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Status and progress of the RF system for high energy photon source

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High Energy Photon Source (HEPS), a 6 GeV diffraction-limited synchrotron light source, is currently under construction in Beijing. The double-frequency RF system is being developed to deliver 6 MV of RF voltage and 850 kW of beam power with an active third harmonic system. The prototypes of the higher-order-mode damped 166.6 MHz quarter-wave superconducting cavities, as well as the 499.8 MHz harmonic superconducting cavities, have been manufactured and vertical tested, while the cryomodules for these cavities are being developed. All six normal-conducting 5-cell cavities were high-power tested and three of them have been installed in the booster tunnel for initial beam commissioning. Following the success of the prototype 166.6 MHz 260 kW and 499.8 MHz 150 kW solid-state power amplifiers, the series production of the amplifiers is underway. The new low-level RF control system based on Xilinx FPGA is in the prototyping phase and the first lab test results fulfill the HEPS requirements. This paper presents the status and progress of the RF system for HEPS.

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