

Concept of the Real-time Monitoring System for the ESS Phase Reference Line

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The Phase Reference Line (PRL) of the European Spallation Source (ESS) is a system that distributes 352.21 MHz and 704.42 MHz reference signals from Master Oscillator (MO) in Klystron Gallery (KG) to LLRF and Beam Instrumentation (BI) systems over the machine in the tunnel. It is a 580 m long system based on a 1-5/8" coaxial rigid line installed in the tunnel. Due to radiation, the system is an entirely passive structure, and possible diagnosis during the accelerator operation is an issue. This contribution covers the design concept of a real-time PRL performance monitoring system. The system will base on active optic links measuring PRL phase performance with the assistance of reflectometer links. Reflectometers with Ethernet interface for real-time phase change measurements in cables routed through STUBs. Active optical links for PRL performance monitoring in the ESS Klystron Gallery. The assumed measurement accuracy is better than 0.1 degrees.

Keyword

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