug. and returning on 5 Sep. The plan is to bring John Fitzner in during Mark's absence. Tom reported that John still hadn't formally applied for the position, but that everything else was arranged for his hiring. Tom indicated that he planned to contact John.

Dave was concerned over safety issues when dealing with beryllium-copper alloy. The conclusion of the discussion was that since beryllium is alloyed with copper, one couldn't be exposed to the actual elemental metal.

Gene reported that the new spider for the Dewar will be fabricated and gold plated by Universal Cryogenics Laboratories. A 2 week delivery was quoted. This vendor's price was almost the same as others without plating.

George reported that the Quinstar 1.3 mm E-band Gunn LO directional coupler had arrived today, 5 weeks ahead of schedule. Because of this advance in the schedule, the LO system completion date is now September 19. George stated that the Pacific

Millimeter Products diplexer and harmonic mixer had arrived and that orders had been placed for the waveguide and flanges. The bias tee is the only remaining component to be ordered. George doesn't have a delivery date for the waveguide and flanges yet. He will check on this.

George summarized his plans for re-packaging the PLL components into a TDJ Company chassis. He stated that the PLL circuit boards will be removed from their current individual small enclosures and mounted on one side of an "H"-frame assembly that then gets installed in the new chassis. He indicated that he wants to evaluate the performance of the new harmonic mixers with respect to drive power before the 8.7 - 13 GHz medium power amplifiers are ordered. He expects to finish this task by tomorrow.

Dave volunteered to modify the digital driver circuits to control the RF selectors in the 1.3 mm Receiver IF Processor chassis. Tom still needs to supply a list of functions and descriptions for all the digital input and output circuits.

Gene reported that orders had been placed for the transfer switches used in the Interim Transfer Switch chassis. Its power supplies and other miscellaneous components had also been ordered.

Dave described the general design philosophy of the IF Converter System chassis. The chassis will hold 5 modules, 4 active plus one inactive spare. A central removable section will separate a pair of modules and will contain the oscillators and signal dividers that drive each module. There was still no information on the hourly rates of the Steward machine shop.

Dave further indicated that the mechanical design of the power supply chassis for the IF Convert system had been finished and that all the power supplies had been selected and ordered. The mechanical work on the power supply chassis had not been finished.

George indicated that he expected to have the mechanical design of the IF Converter System central section completed in about one week. He had selected the 8-way 100 MHz power divider but had not yet ordered it from Mini-Circuits. George also stated that Jersey Microwave expected to delivery the 100 MHz PLL source in 6 weeks.

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There was a proposal to ask John to assemble the components onto the IF Converter System controller PC card. No decision was taken.

Dave indicated his concern over the lack of standard SMA semi-rigid coaxial connectors. He needs a number of these when working on the Filter Bank IF Input Processor. An order will be place soon.

George reported that the DROs for use in the AOS IF Input Processors have been ordered.

There was a discussion on the status and delivery schedules for the 4 - 8 GHz general purpose amplifiers. George reported that he had received a quote from Cernex. The amplifier cost was \$ 475 with a delivery of 4 - 6 weeks. He reported that he had not received any information from Ciao. A signal power and VSWR budget is urgently needed to make the final determination of the types and quantities of amplifiers.

On a completely different topic, Martin indicated his interest in installing electrical isolators in the four helium high pressure lines between the compressor and the receiver. Gene will get find the technical references for Martin.

The 3 action items are summarized below:

1. George will obtain a delivery date for the 1.3 mm waveguide and flanges.
2. Obtain hourly rates for the Steward machine shop.
3. Bob will produce an IF power level budget.

The 1 decision taken is described below:

1. Gene will be the point person for technical issues when dealing with the filter vendor, Micro-Tronics.

Robert

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