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X-Band Low Level Radio Frequency System Development

EuPRAXIA stands for “European Plasma Research Accelerator with eXcellence In Applications”. It’s a collaborative project aimed at developing a compact, cost-effective particle accelerator based on plasma technology. This initiative involves researchers and institutions across Europe working together to advance the field of accelerator science. EuPRAXIA aims to produce a new generation of accelerators with potential applications in various fields, including medicine, industry, and fundamental research in physics. LLRF stands for Low-Level Radio Frequency. It’s a system used in particle accelerators to stabilize and control the radiofrequency fields used to accelerate charged particles, ensuring precise energy levels and beam stability. The goal of this project is the development of a prototype for an X-band LLRF system, tailored to address the challenging requirements of the EuPRAXIA@SPARC_LAB application. Once confirmed on a real testbench, the prototype will be used as a starting point for the industrialization into a commercial instrument. This poster will present the Conceptual Block diagram of the LLRF prototype.

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