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High Power Solid state amplifiers for the SOLEIL Synchrotron

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In SOLEIL, 5 solid state amplifiers provide the required RF power at 352 MHz : 1 x 35 kW for the booster cavity and 4 x 190 kW for the 4 superconducting cavities of the storage ring. Based on a design fully developed in house, they consist in a combination of a large number of 330 W elementary modules (1 x 147 in the booster and 4 x 724 in the storage ring) with MOSFET transistors, integrated circulators and individual power supplies. Although quite innovative and challenging for the required power range, this technology is very attractive and presents significant advantages as compared to the more conventional vacuum tubes, klystrons or IOTs. The booster and two of the storage ring power plants have been successfully commissioned and the first operational experience is quite satisfactory. The amplifiers proved to be very reliable as well as easy and flexible in operation. The commissioning of the two other amplifiers on the second cryomodule is scheduled for August 2008.

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