

KSTAR ICRF Antenna for Long-pulse High-power Operation

**Young-Dug Bae, Sun-Jeong Wang, Jae-Sung Yoon, Jong-Gu Kwak, Bong-Guen Hong,
Sung-Kyu Kim, Chrul-Kew Hwang and Suk-Kwon Kim**

Korea Atomic Energy Research Institute, Daejeon, Korea 305-353

The KSTAR ICRF antenna has been developed for a high-power and long-pulse operation. In 1999, a prototype ICRF antenna was built, and its performance was extensively evaluated during several test campaigns from 1999 to 2003. In 2002, a new antenna was constructed, which has several improved features for a long pulse operation. The high-power and long-pulse capabilities of the antenna were experimentally estimated by RF test campaign-5 (2004), campaign-6 (2004), and campaign-8 (2005) in the test stand. As a result, we achieved a standoff voltage of 41.3 kV_p for a pulse length of 300 s, and 46.0 kV_p for 20 s, which considerably exceeds the design requirements. In order to simulate a steady state operation, we extended the pulse length up to 600 s and 1000 s which are much longer than the design requirement of 300 s. We achieved maximum operating voltages of 35.0 and 27.9 kV_p for the pulse lengths of 600 and 1000 s, respectively. The antenna has been ready to be installed in KSTAR tokamak.