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Tue-Af-Po2.18-03 [35]: HL-LHC D2 Short model recombination dipole cold test results and analysis

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The new D2 recombination superconducting dipole is a key two-in-one NbTi magnet with a 105 mm bore aperture for the LHC high luminosity upgrade project (HL-LHC) expected in operation from 2024. A short model magnet of 1.6 m magnetic length has been designed by INFN (Genova), built by Ansaldo Superconductors Group, and cold tested at CERN within a INFN-CERN collaboration framework. This model magnet features novel magnetic and mechanical design elements, which include the cancellation of unwanted cross-talk field multipoles through asymmetric coils, aluminium alloy collar pack preloading rings and a peculiar axial structure design. The future series of four 8.5 m long full-length dipole magnets shall be installed on both sides of ATLAS and CMS interaction points with an integral field of 35 T.m and 4.5 T bore magnetic field
This paper shall present the first power test mechanical results including training, protection, and field quality. Short model results will give a relevant feedback on the prototype construction and the series production.

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