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Development of the RF power distribution System for the ILC Prototype Cryomodule

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The RF power distribution system for the International Linear Collider (ILC) is redesigned based on the updated requirements established in the scope of the ILC Technology Network (ITN) at KEK. Its main features are a low center of gravity, a compact design, and a reduced number of waveguide components. The power distribution system design is updated to avoid interference among various components in the case of future multi-cryomodule assembly. Furthermore, the concept of a local power distribution system without a circulator was introduced, which was evaluated by analytical calculations, simulations, and low-power tests. The cryomodules integrated with waveguide systems will be installed inside the tunnel. Therefore, a prototype waveguide support system was designed. A test assembly was conducted to gain a better understanding of the installation process and space requirements.

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