

HTPD 2018



Contribution ID : 26

Type : not specified

## 10.11 Prototyping and testing of the ITER plasma position reflectometry high-field side in-vessel antenna assembly

Wednesday, 18 April 2018 10:31 (120)

The ITER Plasma Position Reflectometry diagnostic aims to provide measurements of the edge plasma to correct or supplement the magnetics for plasma position control. It consists of five systems, two of which are installed inside the vessel. One of these systems probes the plasma from the high-field side using small pyramidal horns located in the gap between two blankets. Electromagnetic simulations have shown that the blankets shape the radiation pattern and need to be considered as part of the antenna. Full-wave plasma simulations have shown that the first-wall geometry might induce measurement errors above the required  $\pm 1$  cm. To further address these issues, we manufactured an antenna prototype that includes a mock-up of the blankets. Here, we present the results of the prototype tests in an anechoic chamber and using a target metallic mirror, with and without the blankets. The signals from varying target distances are used to assess the precision/accuracy of the system with time-frequency data analysis techniques employed to obtain automatic routine density profiles in current devices. The sensitivity to tolerances in the blankets' installation is assessed by changing the height of the blankets' gap as well as the antenna's position with respect to their surfaces.

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Session Classification : Session #10, Wednesday Morning Poster Session