

Status of RF systems at Fermilab for Project X

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A third IOT station has been commissioned at Meson Detector Building (MDB). This unit intended for testing 650 MHz couplers and components. The initial thought was to use one of the existing stations at the northern part of the building. The location for the test stand was chosen on the south end of the building where an existing shielded corridor from an old beam line exists. A cost estimate of what it would cost to run 250 feet of 6 inch coax from the existing station to this location would have cost more than double the amount needed to install this third station close to the area of testing. The system was brought up with minimal difficulty. One of the IOTs worked for just a short time before a tube fault occurred. It was replaced with one of the other IOTs and was tested for one week before turning off. In the interim, budget cuts to Project X have put a lower priority on this test stand.

With the experience of getting the third IOT station up and running, it was decided to convert one of the other two 650 MHz stations to 1.3 GHz using the CPI tube that has been at Fermilab on an ion pump for over one year. Modifications are continuing and this new 30 kW CW IOT has an internal cavity. It does not have an arc detection sensor. The software trip levels and set points in the PLC controlling the IOT power supplies must be modified by Thomson factory personnel for this new tube at a cost of \$1500.

Thomson, the manufacturer of the IOT stations, has also sold us a refurbished 162.5 MHz 10 kW CW solid-state amplifier. It was delivered two weeks ago and is being temporarily installed at MDB. Thomson has agreed to come to Fermilab to help us commission this unit. We require 40 gpm of water-cooling. Due to the shutdown of accelerators at Fermilab, the mechanical support group has a large workload and this project subsequently has lower priority. It is hoped the plumbing will be done within the week. Thomson will then come out and help with this amplifier and make the software modifications to the IOT stations on the same trip.

The Bruker 10 kW CW 325 MHz amplifier was delivered the same week as the Thomson unit. It is located near the test cave in the southern part of MDB next to the IOT station. We are waiting for water connections to this amplifier as well.

Two 75 kW CW 162.5 MHz amplifiers have been ordered from Bruker to power the RFQ. Delivery is expected in June 2013. Dimensions, water-cooling, and electrical requirements have been provided so that we can continue with our floor plans for PXIE at CMTF.