Contribution ID: **201** Type: **Poster**

Power control system of 4.6GHz Lower hybrid wave for experimental advanced superconducting tokmak

Tuesday 6 June 2017 13:40 (2 hours)

The 6 MW/4.6 GHz lower hybrid current drive (LHCD) system as an effective approach for auxiliary heating and noninductive current drive has been designed and installed with twenty-four 250 KW/4.6 GHz high power klystron amplifiers in the experimental advanced superconducting tokamak(EAST). The power control system of 4.6GHz lower hybrid wave (LPCS) in continuous wave mode has been set up, which can control the lower hybrid power and protect the LHCD system. In this paper, the system architecture and software of the LHPCS are presented. The LPCS of 4.6GHz LHCD included the microwave pre-amplifier system, directional coupler, high reflected power protection subsystem, data acquisition and power control subsystem. The microwave pre-amplifier system contain master oscillator box, two power dividers box and 24 pre-amplifier box. There were two set high reflected power protection systems. They were installed to make sure klystron, ceramic window and other devices in safety once high reflection occurs. Data acquisition and power control computer is set up on the basis of national instruments CompactRIO and PXI system. The software for high reflected power protection subsystem, data acquisition and power control subsystem were based on LabView. Moreover, the experiment of measurement of incident power, High reflected power protection were dexcribed here in detail. Finally, High power CW operation and power modulation experimental with feedback controlled low power microwave source to results in EAST were show here in detail.

Eligible for student paper award?

No

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Session Classification: T.POS: Poster Session T

Track Classification: Plasma heating and current drive