

# Design and Experiment of a 28 GHz 10 kW Gyrotron System for Electron Cyclotron Resonance Ion Source

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In order to deliver the microwave power from gyrotron oscillator to an electron cyclotron resonance ion source (ECRIS) for simultaneously producing high current and highly charged ions, a 28 GHz 10 kW gyrotron system was designed. The microwave power from 28 GHz gyrotron installed in Korea Basic Science Institute (KBSI) were measured using a dummy load from 0.5 kW to 10 kW with frequency variation from 27.9740 GHz to 27.9893 GHz. The dummy load was developed for gyrotron test. The gyrotron oscillator of transmission system operates in continuous wave (CW) mode with the smoothly regulated output power. In order to transfer microwaves into an ion source with low power loss, low mode conversion and low reflected power, a microwave power transmission line was designed. Also, we installed a DC break in microwave transmission line so that the gyrotron system is electrically insulated from ion source with high voltage platform. The design of 28 GHz 10 kW gyrotron system and experimental results of waveguide components will be reported in this paper.

## Paper submission Plan

## Best Presentation

## Contribution track

ICABU WG1. Accelerator Systems

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