

MEGAWATT CLASS GYROTRON DEVELOPMENT AT MPP

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ABSTRACT

MPP is currently engaged in the design, development, and demonstration of several 500 kW – 1 MW power level gyrotrons at millimeter wave frequencies for both fusion and non-fusion applications. MPP has designed, built, tested and delivered the first of two 600 kW continuous wave (cw) dual frequency 70/105 GHz gyrotrons for the Oak Ridge National Laboratory's Material Plasma Exposure eXperiment (MPEX) program [1]. Detailed design features as well as the results of experimental demonstrations will be given. In addition, MPP has designed and built a 1 MW cw 105 GHz gyrotron for a deep hole drilling application. To date, the gyrotron fabrication is complete and tests are planned for Spring 2026. Test results, if available, will be discussed.

References

[1] J. Rapp, et al, "The Material Plasma Exposure eXperiment: mission and conceptual design," Fusion Eng. Des., vol. 156, p.111586, 2020.