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Density profile measurements from the developed FMCW Reflectometry system for Aditya-U tokamak.

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Results from FMCW reflectometry measuring density profiles for the first time on Aditya-U tokamak are reported. Two channels in 18-28 GHz and 26-40 GHz range are established at IPR. The reflectometer was operated in O-Mode with its horn antennae placed outside the vacuum vessel. The diagnostic was calibrated in laboratory and also verified in-situ. Characterisation of the instrument for system dispersion and phase offset correction are presented. A signal processing algorithm developed to filter the noise and frequencies other than those due to plasma. An algorithm to remove amplitude variations is used on the raw baseband signal after which the group delay is estimated using the spectrogram technique. Bottolier-Curtet method is used for profile inversion after correcting the measured group delay for contributions to it other than plasma. Edge density profiles for different plasma conditions were measured and analysed.

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