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Design, prototyping and testing of the Electron Ion Collider electron storage ring SRF cavity

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The electron storage ring (ESR) in the Electron Ion Collider (EIC) requires a challenging 591 MHz fundamental 17-cavity RF system to provide up to 10 MW CW power to the beam with up to 2.5 A beam current and a wide range of voltage. In this paper, we will report the latest RF and mechanical design status, as well as the prototyping and testing results.

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