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Alignment methods developed for the validation of the thermal and mechanical behaviour of the Two Beam Test Modules for the CLIC project

CLIC (Compact Linear Collider) project will consist of more than 20000 two meters long modules. A test setup made of 3 modules has been built at CERN to validate the assembly and integration of all components and technical systems in the crowded environment of a module and to validate the short range strategy of pre-alignment. The test setup has been installed in a room equipped with a sophisticated system of ventilation able to reproduce the environmental conditions of the CLIC tunnel, including the longitudinal air flow. Some of the components have been equipped with electrical heaters to simulate the power dissipation, combined with a water cooling system integrated in the RF components. Using these installations, in order to have a better understanding of the thermal and mechanical behaviour of a module under different operation modes, machine cycles have been simulated; the misalignment of the components and their supports has been observed. This paper describes the measurements methods developed for such a project and the results obtained.

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